

## R-BUS CABLE CONNECTION

### IMPORTANT:

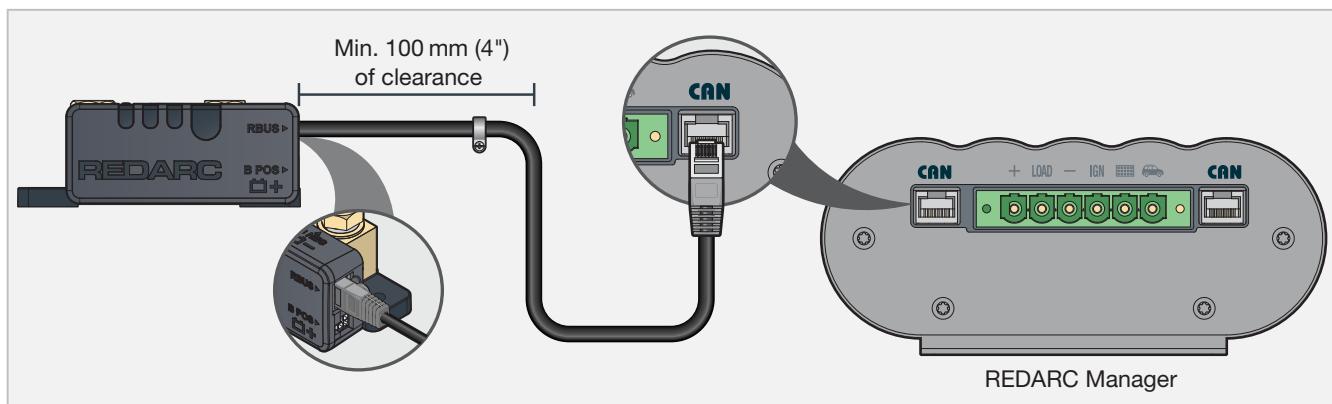
- The Battery Monitor is not designed to be used alone with the RedVision® Display.
- DO NOT connect computers or IT equipment to the R-Bus socket. This may damage internal components.

## CONNECTING THE BATTERY MONITOR TO THE REDVISION® SYSTEM

The supplied R-Bus cable is used to connect the Battery Monitor to the RedVision® system.

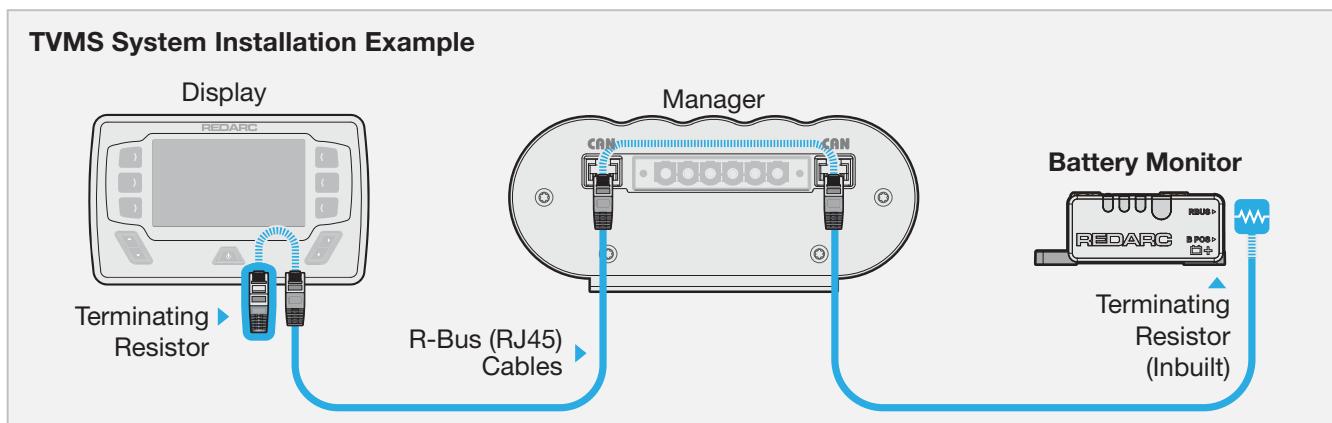
Connect one end of the R-Bus cable to the RBUS socket on the Battery Monitor. Then, connect the other end of the cable to any available R-Bus (CAN) socket on the Manager or other compatible REDARC Products with a R-Bus system.

**NOTE:** Leave a minimum of 100 mm (4") of clearance around the RBUS socket on the Battery Monitor to allow routing of the R-Bus cable.



## REDVISION® SYSTEM SETUP EXAMPLE

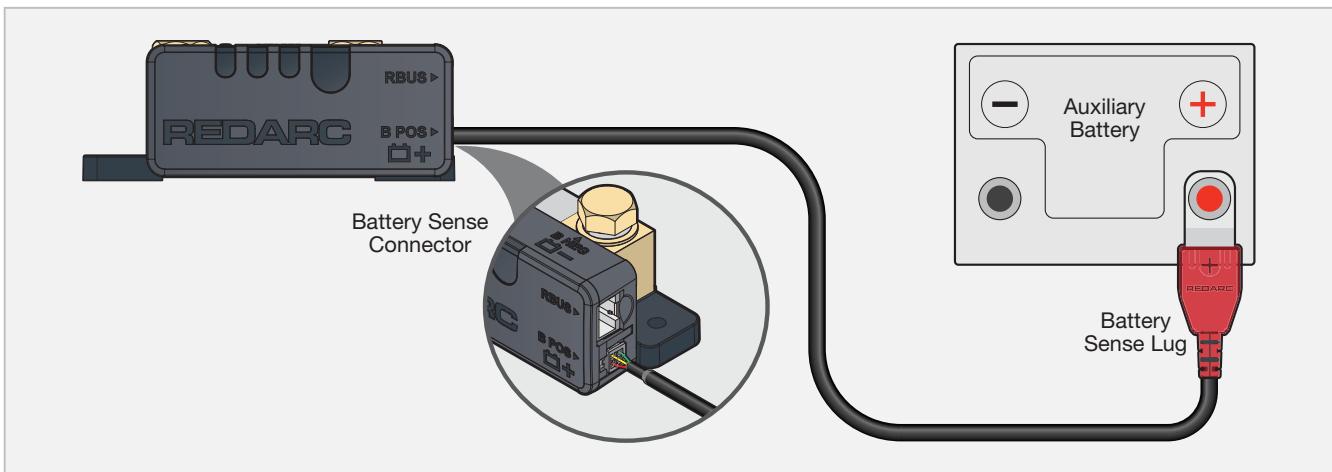
To incorporate the Battery Monitor into your R-Bus system, connect the devices in a continuous daisy-chain network. Terminating Resistors must be present at each end of the daisy-chain to complete the R-Bus system (supplied with the Manager). **The Battery Monitor has its own built in terminating resistor.** An example is shown below.



## BATTERY SENSE LEAD CONNECTION

Insert the Battery Sense Connector on the Battery Sense Lead into the B POS  + socket on the Battery Monitor. Then, connect the Battery Sense Lug to the auxiliary battery positive (+) terminal using appropriate fasteners to secure.

**IMPORTANT:** Do not fit the Battery Sense Lead between the auxiliary battery and lugs carrying high currents.

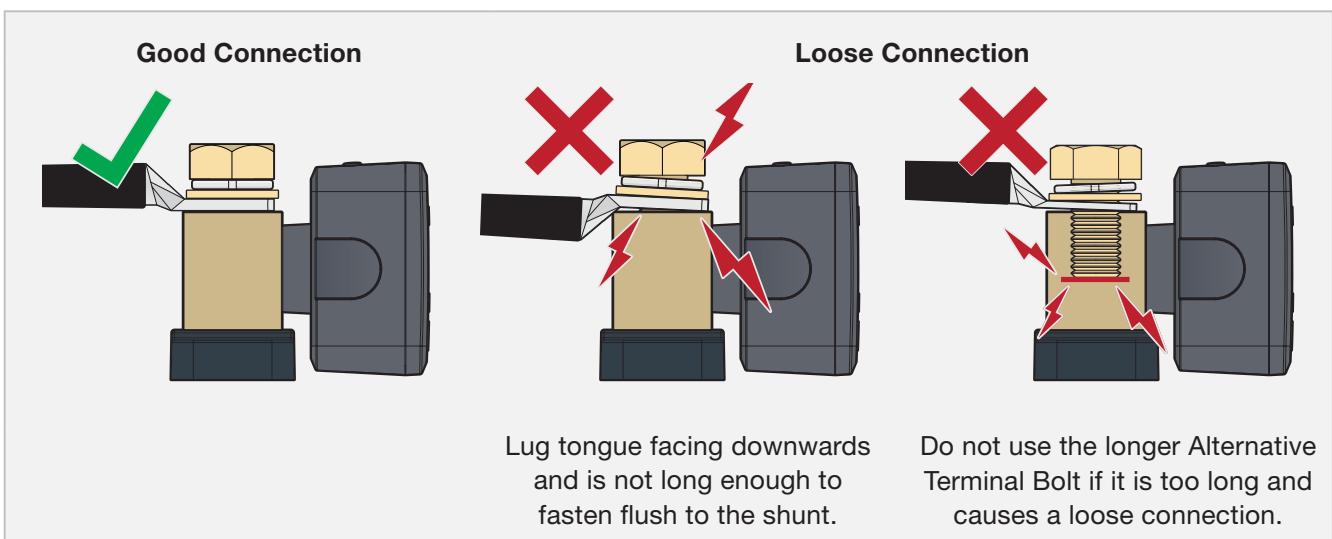


## STRAIN-RELIEF AND CABLE MANAGEMENT

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

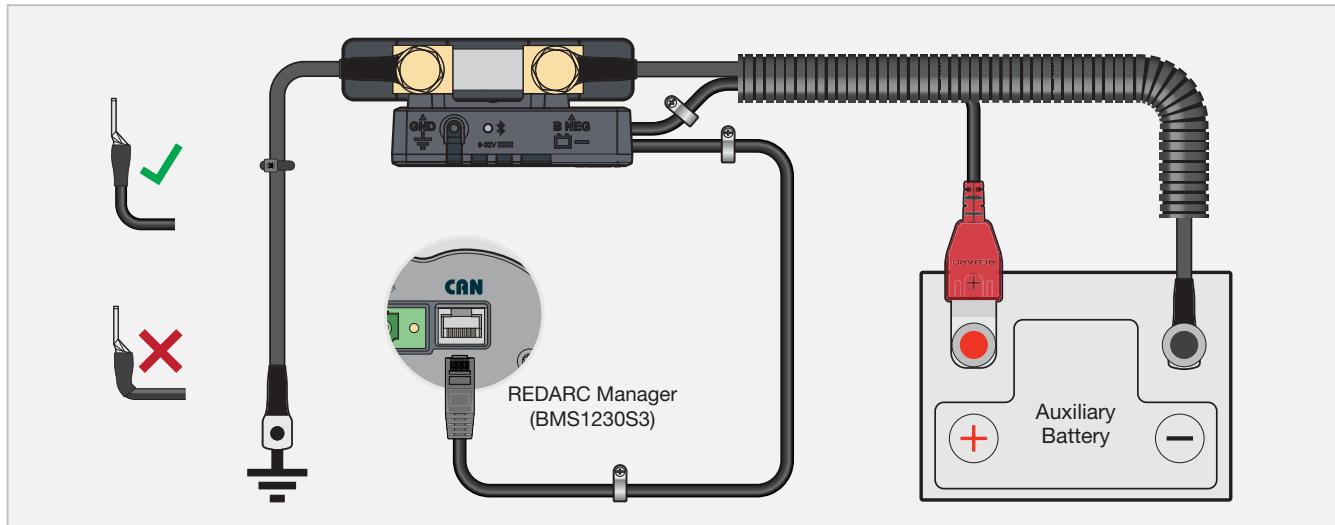
**NOTICE:** Do not bottom-out the thread when screwing the bolt into the terminal, this may cause a poor electrical connection.

**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.



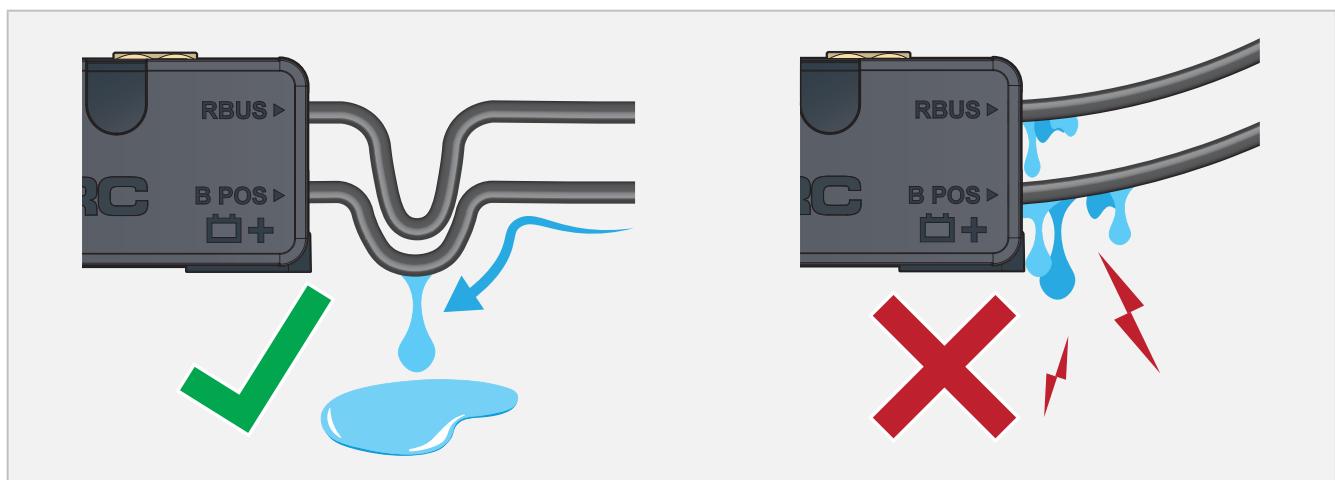
## PROTECT AND SECURE THE CABLES

- Allow strain-relief for cables, ensuring cables are not pulled or stretched tightly. This can cause damage or allow the cables to become loose and affect the performance of the Battery Monitor.
- To avoid connections becoming loose, secure all cables to a fixed point close to the 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.



## AVOIDING WATER ENTRY

Ensure that cables are routed with drip loops, this is to prevent moisture from running down the cables into the Battery Monitor.



## 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.

# OPERATION

When power is first drawn to the Battery Monitor, the Status LED will quickly flash White to indicate the Battery Monitor is ON. Directly afterwards, the Status LED will automatically begin to flash Blue, entering into Bluetooth pairing mode.

## BLUETOOTH PAIRING MODE

Bluetooth pairing mode will time out after approximately 90 seconds. Hold the Control Button between 0.5 to 3 seconds to enter back into Bluetooth pairing mode, when in pairing mode the Status LED will flash Blue. Once a smartphone device is paired to the Battery Monitor, the Status LED will stay solid Blue.

## FAULT INDICATION

The Status LED will turn solid Red or flash Red/Blue (if Bluetooth is connected) to indicate a fault detection, for more information see '['Troubleshooting' \(page 22\)](#)'.

# SYSTEM CONFIGURATION

Once the Battery Monitor installation is complete, it needs to be configured using the RedVision Configurator App. The App defines the behaviours and operation of the Battery Monitor and informs the Battery Monitor of your auxiliary battery's specifications.

If an R-Bus device is incorporated in your system, the RedVision Configurator App needs to be used in order to configure your entire system. Refer to the R-Bus device's instruction manual for further information on configuring its system.

## GET THE REDVISION® CONFIGURATOR APP



### GET THE REDVISION® CONFIGURATOR APP

Download the free REDARC RedVision® Configurator App to Configure the settings of your Battery Monitor using your smartphone via Bluetooth®.



The Configurator App and its interactions with the Battery Monitor have not been tested on all smartphone models. Visit the application pages with your App store to view compatibility details.

### PAIRING THE BATTERY MONITOR TO THE CONFIGURATOR APP

1. Download the RedVision® Configurator App and make sure Bluetooth is enabled on your smartphone.
2. Press the Control Button on the Battery Monitor for 0.5 to 3 seconds, then the Status LED will flash Blue and the Battery Monitor will enter into Bluetooth pairing mode.
3. Open the Configurator App and allow the required permissions if it's the first time using the App. Then, in the **Choose System** screen, select the system that matches the Product Serial Number on the Battery Monitor.
4. When the Bluetooth pairing request appears, tap **Pair** (first time pairing may take a few minutes).
5. Under the Manager heading, tap the **green arrow**  next to your Battery Monitor (check the system matches the Product Serial Number).
6. Configure the Battery Monitor by entering in your auxiliary battery's specifications\* (refer to your battery manufacturer's specifications). Once completed, tap **Save** .
7. If the Status LED on the Battery Monitor is Off, press the Control Button for 0.5 to 3 seconds to enter back into Bluetooth pairing mode, then, in the Configurator App press **Program** .
8. In the **Choose System** screen, re-select the system that matches the Product Serial Number on the Battery Monitor. Do not exit the Configurator App until the success banner appears and the Status LED on the Battery Monitor turns solid Blue. Once this occurs the Bluetooth pairing is complete.

**\*NOTE:** System setups without a R-Bus Interface are not able to configure the Maximum Charge setting.



Bluetooth Pairing Mode



Bluetooth Connected

## SUBSEQUENT CONNECTIONS

Once the smartphone has been paired with the Battery Monitor, it will automatically reconnect when the Configurator App is opened and the Battery Monitor is selected — In the **Choose System** screen, tap the Product Serial Number on the Battery Monitor from the list of devices.

## EDIT A CONFIGURATION

1. Open the RedVision Configurator App.
2. From the **Choose System** screen, tap **Open Configuration** .
3. From the list, choose the configuration you want to edit.
4. Edit the configuration as required to suit your setup — remember to tap **Save**  each time you make a change.

## END-USER LOCKOUT

The Battery Monitor allows you to add an Installer PIN (personal identification number) to prevent end-users from changing the configuration of their RedVision® system. This is to avoid safety hazards if the system is reconfigured in an unsafe way by persons who do not fully understand the system requirements.

**IMPORTANT: By adding an Installer PIN, the saved Configuration cannot be edited without entering the correct PIN. DO NOT forget the PIN.**

### ADD AN INSTALLER PIN:

1. Open the RedVision® Configurator App.
2. From the **Choose System** screen, tap **Open Configuration**  then select the configuration you want to add an installer PIN to.
3. Tap the gear icon  at the top right of the screen, then select **Add Installer PIN** from the pop-up list.
4. Type a 4 to 8 digit PIN into the **New PIN** field, then retype it in the **Confirm New PIN** field. Tap **Add**.
5. The PIN will now have to be entered to make any changes to the locked configuration.

### REMOVE THE INSTALLER PIN:

1. Open the RedVision® Configurator App.
2. From the **Choose System** screen, tap **Open Configuration**  then select the configuration you want to remove the Installer PIN from.
3. Tap the gear icon  at the top right of the screen then select **Remove Installer PIN** from the pop-up list.
4. Type the PIN into the **Current PIN** field, then tap **Remove**.

# SYSTEM TESTING

System testing is an important step to confirm the end-user experience of the configured system. Identifying and correcting errors is important before the system is operational and on-the-road.

1. Download and install the RedVision® App.
2. Open the App and check that each connected device appears and functions as intended.
3. To test the system, power up a connected charger and check that the current flow is into the auxiliary battery and the arrow is pointing up and green.

## GET THE REDVISION APP

**GET THE REDVISION® APP**



The RedVision® App gives you remote access to Battery Monitor functions and features including battery level monitoring, system and terminal source monitoring.



The RedVision® App and its interactions with the Battery Monitor have not been tested on all smartphone models. Visit the application pages with your App store to view compatibility details.

### PAIRING THE BATTERY MONITOR TO THE REDVISION® APP:

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



Bluetooth Pairing Mode



Bluetooth Connected

## SUBSEQUENT CONNECTIONS

Once the 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 the Menu icon  at the top right, then select the Battery Monitor from the list of devices.

## PAIR MULTIPLE SMARTPHONES

The Battery Monitor 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 [page 21](#).

## AUXILIARY BATTERY STATE OF CHARGE ESTIMATE

The Battery Monitors time-till-full/flat (TTFF) value displayed on the RedVision® App indicates the estimated time until the auxiliary battery is fully charged or completely depleted based on your current charge usage rate. This allows you to manage the auxiliary battery's life and plan your device usage accordingly.

# TROUBLESHOOTING

## FAULTS

Faults are indicated by the Status LED on the Battery Monitor:

- **Flashing Red/Blue** — Fault detected whilst a smartphone is connected to the Battery Monitor via the RedVision® App.
- **Solid Red** — Bluetooth pairing and/or R-Bus device communication Fault detected.



Flashing Red/Blue



Solid Red

## FLASHING RED/BLUE LED

In the event of the LED flashing Red/Blue refer to the RedVision® App on your smartphone or the RedVision® Display to identify the cause of the Fault.

The Battery Monitor is capable of detecting Faults including out of range temperature and voltage of the auxiliary battery.

## SOLID RED LED

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/or wired R-Bus connected devices will be unable to communicate with the Battery Monitor.

## BLUETOOTH TROUBLESHOOTING

To resolve, complete the following steps, then repeat the Bluetooth pairing instructions on [page 21](#) before directly contacting REDARC Tech Support or your local REDARC Distributor.

1. In the RedVision® App, click the **Menu Icon**  to navigate to the list of devices, locate your Battery Monitor device and delete it.
2. In your smartphones Bluetooth settings, remove the Battery Monitor from your Bluetooth devices list.
3. Switch off and re-start your smartphone.
4. **Clearing 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.



Hold the Control Button  
to Clear Pairings

## DISPLAY TROUBLESHOOTING



Fault indication  
on the Display.

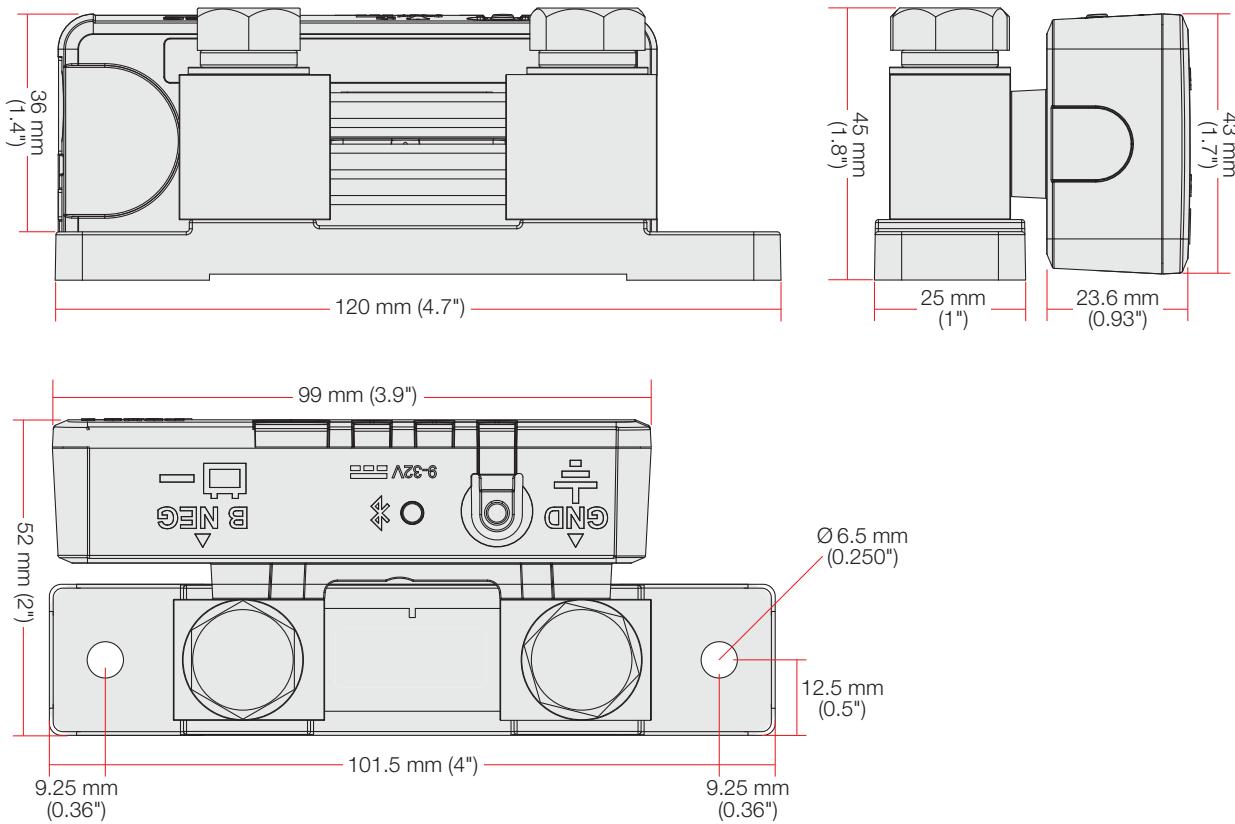
To resolve installations where a Display is incorporated in your R-Bus system complete the following steps, in order, before directly contacting REDARC Tech Support or your local REDARC Distributor:

1. Check R-Bus cable to make sure it is securely connected to the correct socket on each R-Bus input in your system.
2. Confirm that terminating resistors are fitted at each end of the R-Bus 'daisy-chain' (see "[RedVision® System Setup example](#)" on [page 15](#)).

# TECHNICAL SPECIFICATIONS

## GENERAL SPECIFICATIONS

Main Unit Weight	355 g / 12.5 oz
Main Unit Dimensions	120 × 52 × 45 mm / 4.7" × 2" × 1.8"
Battery Sense Lead Length	1 m / 3.3'
R-Bus Cable Length	2 m / 6.6'



## ELECTRICAL SPECIFICATIONS

Operating Voltage Range	9 to 32 VDC ==
Current Draw	8 mA
Unit Operating Temperature	-20°C to 60°C / -4°F to 140°F

Voltages Specified are  $\pm$  100 mV.

## OPERATION SPECIFICATIONS

Current Measurement Range	$\pm$ 500 A
Current Measurement Accuracy	$\pm$ 0.4%
Voltage Measurement Range	0.0 V – 39.5 V
Voltage Measurement Accuracy	$\pm$ 0.5%
Battery Temperature Measurement Range	-40°C to 100°C / -40°F to 212°F
Temperature Measurement Accuracy	$\pm$ 0.5°C
Input Voltage Range	9 to 32 VDC ==
Battery Type	Standard Lead Acid, Calcium Content, Gel, AGM or LiFePO <sub>4</sub> type only

Voltages Specified are  $\pm$  100 mV.

## BLUETOOTH SPECIFICATIONS

Bluetooth Frequency	2402-2480MHz
Bluetooth Power	-4dBm

## COMPLIANCE

FCC ID	2BAH6-SU601
IC	30290-SU601
Standards	     

### Internal Transmission Notice

- 1. WARNING: Any changes or modifications not expressly approved by the grantee could void the user's authority to operate this equipment.**
- 2. 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
- 3.** 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
- 4.** 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.

# WARRANTY

## LIMITED WARRANTY

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

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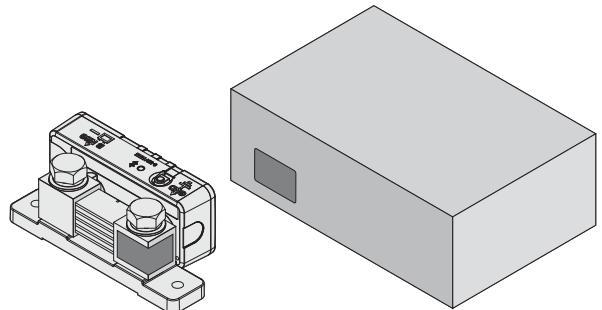
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## CHECKING THE PRODUCT SERIAL NUMBER

The Product Serial Number is located on the Battery Monitor and on the product packaging.



## IMPORTER CONTACT INFORMATION

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DE24 8HG, Derby  
UK

For written request please email [power@redarcelectronics.eu](mailto:power@redarcelectronics.eu)

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