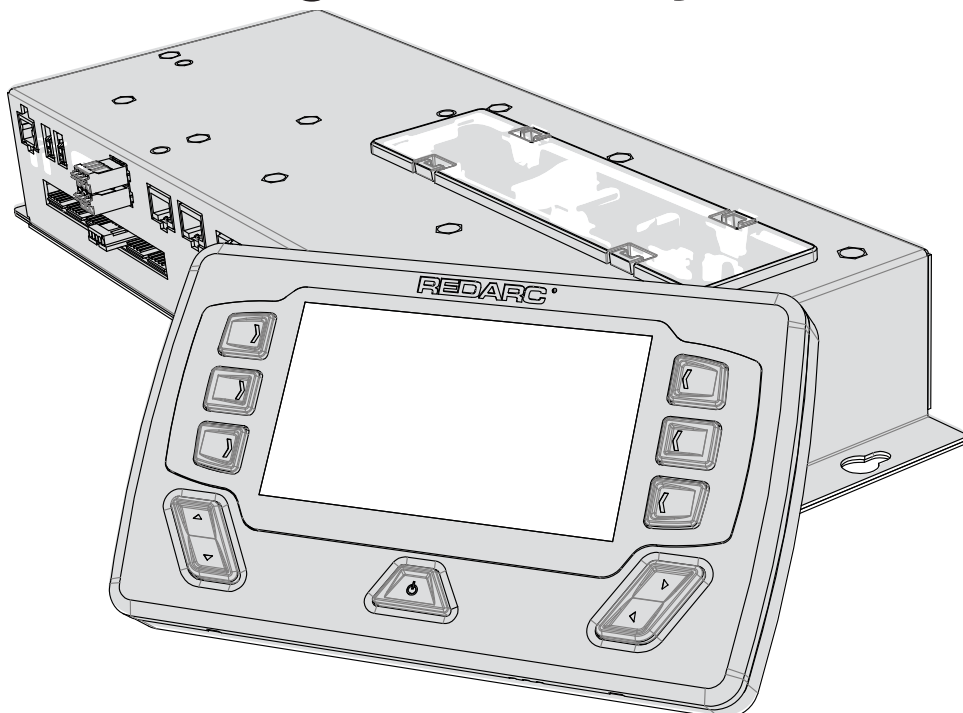


THE POWER OF

REDARC®

REDiVISION

Total Vehicle
Management System



TVMS1280



THE REDVISION TOTAL VEHICLE MANAGEMENT SYSTEM

The RedVision Total Vehicle Management System (TVMS) sets an unprecedented level of automation in the recreational vehicle industry by allowing users to control multiple on-board devices with one easy to use system.

RedVision acts as a central hub that connects devices and displays vital information for the vehicle and its on-board accessories. RedVision allows the user to turn lights, inverters, water pumps and other loads such as televisions, electric steps and fridges on or off, while displaying water levels, temperature, energy (battery power) consumption and storage*.

WARNINGS & SAFETY INSTRUCTIONS

WARNING

1. **SAVE THESE INSTRUCTIONS - THIS MANUAL CONTAINS IMPORTANT SAFETY INSTRUCTIONS FOR THE REDVISION TOTAL VEHICLE MANAGEMENT SYSTEM (TVMS).**
2. **DO NOT OPERATE THE SYSTEM UNLESS YOU HAVE READ AND UNDERSTOOD THIS MANUAL AND THE SYSTEM IS INSTALLED AS PER THESE INSTALLATION INSTRUCTIONS. REDARC RECOMMENDS THAT THE SYSTEM BE INSTALLED BY A SUITABLY QUALIFIED PERSON.**

CAUTION

1. Risk of explosive gases: Working in the vicinity of a Lead-Acid battery is dangerous. Batteries generate explosive gases during normal operation. For this reason, it is of utmost importance that you follow the instructions each time you use the system.
2. The system 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 system.
3. Do NOT alter or disassemble the system under any circumstances. All services or repairs 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.
4. Use of an attachment not recommended or sold by REDARC may result in a risk of fire, electric shock, or injury to persons.
5. Cable and fuse sizes are specified by various codes and standards which depend on the type of vehicle the system is installed into. Selecting the wrong cable or fuse size could result in harm to the installer or user and/or damage to the TVMS 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 system.
6. Be extra cautious so as to reduce the risk of dropping a metal tool onto a vehicle battery. Doing so might cause the battery to spark or might short-circuit the battery or other electrical parts that may cause an explosion.
7. Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a lead-acid battery. A lead-acid battery can produce a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.

8. NEVER SMOKE OR ALLOW A SPARK OR FLAME NEAR A BATTERY AS THESE MAY CAUSE THE BATTERY TO EXPLODE. TO REDUCE THE RISK OF A SPARK NEAR A BATTERY WHEN CONNECTING THE BATTERY INSTALLED IN A VEHICLE TO THE TVMS, ALWAYS DO THE FOLLOWING:

Wire the Output Connector before connecting it to the Distribution Box. During connection of the unit, the Battery Output (positive) must be connected first, followed by the Ground (chassis) terminal. The chassis connection should be made away from the battery and fuel lines. Once all connections are wired to the Output Connector, plug the connector into the Distribution Box.

9. Do not use this product to control safety critical devices or those that could cause harm if operated remotely (for example fume exhaust fans or lifters).
10. Ensure that the Display is not mounted in vehicle head-impact zones. Doing so may result in injury to the driver and/or passenger in the event of an accident.
11. Ensure the Display is not mounted where it may distract the driver of the vehicle. Distracting the driver may result in an accident.
12. Risk of damage to the system. Do NOT connect a load negative (-) to the chassis AND to the applicable negative (-) output channel as this may cause damage to the Distribution Box under some circumstances. Connect to the applicable negative (-) output channel OR a suitable chassis grounding point to avoid damage.
13. Risk of damage to the system. Do NOT connect to the 'TRC' socket at the front (240V end) of the inverter as this will cause damage to the RedVision Distribution Box. Connect to the 'REMOTE' socket to avoid damage.

NOTICE

1. Do NOT connect computers or IT equipment to the RJ45 ports on the RedVision Distribution Box or Display. Damage may occur.
2. It is recommended to leave the Display connected at all times to the base unit.
3. The Distribution Box may be mounted in any orientation but must be mounted onto a flat, solid surface using 4 x M6 screws or bolts. Failure to adequately mount the unit, such as using adhesives to mount the unit will result in unreliable operation of the Distribution Box.
4. It is the installer's responsibility to ensure their installation complies with any applicable legal and regulatory requirements. Within Australia, installers may wish to consult AS/NZS 3001 as one potentially relevant standard.
5. Ensure that the channel and master override dip-switches are turned off after use to prevent accidental operation of the channel / flattening of either the Starter or Auxiliary battery.
6. The RedVision App and its interactions with RedVision has not been tested on all smartphones available on the market so is not guaranteed to work on all devices. However, the app should work on most phones with Bluetooth® 4.0 (or later) running IOS 11. 1 (or later) or Android 7.0 (or later).
7. The Configurator App. allows modification to the core system functionality of your RedVision system, only use this App if you have read and fully understand all instructions in this manual.

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FEATURES AND BENEFITS

Why use RedVision?

- Integration service provided to OEM's to make the most of the product and our manufacturing experience
- Configurable software to meet the specification of different vehicles
- Differentiation against lower cost, lower tech, competitors
- REDARC reliability, warranty, and after sales service

Customer Benefits of RedVision

- Modern, user friendly interface
- Wireless information and control from mobile device
- Easy to understand simple system layout
- Feature expandability after sales
- REDARC quality

OEM Benefits of RedVision

- Feature expandability for vehicle customisation to customer order
- Easily up sell value add components such as inverters
- Decreased installation time and complexity
- Reduced weight and area of components
- Improved service and support
- Packaged pricing and delivery
- Decreased production time

Features

- Read up to two temperatures
- Read up to six water tanks
- View and control inverter^{*1}
- View battery charging, load, and condition information^{*2}
- Switch up to 10 outputs
- Fuse up to 10 circuits plus charger circuit
- Automate output functionality
- Works with a range of REDARC charging systems

1 INTRODUCTION

1.1 Kit Contents

Distribution Box (TVMS1280-DB):

Qty	Part
1	Distribution box
1	Fuse cover panel (fitted)
1	Fuse puller tool (fitted)
1	80A midi fuse
1	Midi fuse holder
2	50A midi fuses (fitted)
4	Crimp terminals for fuse holder
1	0.5m R-Bus Cable
1	3m Inverter Remote Cable
1	R-Bus Terminator
2	Temperature Sensors
6	Power cable mating connectors
1	Digital I/O mating connector

Display (DISP4300):

Qty	Part
1	4.3" Display
1	Optional Mounting Spacer
1	Display Fascia
1	R-Bus Terminator
1	5m R-Bus Cable

1 INTRODUCTION

1.2 Specifications

Compliance		
Safety	IEC60335	
General Specifications		
	Distribution Box	Display
Operating Temperature	-20°C to 60°C	-20°C to 75°C
Storage Temperature	-40°C to 85°C	-40°C to 85°C
Dimensions (see pages 7-8)	385 x 138 x 58mm	178 x 108 x 26mm
Environemntal Protection	IP30	Splash Resistant
Product Weight	2.0kg	0.3kg
Warranty	2 years	
Electrical Specifications		
System Voltage	12V	
Maximum Charger Current	40A	
Maximum Battery Current	80A	
No. Switched Circuits	5 x 10A Max, 5 x 30A Max	

1.3 Compatible Devices

Type	REDARC Part Number	Device Connection Wire	Relevant section of this manual
Chargers	BCDC1220	N/A	Section 2.6
	BCDC1220-IGN		
	BCDC1225D		
	BCDC1240D		
Battery Management Systems	BMS1215S3	CAN/R-BUS	Section 2.8
	BMS1230S2		
Inverters	R-12-350RS	REMOTE (<i>NOT</i> 'TRC')	Section 2.10
	R-12-700RS		
	R-12-1000RS		
	R-12-1500RS		
	R-12-2000RS		
	R-12-3000RS		

1.4 Dimensions

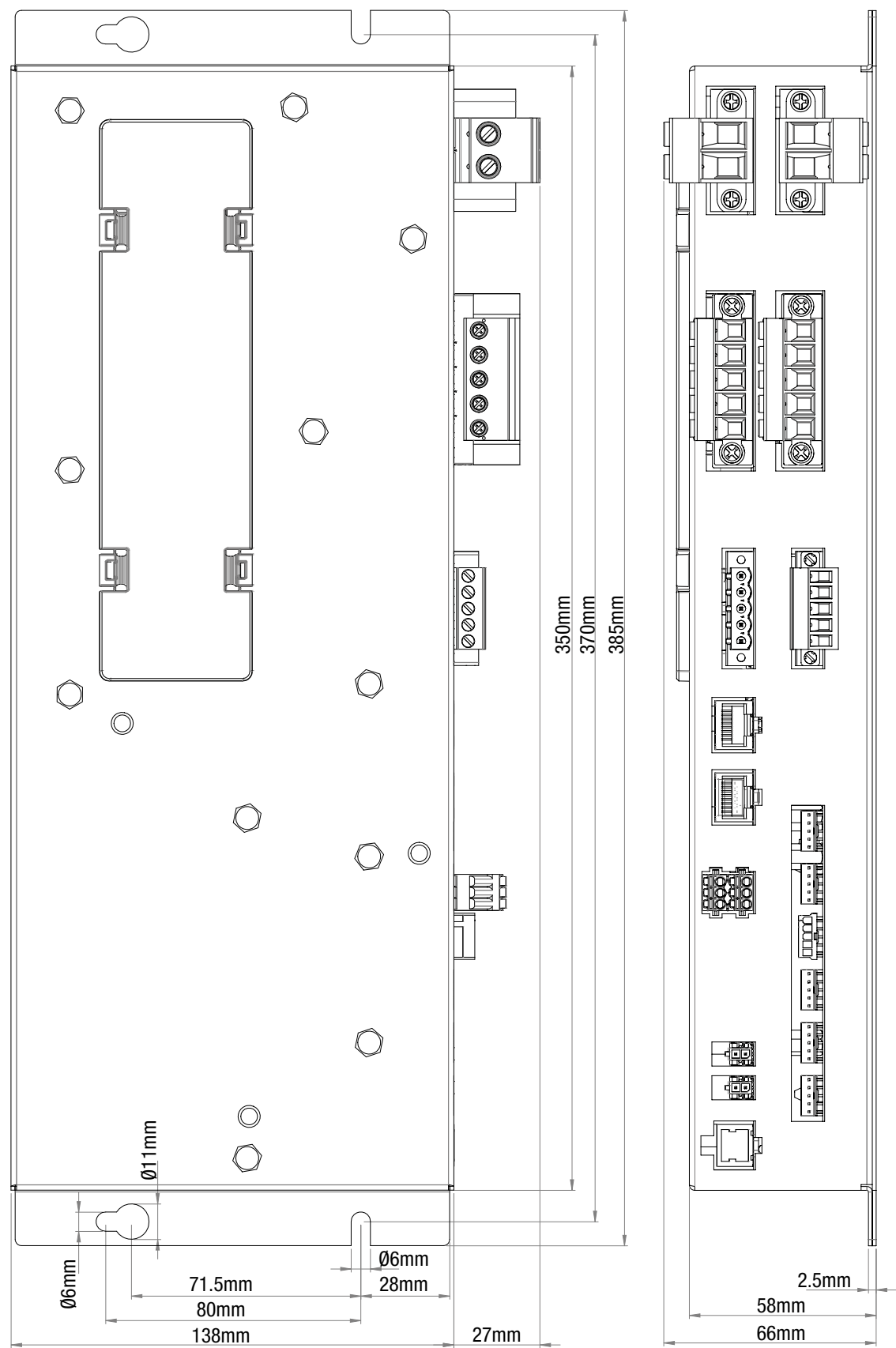
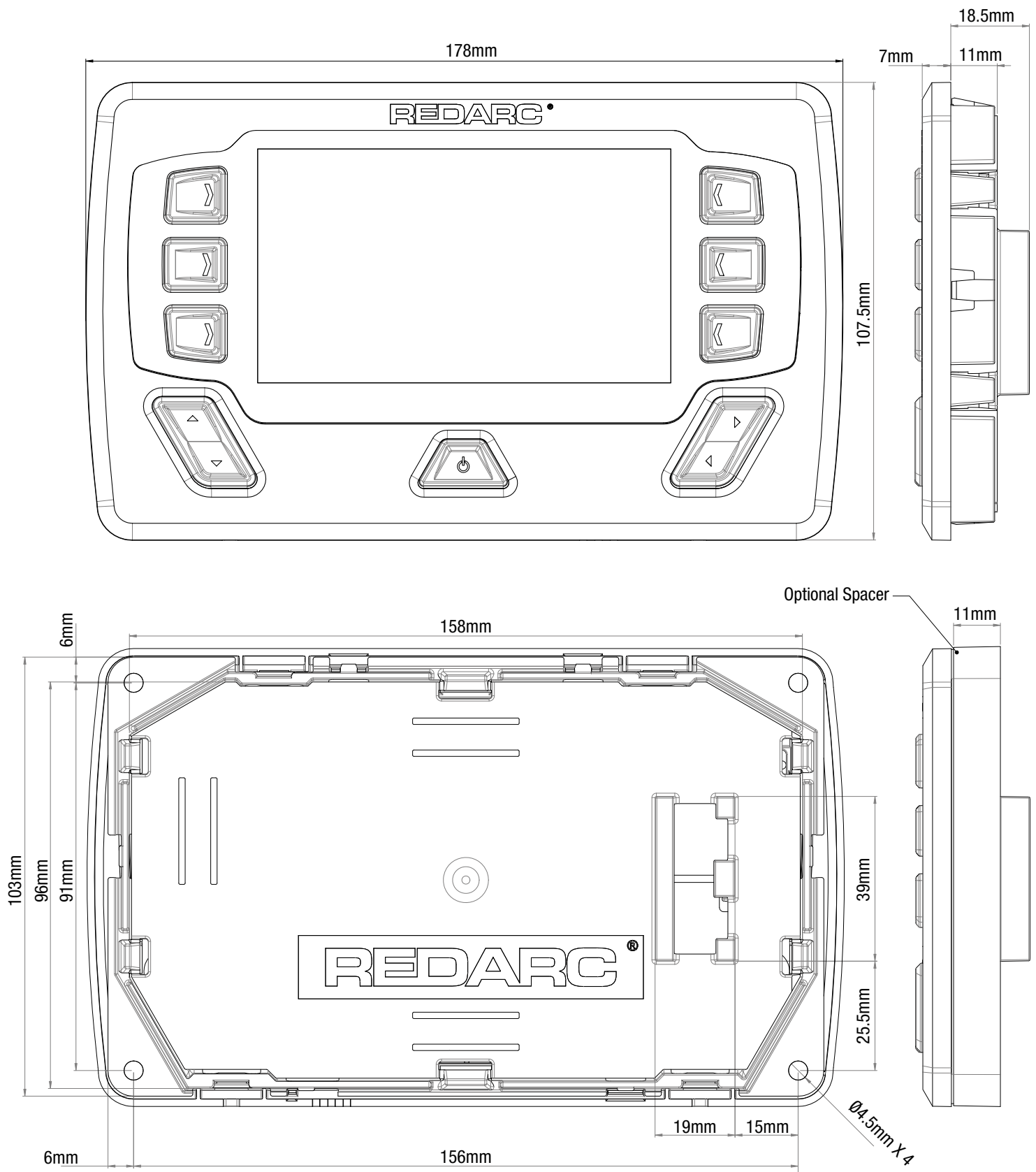
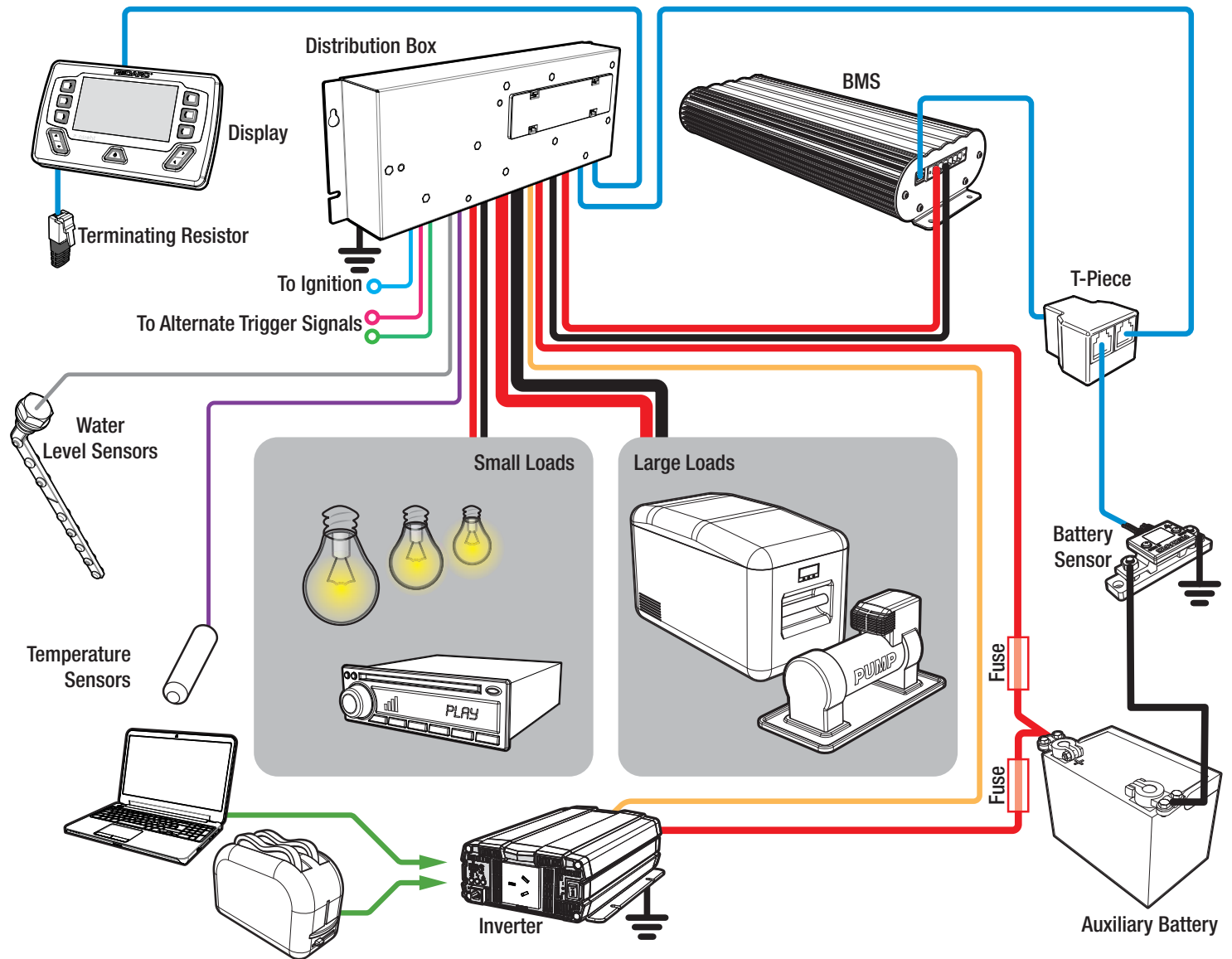


Figure 1.4.1 - Distribution Box Dimensions



2 INSTALLATION GUIDE

2.1 System Layout



⚠ CAUTION

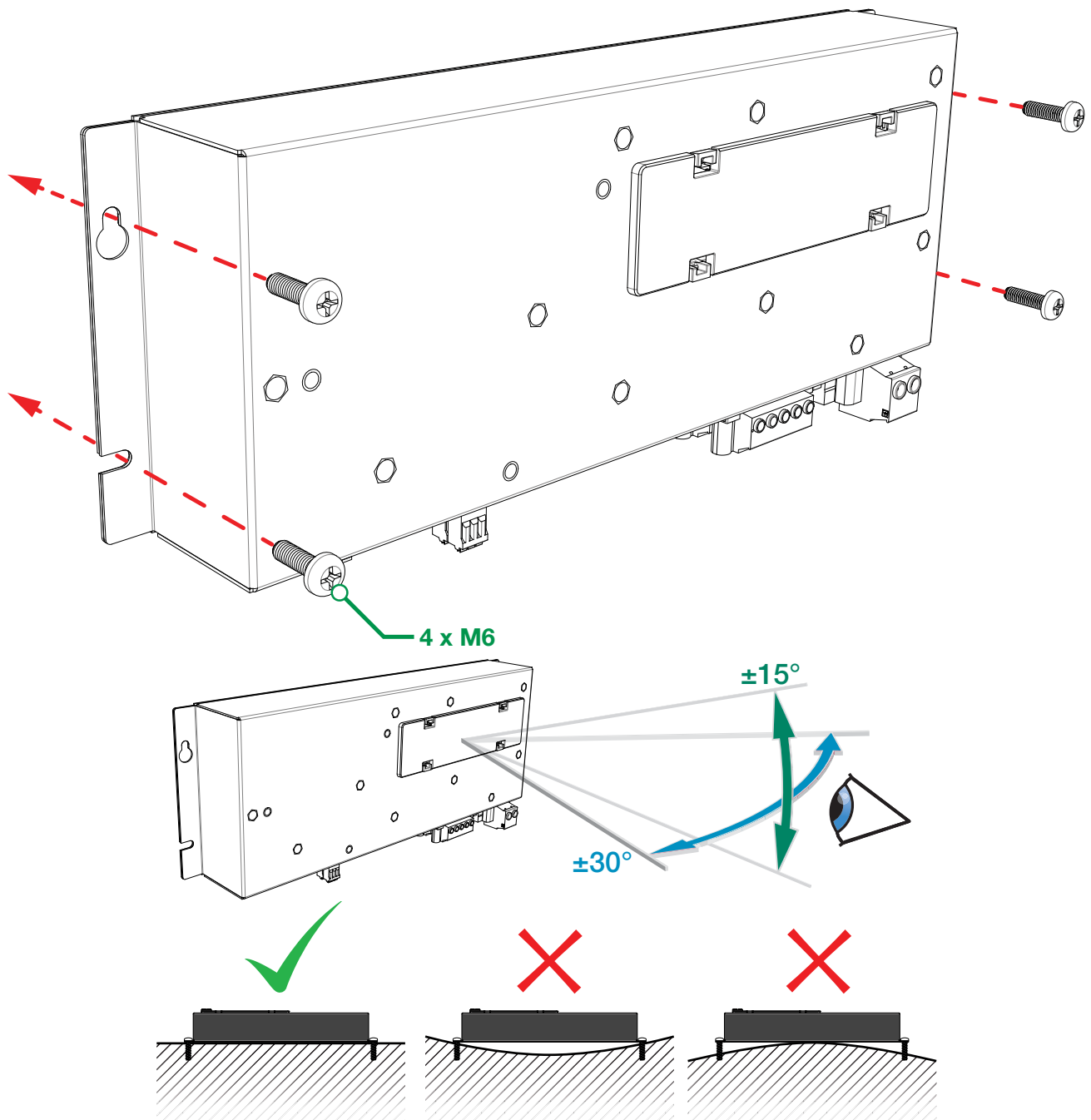
Do not use this product to control safety critical devices or those that could cause harm if operated remotely (for example fume exhaust fans or lifters).

2.2 Mounting Instructions

The Distribution Box should be mounted as close as possible to the auxiliary battery(s) and Battery Charger to avoid voltage drop.

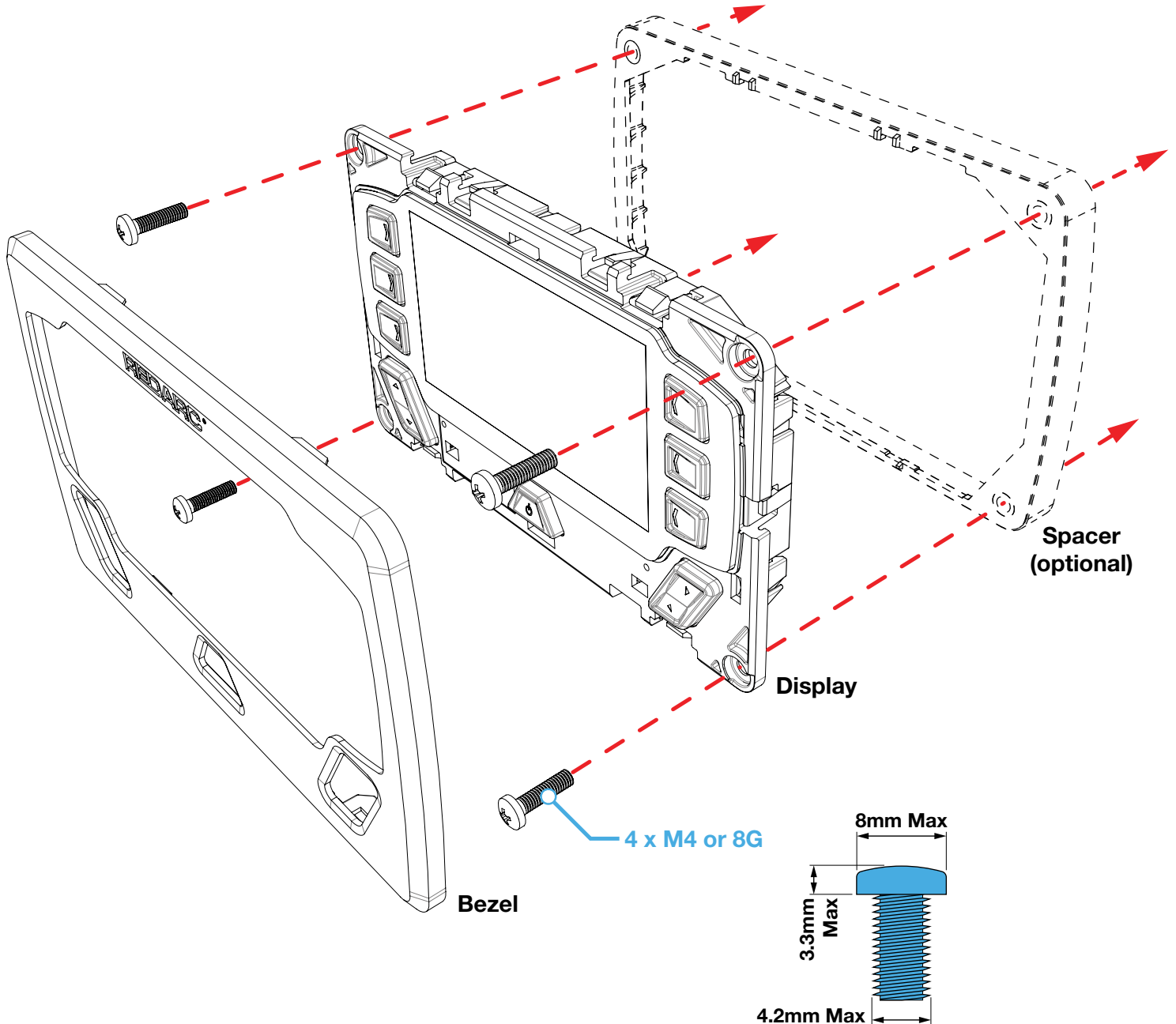
2.2.1 Mounting the Distribution Box

The Distribution Box may be mounted in any orientation but must be mounted onto a flat, solid surface using 4 x M6 screws or bolts. Failure to adequately mount the unit, such as using adhesives to mount the unit may result in unreliable operation of the Distribution Box. Ensure clear access to the fuse panel to ensure service of fuses and override of channels can be performed.



2.2.2 Mounting the Display

The Display should be mounted inside the vehicle (Refer to page 48 for a 1:1 cutout template). It is however acceptable to mount the Display in any convenient location, as long as it is protected from harsh environments such as being exposed to rain or severe amounts of dust or full-time direct sunlight.

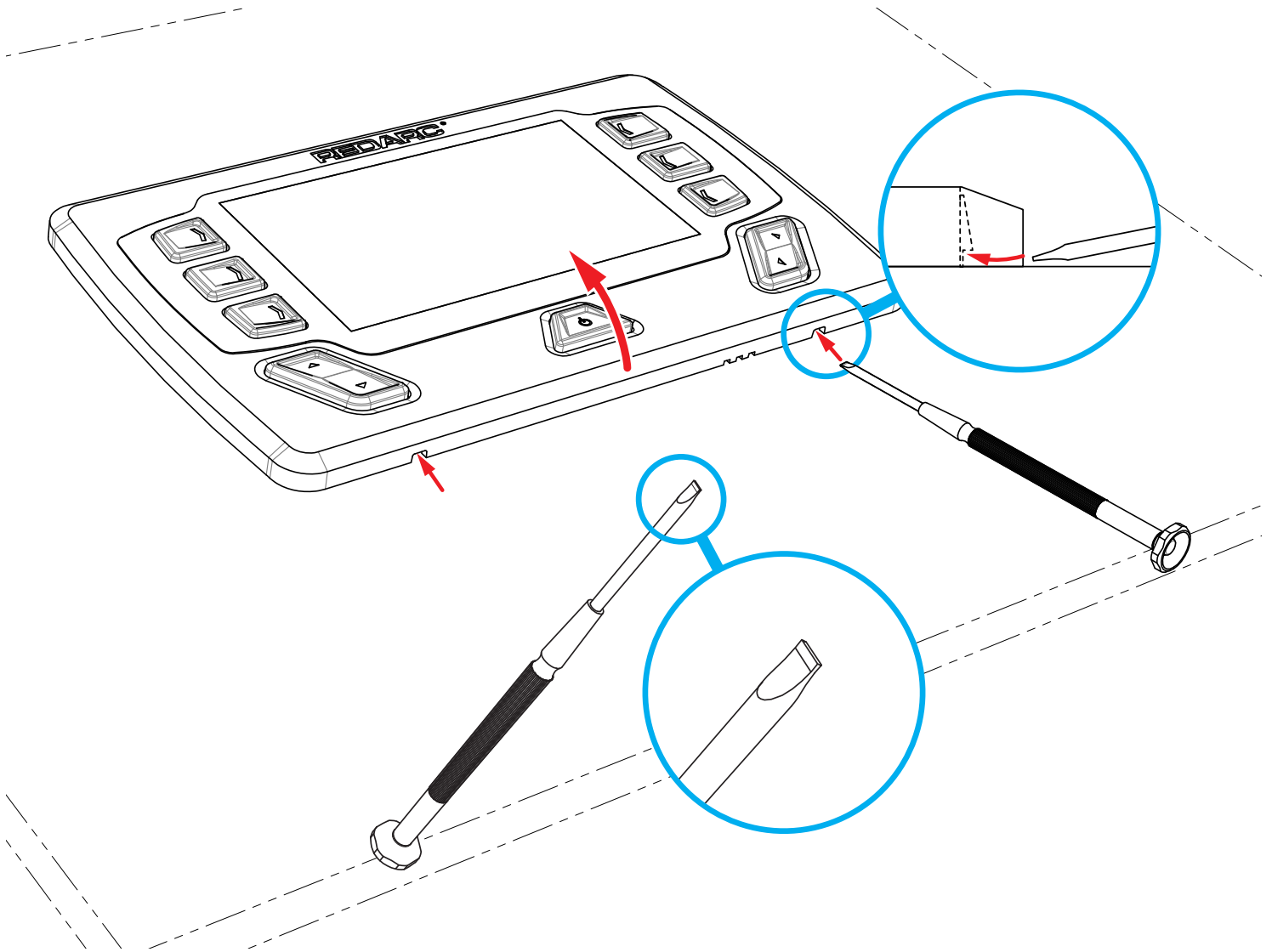


⚠ CAUTION

Ensure that the Display is not mounted in vehicle head-impact zones. Doing so may result in injury to the driver and/or passenger in the event of an accident.

Ensure the Display is not mounted where it may distract the driver of the vehicle. Distracting the driver may result in an accident.

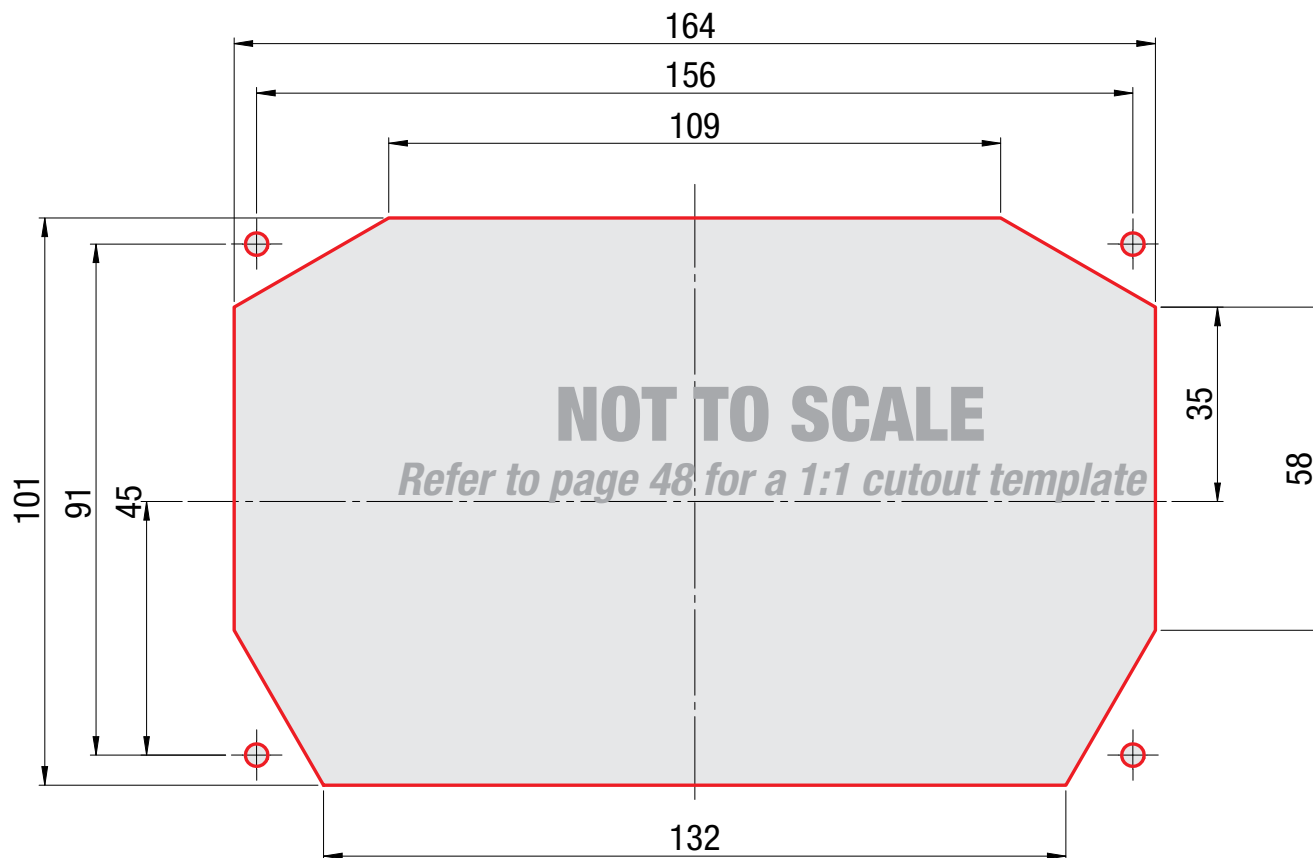
2.2.3 Removing the Display Fascia



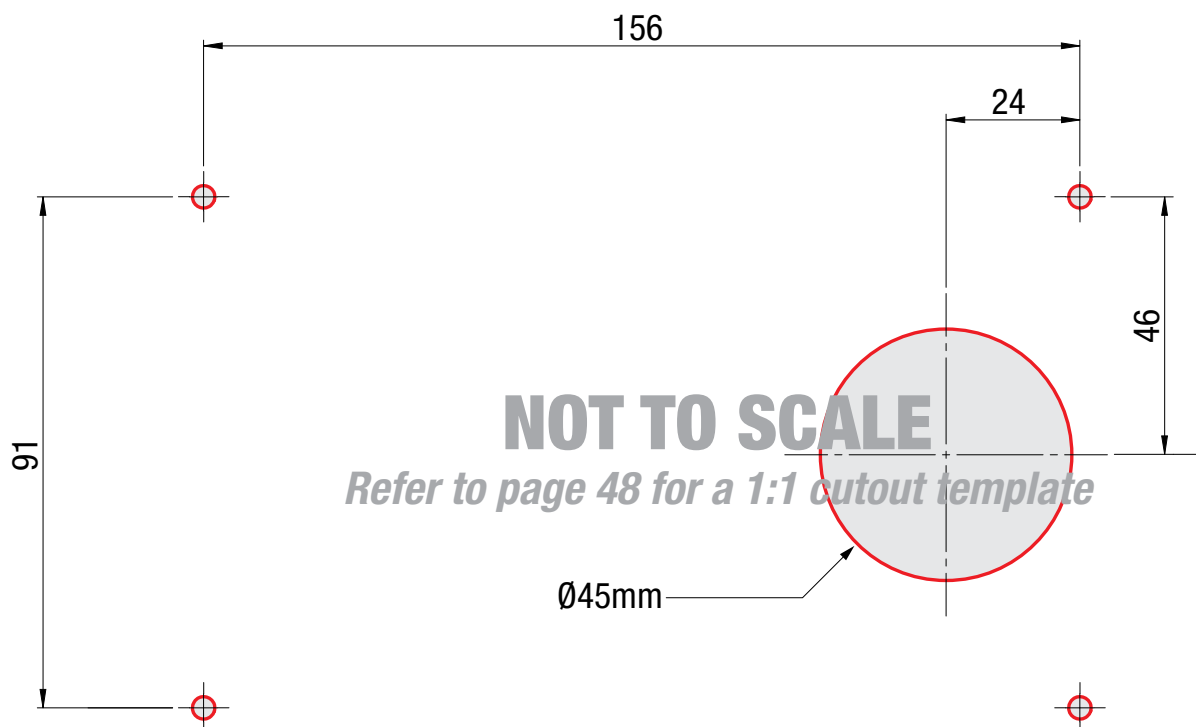
NOTICE

Refer to page 48 for a 1:1 cutout template

2.2.4 Flush Mount Drill/Cut Dimensions



2.2.5 Surface Mount Drill/Cut Dimensions



2.3 DC Cable Size Requirements

2.3.1 Input Wire size

REDARC recommends the installer use cabling between 8-4B&S automotive. Refer to the table below for further information.

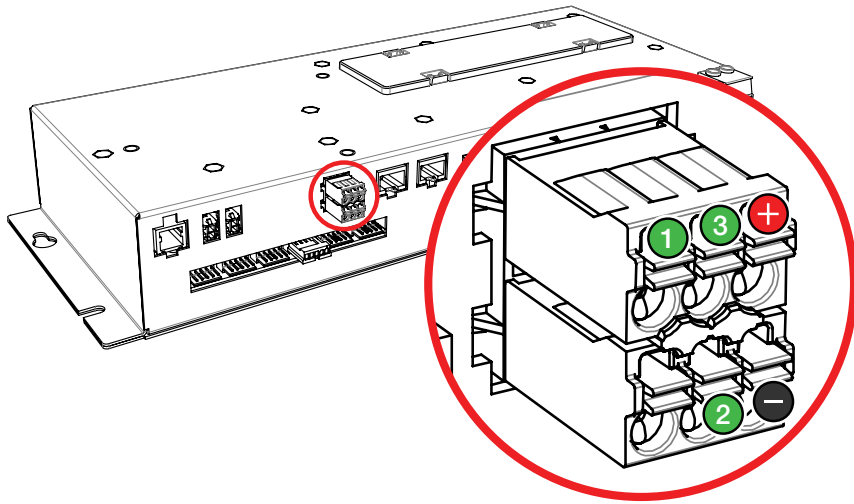
Connection	Terminal Size	Max Cable Size	Cable length <3M	Cable Length >3M
Charger Output & Ground	16 mm ²	4B&S	8B&S	6B&S
Auxiliary Battery Positive & Ground	16 mm ²	4B&S	6B&S	4B&S

2.3.2 Output Wire Diameter Selection

REDARC recommends the installer use suitably rated cable and fuses for the load connected. Refer to the table below for the 10 and 30 amp connector terminal sizes and maximum cable sizes.

Connection	Terminal Size	Max Cable Size
10A Circuits	2.5 mm ²	6 mm Auto
30A Circuits	6.0 mm ²	8B&S

2.4 Digital I/Os



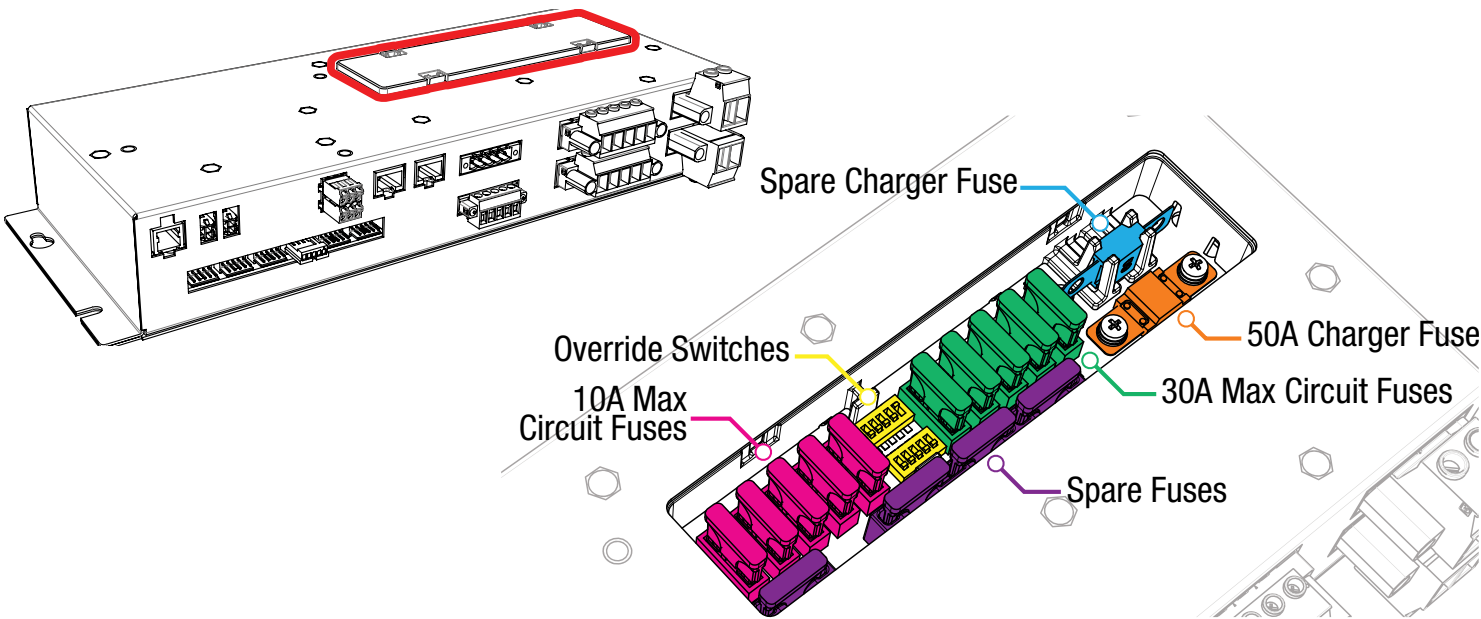
- 1
 - 2
 - 3
- } Digital Inputs
- +
 -
- Start Battery Positive
- Start Battery Negative

The Distribution Box incorporates 3 digital inputs.

The digital inputs, 1, 2 and 3, can be configured to switch Distribution Box output loads on/off when triggered (for example, to turn off all loads except a fridge when the vehicle ignition is on).

The Start Battery Positive (+) and Start Battery Negative (-) inputs can be used to monitor and display a voltage from an external source (for example, to display the vehicle's starter battery voltage).

2.5 **Fuses**



2.5.1 Fuse Locations

The Distribution Box load output channels are protected by standard blade fuses located in the fuse panel:

Qty	Part	Type	
5	10A Max Loads	Blade	<i>Fuses Not Supplied</i>
5	30 Max Loads	Blade	<i>Fuses Not Supplied</i>
4	Spare Fuse Holders	Blade	<i>Fuses Not Supplied</i>
1	50A Charger Fuse	MIDI	<i>Supplied</i>
1	Spare Fuse Holder	MIDI	<i>Supplied</i>

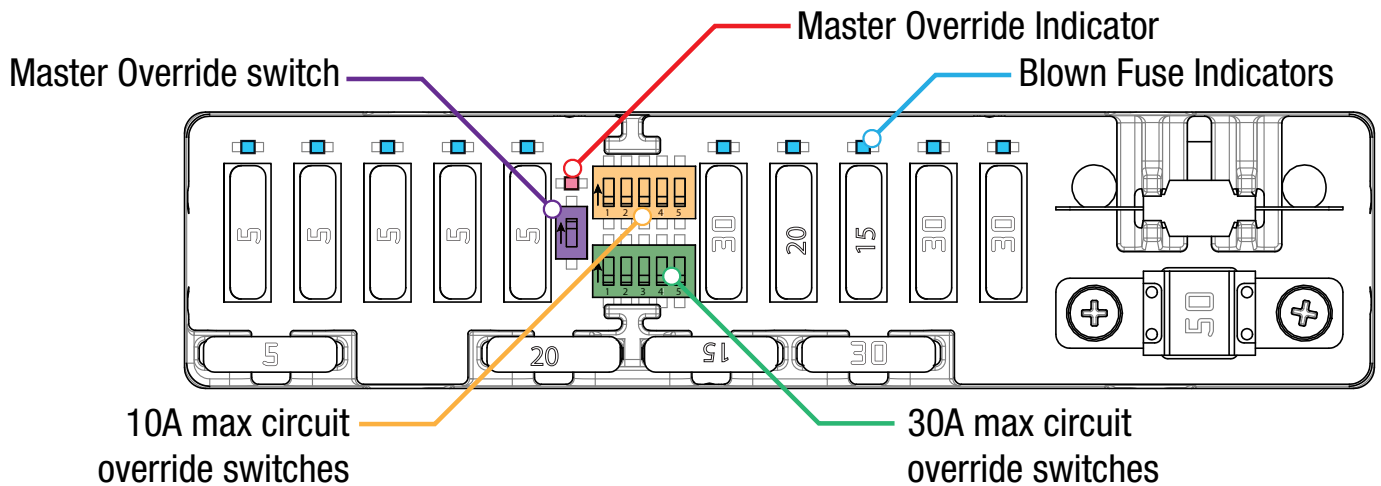
Additionally a 1 x 80A Battery Fuse and Fuse Holder are supplied.
To protect the Distribution Box from harsh startup currents, inductive type loads (e.g. large fridges, pumps, motors) should be connected through the 30A Max circuits.

2.5.2 Load Negatives

Wire each load positive (+) and negative (-) to the applicable output channel. Alternatively, load negatives may be connected at a suitable chassis grounding point.

⚠ CAUTION

Risk of damage to the system. Do NOT connect a load negative (-) to the chassis AND to the applicable negative (-) output channel as this may cause damage to the Distribution Box under some circumstances. Connect to the applicable negative (-) output channel OR a suitable chassis grounding point to avoid damage.



Note: Fuse values may vary from those shown in this diagram, depending on individual system requirements

2.5.3 Blown Fuse Indicators

A blown fuse is indicated by an illuminated indicator (white) above the blown fuse. Investigate and rectify the cause of the failure before replacing with an appropriately sized fuse. The blown fuse will also be indicated by the icon on the display turning RED.

2.5.4 Override Switches

Under normal conditions each load output channel may be switched using the display, however should a load need to be manually switched on, the override switches (located between the two fuse banks) may be used.

Overriding is a two stage process - firstly override mode must be enabled using the master override switch (located to the left of the two switch banks). The master override indicator (red) will illuminate to denote that override mode is enabled. Once enabled, the individual load channels may be operated using the relevant switches. During override the system cannot be controlled by the display.

NOTICE

Ensure that the channel and master override switches are turned off after use to prevent accidental operation of the channel and/or flattening of either the Starter or Auxiliary battery.

2.6 Battery & Charger Connection

2.6.1 Battery Connection

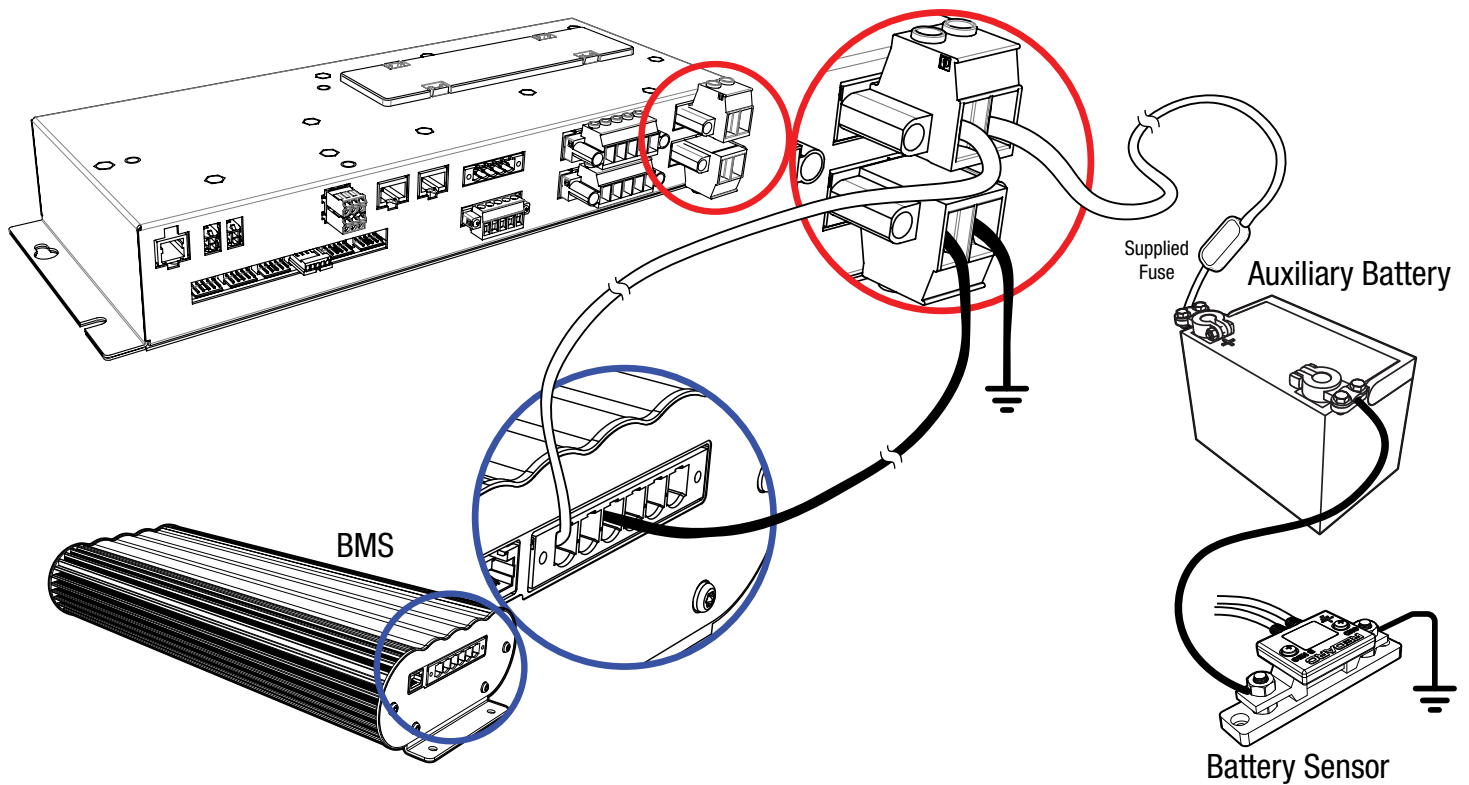
Wire the Auxiliary Battery Positive (+) to the Distribution Box through the supplied 80A MIDI fuse - this fuse should be mounted as close as practical the battery. Refer to Section 2.3 for cable sizing.

Wire the distribution box Battery Ground (-) to either a suitable grounding point (i.e. chassis or earth stud) or connect directly to the GND (\perp) terminal of the Manager's battery sensor.

2.6.2 Charger Connection (Manager 15 or 30)

The Manager should be mounted as close as possible to the Distribution Box. Connect the Battery Management System's battery output positive (+) and Ground (\perp) to the Distribution Box Charger (+) and Ground (-) connections. Refer to Section 2.3 for cable sizing.

The Distribution Box includes a 50A MIDI fuse to protect the charging circuit (the maximum charging current is 40A). Refer to Section 2.5 for details.

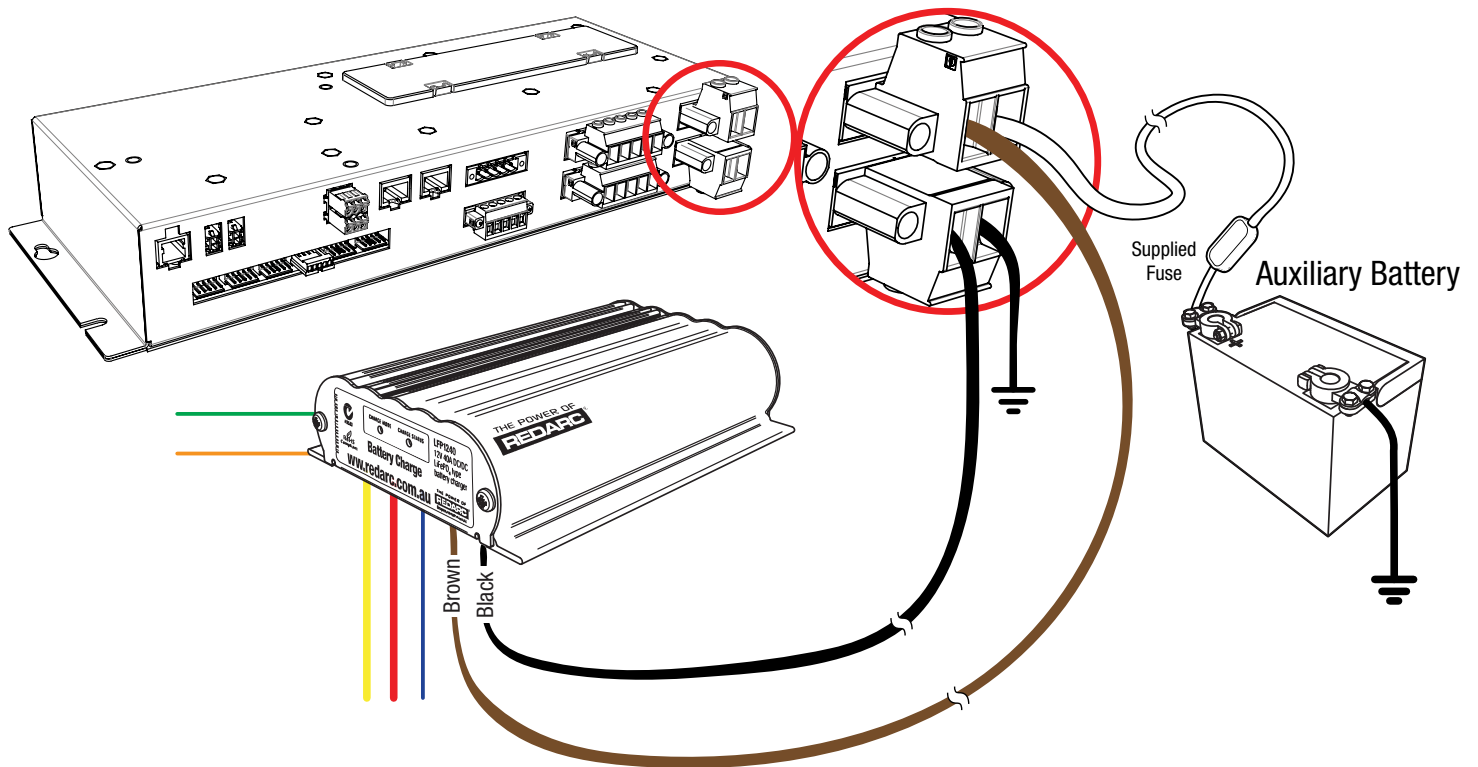


2.6.3 Charger Connection (BCDC)

The BCDC should be mounted as close as possible to the Distribution Box. Connect the BCDC's battery output positive (+) and Ground (\perp) to the Distribution Box Charger (+) and Ground (-) connections.

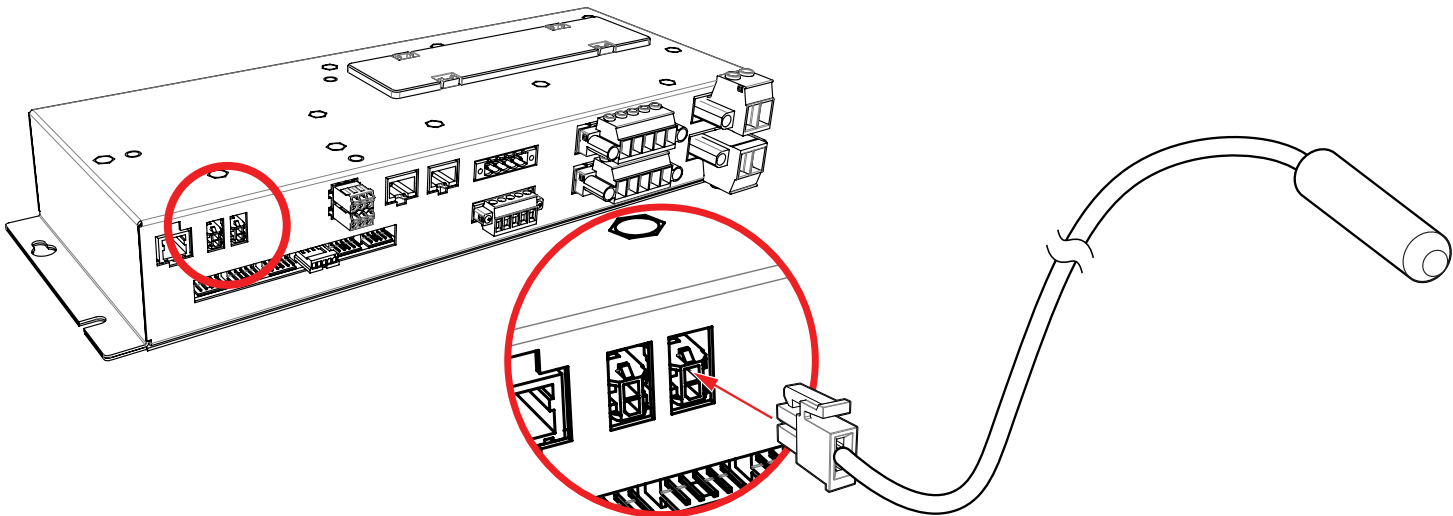
Refer to Section 2.3 for cable sizing.

The Distribution Box includes a 50A MIDI fuse to protect the charging circuit (the maximum charging current is 40A). Refer to Section 2.5 for details.



2.7

Temperature Sensors



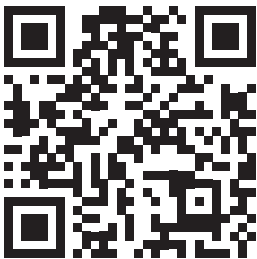
Two 3 metre temperature sensors are included with RedVision and are able to sense from -40°C to +80°C. The two supplied temperature sensors may be added to the system by simply plugging into the two sockets on the Distribution Box.

Additionally, the REDARC sensors in the table below are also compatible:

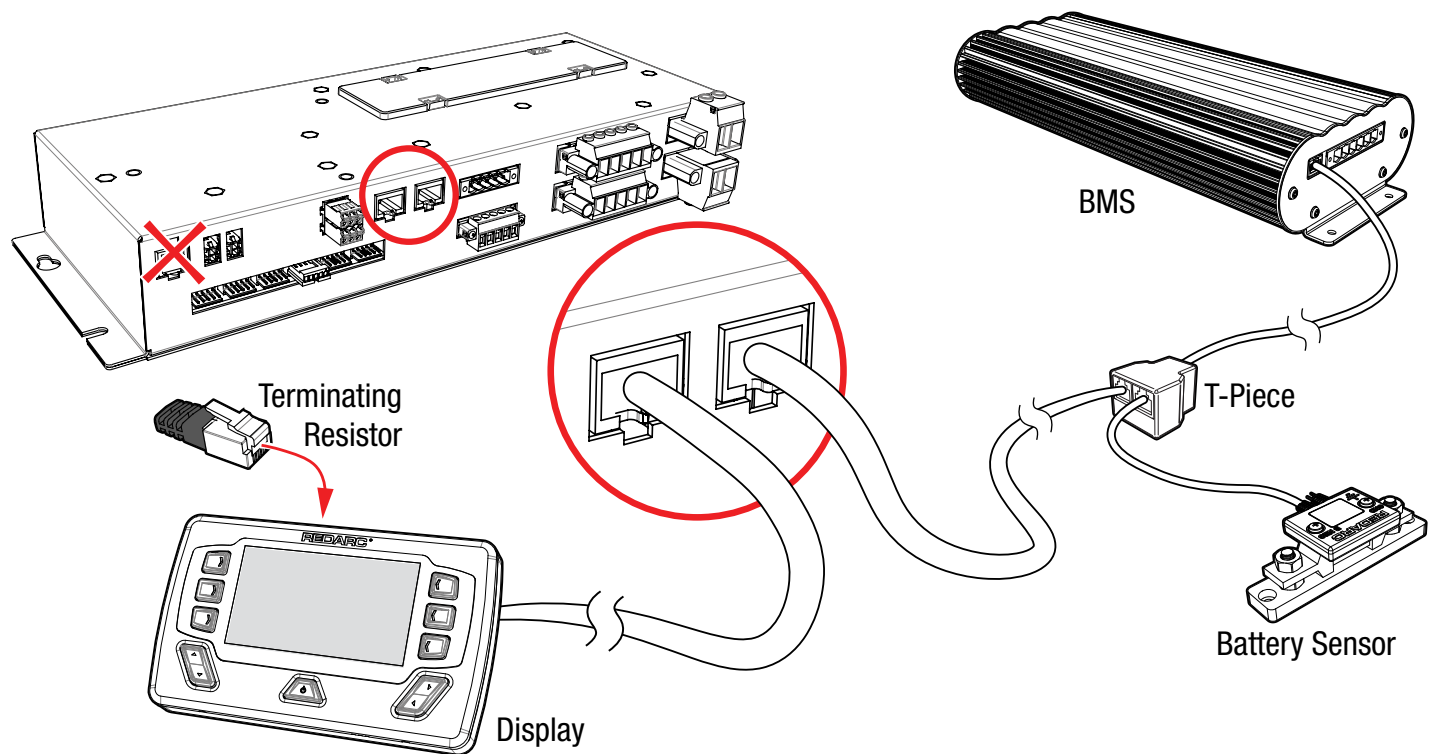
Part Number	Material	Sensing Range	Application	Mounting Size
GS-UT-80	ABS Plastic	-20 to +80°C	Fridges, Freezers, Cabin, Ambient, etc.	N/A
GS-UT-120	Copper	-20 to +120°C		6mm Hole

For further information about REDARC sensors visit:

<http://redarcqr.com/gaugesensors>



2.8 R-Bus Connection (Manager 15 or 30)



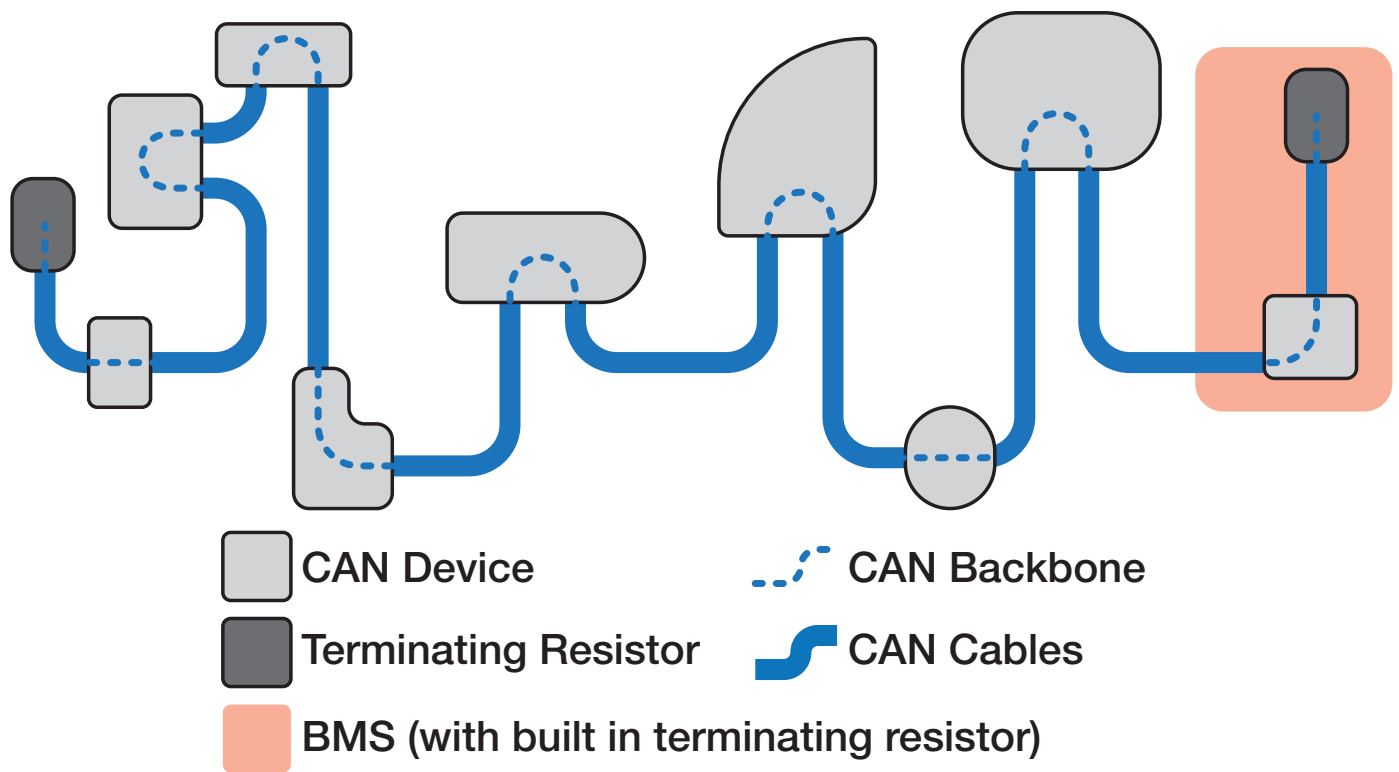
2.8.1 Connecting the RedVision R-Bus

RedVision uses an R-Bus communication system to link components.

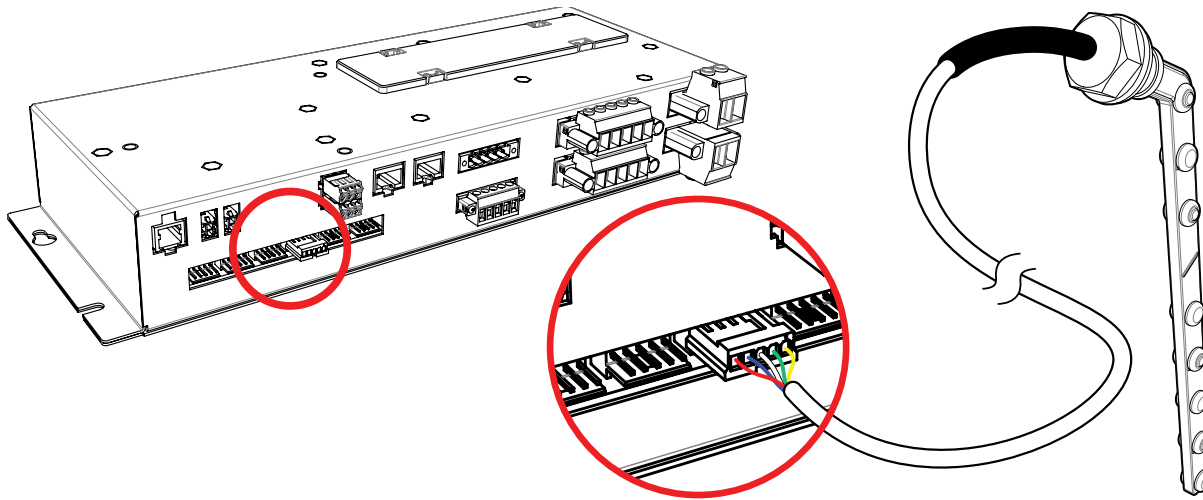
1. Use the supplied 1 metre RJ45 cable to connect the Battery Management System to either of the sockets on the Distribution Box.
2. Use the 5 metre RJ45 cable to connect the remaining socket on the Distribution Box to the Display.
3. Fit the Terminating Resistor to the remaining socket in the Display.
4. When a Manager 15 or 30 is used, the terminating resistor for the other end of the Bus is inbuilt in the BMS. If a Manager 15 or 30 is not used, the supplied terminating resistor should be inserted into one of the ports on the TVMS1280-DB (Distribution Box).

2.8.2 A Brief guide to R-BUS and CANBUS systems

R-Bus and CANBus systems include devices designed to work in a daisy-chain network. A terminating resistor must be present at each end to terminate the network. REDARC Manager 15 & 30 have this resistor built in, thus removing the need to add an extra terminating resistor to one end of the system. The other end of the network should be terminated by inserting the supplied Terminating Resistor into the last device in the network (for example, into the RedVision Display in the diagram on page 22). If no Manager 15 or 30 is used, insert the supplied terminating resistors into both the Display and the Distribution Box.



2.9 Water Level Sensors



Up to six water level sensors may be connected to the Distribution Box.

RV Electronics 5 pin tank senders

The Distribution Box has direct compatibility with the following sensors from RV Electronics:

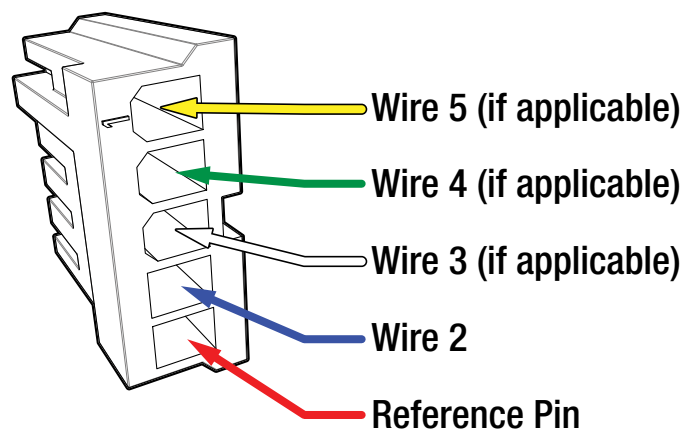
- SP0004
- SP0011
- SP0028

To use, simply connect the sender directly to the distribution box inputs.

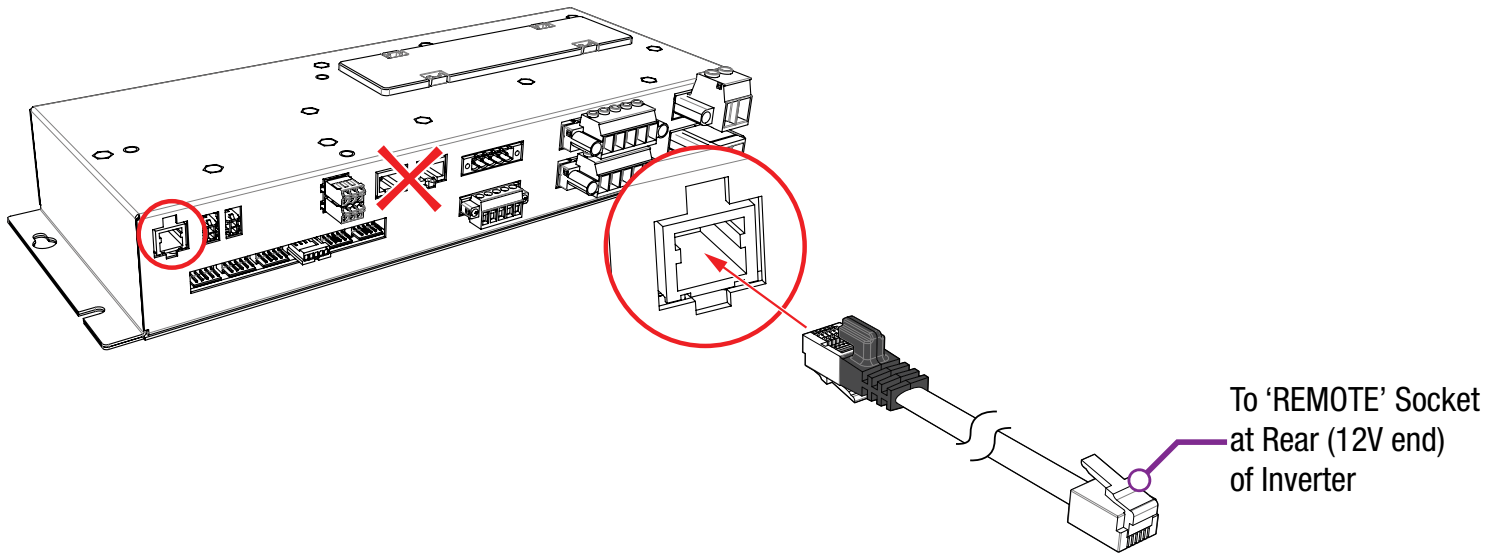
Other 2-5 pin tank senders

Alternatively, most 2-5 pin conductive tank sensors can be used in conjunction with an AMP-171822-5 connector (not supplied).

To use, wire as shown below (noting that colours may vary - refer to the manufacturer's specification sheet):



2.10 Optional Inverter Connection



REDARC's RS-Series inverters may be connected to the Distribution Box to allow the user to monitor power consumption, output load and switch the inverter on/off, all via the Display. Note that the 350W model inverter (R-12-350RS) offers power on/off control only. The inverter should be mounted as close as possible to the Auxiliary battery (Refer to the inverter's user manual for further installation information including fuse and cable sizing).

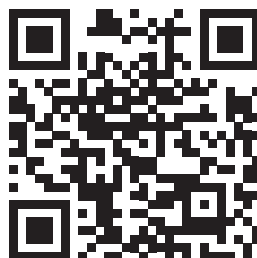
⚠ CAUTION

Risk of damage to the system. Do NOT connect to the 'TRC' socket at the front (240V end) of the inverter as this will cause damage to the RedVision system. Connect to the 'REMOTE' socket to avoid damage.

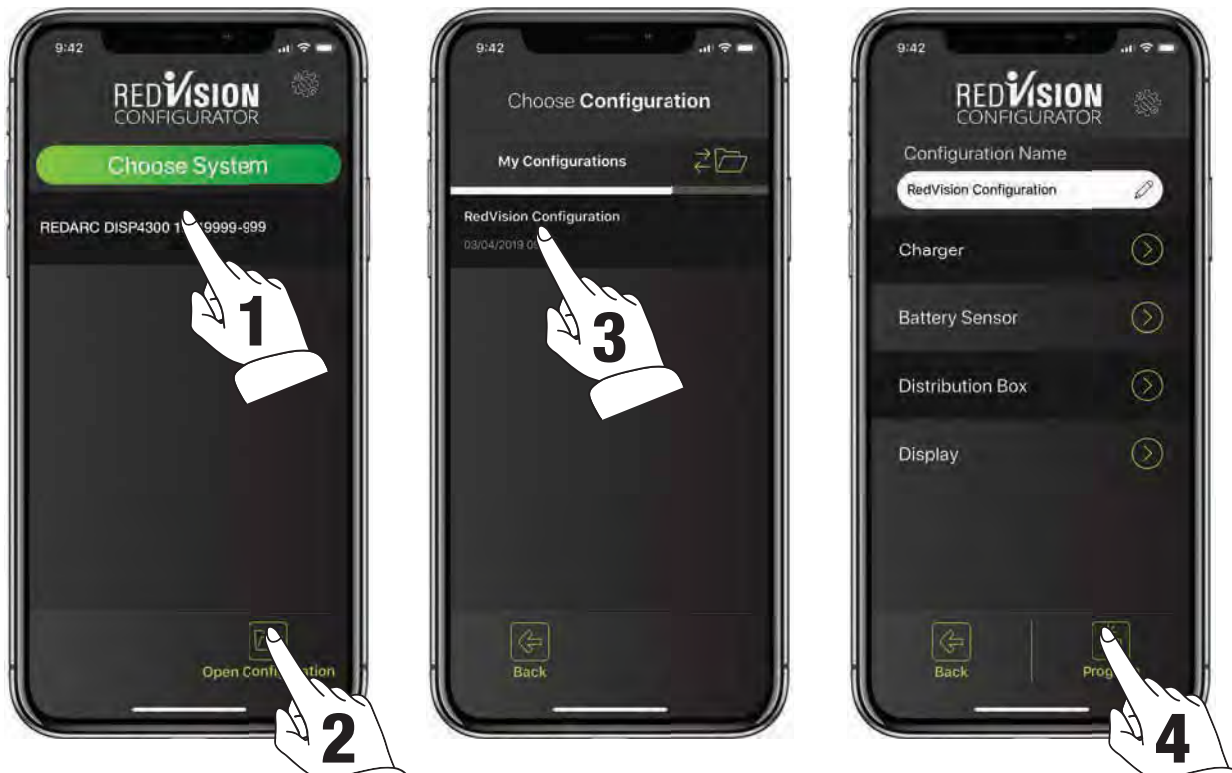
1. Connect the **non**-overmoulded end of the supplied RJ12 cable to the 'REMOTE' socket at the **Rear (12V end)** of the inverter.
2. Connect the over-moulded end of the supplied RJ12 cable to the to the inverter input of the Distribution Box.
3. Connect the Inverter DC supply to the battery, NOT a load output of the Distribution Box

For further information about REDARC inverters visit:

<http://redarcqr.com/inverters>



3.1 RedVision Configurator App.



The RedVision 'Configurator' App allows the user to setup and/or customise their RedVision setup from the convenience of their mobile device.

If this is your first time using the Configurator App, please follow the Bluetooth® pairing instructions found in Section 4.3.1.

NOTICE

The Configurator App. allows modification to the core system functionality of your RedVision system, only use this App if you have read and fully understand all instructions in this manual.

1. Following the Bluetooth® pairing instructions will require selecting your display. Once successfully paired the App will download your current system configuration, save it and then you should see the RedVision Configurator Main Menu. The App has now downloaded your RedVision system settings which you can now change.
2. Alternatively, you may choose 'Open Configuration' to open a previously saved configuration. Tapping this button will take you to the 'Choose Configuration' screen.
3. From this screen you can select the most recently saved version of your system configuration or automatic backups from all previous changes made from your phone. Selecting a configuration will take you to the RedVision Configurator Main Menu.
4. Finally, once you have defined all your Charger, Battery Sensor, Distribution Box and Display settings, tapping the Program button will re-program your device.

3 SYSTEM CONFIGURATION

3.2 Configure Charger



From the **Main Menu**:

- Tap the *Charger* Button



The Configure BMS (Charger) page allows you to setup the Input Trigger and Disconnect When settings for a Manager15 or Manager30 should one be connected.

- The default Input trigger setting is '*Automatic*'.
- The default Disconnect When setting is '*Always*'.

Refer to The MANAGER instruction manual for more detail on these features.

Tap *SAVE* to confirm settings.

3.3 Configure Battery Sensor



From the **Main Menu**:

- Tap the *Battery Sensor* Button



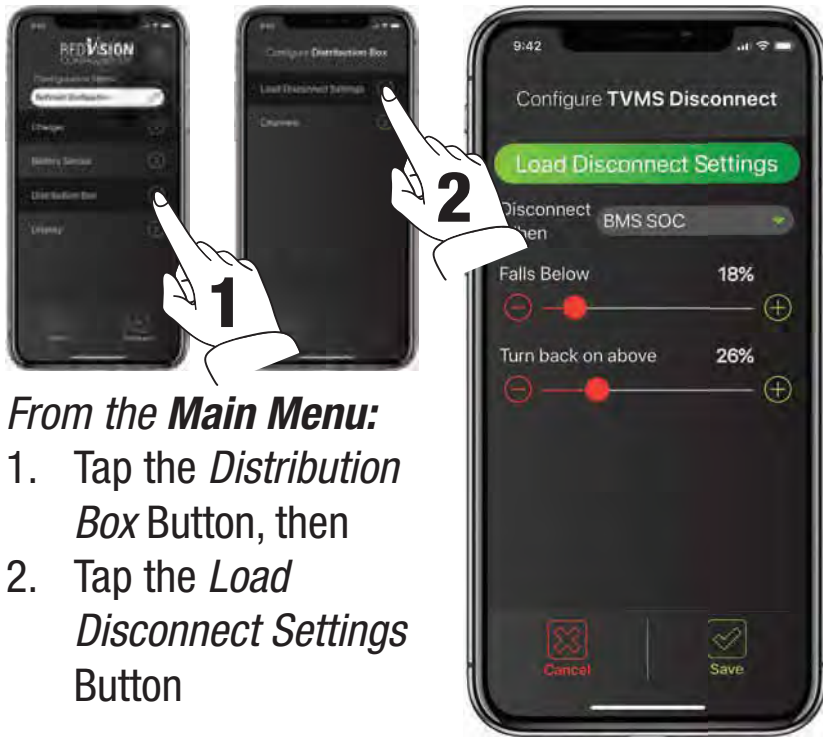
The Configure Battery Sensor page allows you to set the Battery Type, Size and Maximum Charge Current along with SoC & Voltage alarm levels.

- The default battery type is '*Gel*'.
- The default battery size is '*40AH*'.
- The default Maximum Charge Current is the maximum output of your Manager (15A/30A).
- The default SOC Alarm is '*10%*'.
- The default Voltage Alarm is '*10.5V*'.

For more information on these settings refer to The MANAGER instruction manual.

Tap *SAVE* to confirm settings.

3.4 Configure Distribution Box - Load Disconnect Settings



From the **Main Menu**:

1. Tap the *Distribution Box* Button, then
2. Tap the *Load Disconnect Settings* Button

The Configure TVMS Disconnect page allows you to set the Disconnect Trigger for the RedVision system.

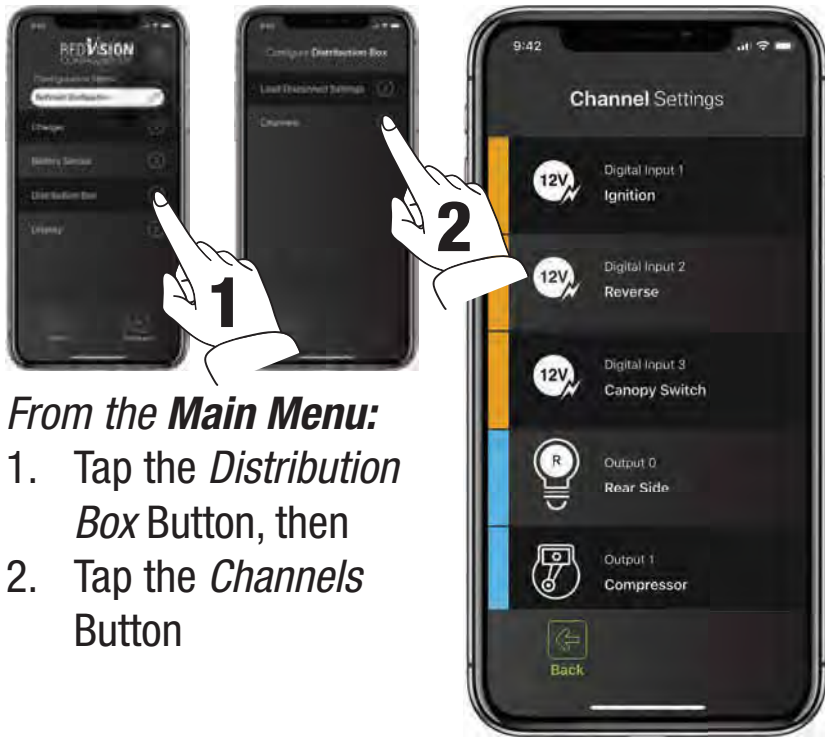
First the trigger type must be chosen from the drop down 'Disconnect When' menu, the default Trigger Type is '*Never*'.

- *Always* - Always Disconnected
- *Voltage* - Triggers based on the voltage at the Batt + terminal on the Distribution Box
- *BMS Voltage* - Triggers on voltage of the Auxiliary Battery as measured by the Manager
- *BMS SoC* - Triggers on SoC of the Auxiliary Battery as measured by the Manager
- *Never* - Always Connected

Next the Disconnect and Reconnect levels must be set, based on the method selected. The App will ensure that Disconnect is always set 5% or 0.5V lower than Reconnect, depending on the trigger type chosen.

Tap *SAVE* to confirm settings.

3.5 Configure Distribution Box - Channels



From the **Main Menu**:

1. Tap the *Distribution Box* Button, then
2. Tap the *Channels* Button

The Channel Settings page allows you to customise each of the connections to your RedVision Distribution Box. Simply put, you can tell RedVision what you have connected to it, and how you want RedVision to control that channel.

There are 5 different types of 'channels' which can be connected to the Distribution Box each indicated by a different colour.

Digital Inputs - You may choose to use these inputs for vehicle ignition and reverse signals, for example, which will allow certain outputs to be turned ON or OFF automatically

Outputs - These are the 5x 30A and 5x 10A channels which you can control from the RedVision App and Screen

Inverter - This channel controls an Inverter connected to the Optional Inverter Connection on the RedVision Distribution Box

Sensors - These control the 2x Voltage and 2x Temperature sensor connections to the RedVision Distribution Box

Water Tanks - These control the water tank connections to the RedVision Distribution Box.



3.5.1 Channel Configuration Options

The Channel Configuration pages allow you to customise the specific details of each channel. Each of the different types of channel, outlined in Section 3.5, will provide slightly different options at this page.

1. *Channel Details* - Allows labelling of the channel, enabling of the channel and allows the channel to be given an Icon. Please ensure that 'Channel Enabled' is selected. Some Icons give the option of an overlay, which is a one letter descriptor to differentiate multiple instances of the same type of channel (i.e. water tanks).
2. *Input Logic* - Allows definition of the Turn ON criteria for a Digital Input channel.
3. *Analog Alarms* - Provides the option of Under or Over Alarms to trigger based on the Input Measurement. These may be Voltage, Temperature or Water Tank Level.
4. *Tank Settings* - Allows definition of the Water Tank Level sensing device including the type of probe used and the water type stored in the tank (i.e. Clean, Black, Brown etc.)
5. *Inverter Settings* - Allows enabling of Inverter communications settings should a REDARC RS series inverter be connected to the 'Optional Inverter Connection' port on the RedVision Distribution Box.

Tap *SAVE* to confirm settings.

3.5.2 Output Channel Logic Configuration

Output Channels are the channels connected to the 5x 30A, 5x 10A and the Inverter connected to the RedVision Distribution Box. Each of these channels must feature a 'Logic Configuration' which defines how the channel behaves.

Master Switched - This switch enables the Master Switch Function for this channel as described in Section 4.1.3. This switch defaults to ON.





From the **Channel Settings Menu:**

- Tap the *Channel* that you wish to modify



There are three main Logic Configuration types that can be used:

1. *Always On* - This will ensure that the selected channel is Always On. This could be used for a fridge, for example, so that you don't accidentally turn it OFF.
NOTE: This setting will still be controlled by the Master Switch if enabled.
2. *Input Control* - This will ensure that the selected channel is ONLY turned ON or OFF with a Digital Input (discussed in Section 3.5). An example of this is a door switch turning on a light.
3. *User Control* - This allows the selected channel to be turned ON or OFF using the Soft Keys on the display or via the Buttons on the App.
In User Controlled mode, ON only during button press and/or Input Override can be selected. The channel will default to have both of these turned OFF.
ON only during button press - Allows the channel to only be active while the button/Soft Key is depressed. This may be used for raising or lowering steps or an awning.
Input Override - Allows the channel to be locked ON or OFF by a Digital Input as well as via User Control.

Digital Input Control - In either Input Control or User Control with Input Override mode, allows definition of the channel function in the instance of a Digital Input Trigger.

Override output when - Defines if the Output is Triggered when the Input is ON or OFF.

Override output to - Defines the state the Output is Triggered to in this instance.

After override output - Defines the return state of the Output after the Trigger is no longer detected.

Tap **SAVE** to confirm settings.

3.6 Configure Display - Soft Keys



From the **Main Menu**:

1. Tap the *Display* Button, then
2. Tap the *Soft Keys* Button

The Configure Soft Keys page allows allocation of any Output Channels (including the Inverter channel) that have '*Channel Enabled*' selected.

The 6 empty slots shown in this page on your device correspond to the same locations on the RedVision Display once programmed.

More pages can be created and configured by tapping the '+' button at the bottom of this page.

Tap **SAVE** to confirm settings.

3.6.1 Soft Key Configuration



From the **Configure Soft Keys Menu**:

1. Tap the *Slot* you wish to setup, then
2. Tap the *Choose* Button

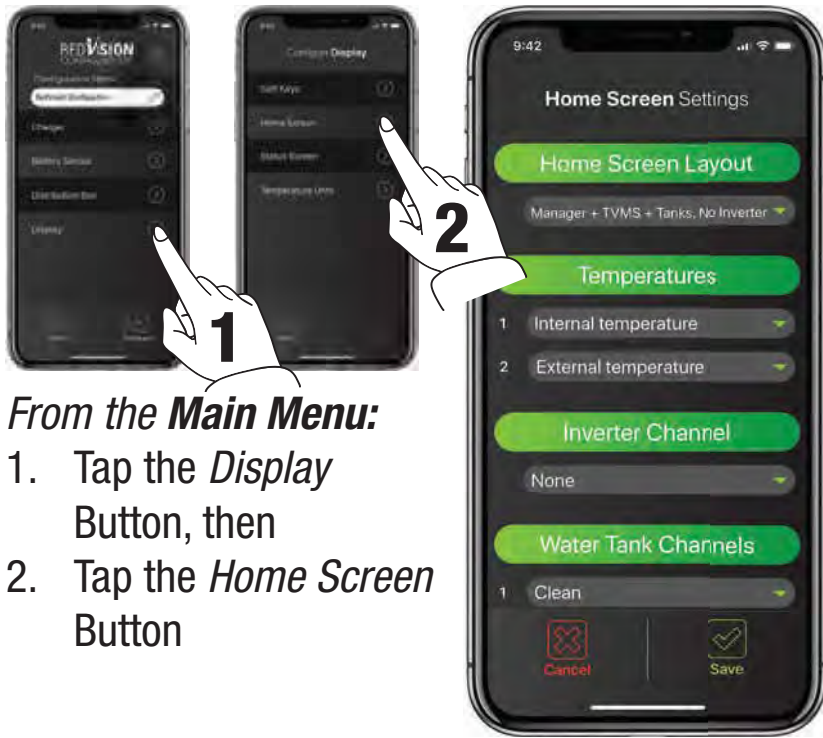
To add a new channel to a Soft Key, simply tap on the empty slot, then tap 'Choose'.

A list of all available channels will appear.

Scroll up/down as necessary and tap on the channel you want, to be in that position.

Tap **SAVE** to confirm settings.

3.7 Configure Display - Home Screen



From the **Main Menu**:

1. Tap the *Display* Button, then
2. Tap the *Home Screen* Button



The Home Screen Settings page allows configuration of the RedVision Display Home Screen.

Home Screen Layout - This drop down menu allows selection of a number of Home Screen combinations. Choose the one that suits your setup OR displays the items that you wish to see on your Home Screen.

Temperatures - These drop down menus allows you to select the Temperature Sensor Channels (Refer Section 3.5) that appear on the RedVision Display. The first drop down menu selects the Channel that will appear on the left and the second will appear on the right.

Inverter Channel - This drop down menu allows you to select the Inverter channel to be displayed. Ensure 'Enable Communications' is selected (Refer Section 3.5.1).

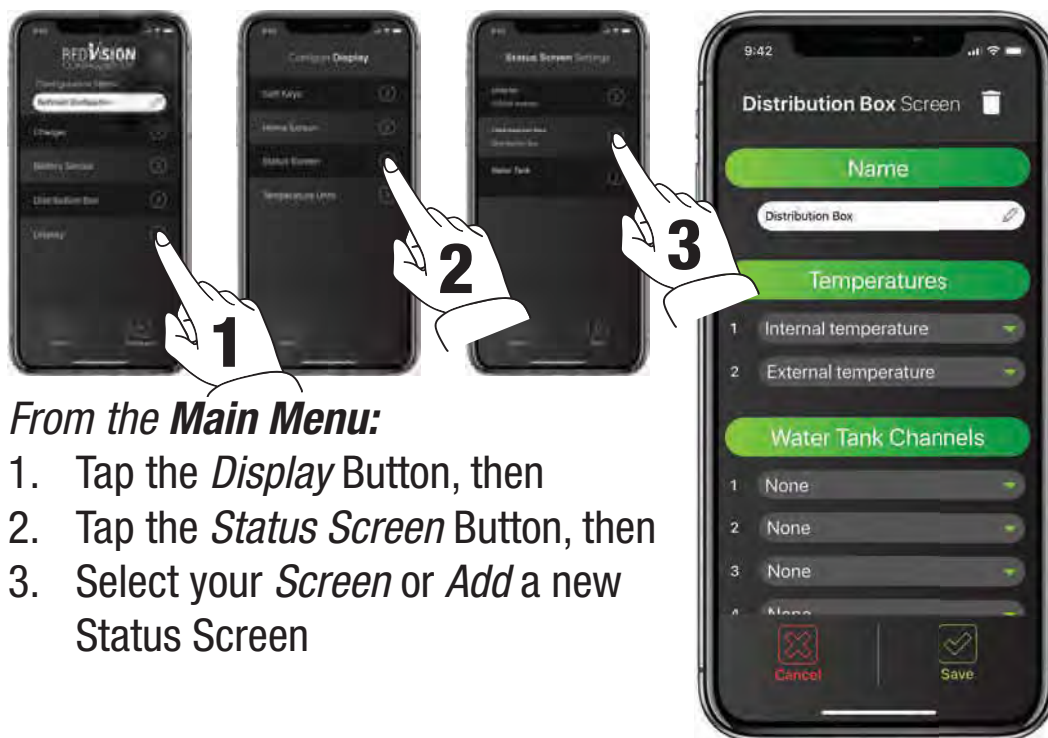
NOTE: when a home page with Inverter display is selected, this section will show no information if no inverter channel is selected.

Water Tank Channels - This drop down menu allows you to select, and place in order, up to four water tank channels to appear on the RedVision Display Home Screen. These Channels must first be configured (Refer Section 3.5).

Voltage Channels - These drop down menus allows you to select the Voltage Sensor Channels (Refer Section 3.5) that appear on the RedVision Display.

Tap **SAVE** to confirm settings.

3.8 Configure Display - Status Screen



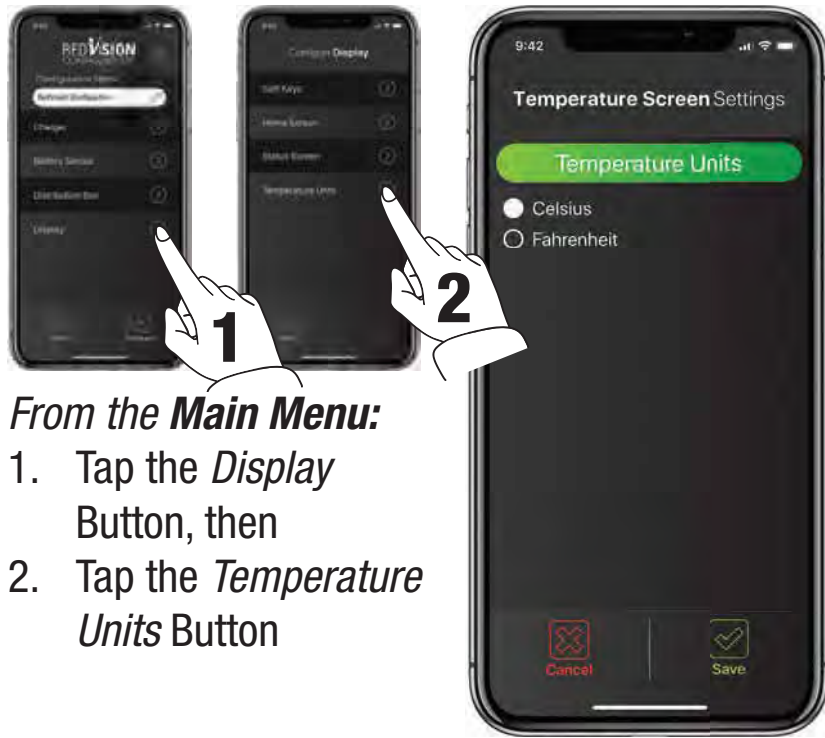
The Status Screen Settings page allows configuration of the RedVision Display Status Screens. These are accessed by pushing the Right Arrow on the RedVision Display.

There are three types of Status Screens which can be added to your Display Menu. Select add at the bottom of the screen, and choose your screen type, either Distribution Box, Inverter, or Tanks. You can name the screen and select the information you want to be displayed.

The tank status screen allows you to display two rows of tank levels, up to four on each row. If you only select two on a row, they will appear larger than if three or four are selected.

Tap *SAVE* to confirm settings.

3.9 Configure Display - Temperature Units



From the **Main Menu**:

1. Tap the *Display* Button, then
2. Tap the *Temperature Units* Button

The Temperature Screen Settings page allows configuration of the RedVision Display Temperature Units. Simply select if you would like your units displayed in Celsius or Fahrenheit and hit save.

Tap *SAVE* to confirm settings.

4.1 The Display



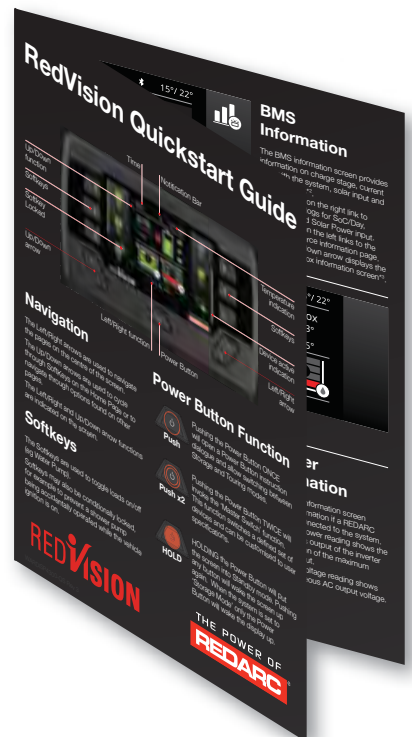
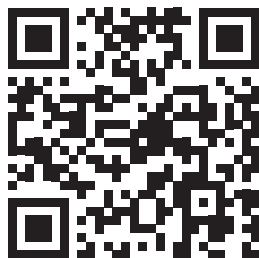
The Display is the main user interface for the RedVision System. It brings information and control to one place without the need for multiple displays and control panels. It is to be mounted in the vehicle and is the base for control and display for RedVision. It also provides the Bluetooth® interface for the RedVision App.

NOTICE

Do not use chemicals or cleaning products as damage to the unit may occur. Clean using a slightly damp cloth only.

A Quickstart guide explaining the operation and functions of the Display is included with the Display, appears over the following few pages and may also be found at:

<http://redarcqr.com/RedVisionQSG>



4.1.1 Navigation

The Left/Right buttons are used to navigate the pages on the centre of the screen. The Up/Down buttons are used to cycle through devices on the Home Page or to navigate through options found on other pages. The Left/Right and Up/Down functions are indicated on the screen.

4.1.2 Soft Keys

The Soft Keys are used to toggle devices on/off (eg Lights, Water Pump). Soft Keys may also be conditionally locked, for example to prevent a shower pump being accidentally operated while the vehicle ignition is on.

4.1.3 Power Button Function



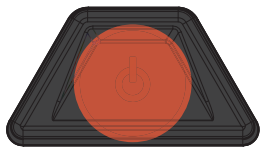
Push

Pushing the Power Button **ONCE** will open a Power Button instruction dialogue and allow switching between Storage and Touring modes.



Push x2







Pushing the Power Button **TWICE** will invoke the 'Master Switch' function. This function switches a defined set of devices and can be customised, by the installer, to user specifications.



HOLD

HOLDING the Power Button will put the screen into Standby mode. Pushing any button will wake the screen up again. When the system is set to 'Storage Mode' only the Power Button will wake the display up.

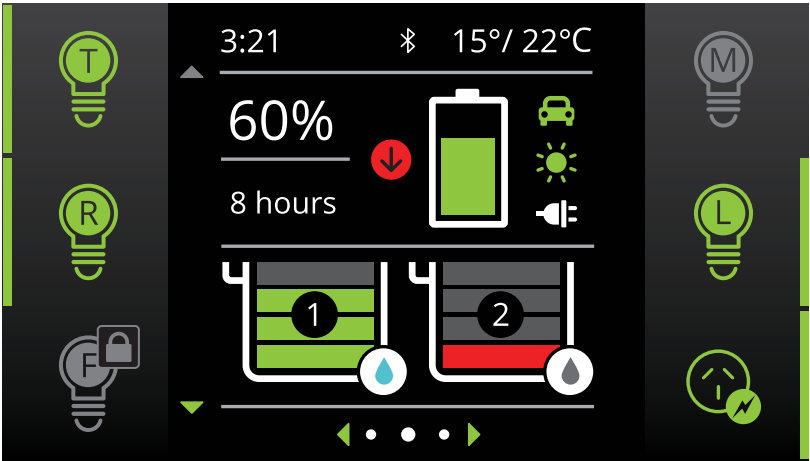
4.1.4 Notification Bar

- | | |
|--|---|
|  Bluetooth® Connected |  Load Disconnect Invoked |
|  Master Switch Invoked |  Storage Mode Selected |
|  Fault Indication |  Alarm Notification |

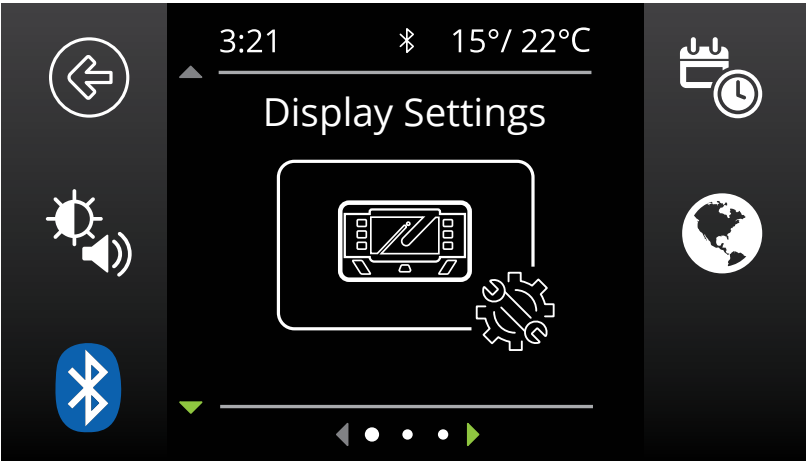
4.1.5 Basic Screens

Home Screen

The Home Screen shows the system overview in the centre, with connected devices managed by Soft Keys to the left and right. The system overview shows BMS status and Water Tank levels*¹. Pushing the Up/Down arrows cycles through all available devices. Pushing Left reveals the Settings menu and Right reveals the information menu.



*¹The information provided on the home screen may vary depending on the system

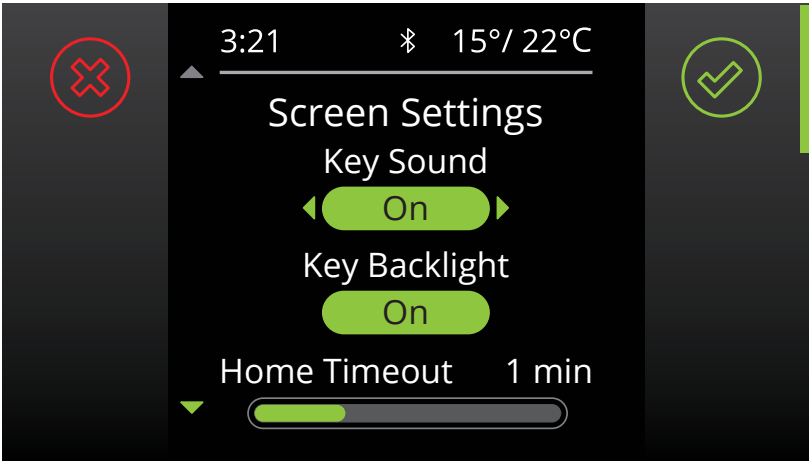


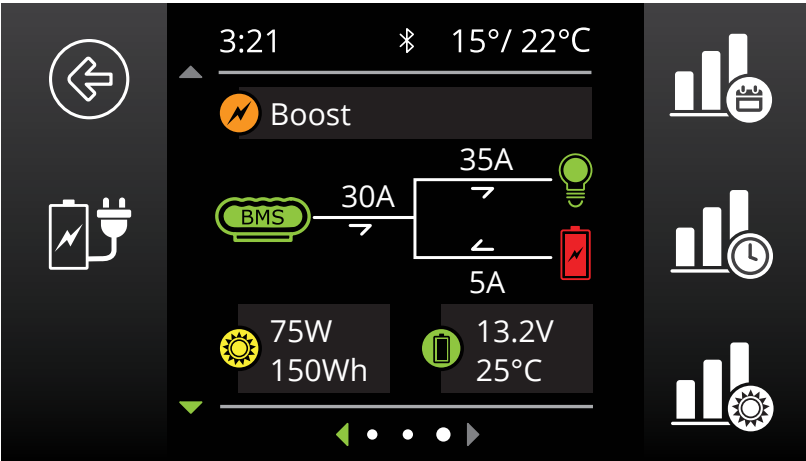
System Settings

This menu allows the user to change Display, System, BMS and Distribution Box settings, selected by Soft Key. Pushing the Up/Down arrows cycle through the available settings menus. Pushing the top left 'Back' Soft Key will return the user back to the Home Screen.

Changing Settings

Once the desired Settings Screen is selected using the Soft Keys, the available settings can be modified. Pushing the Up/Down arrows will cycle through the settings. Pushing the Left/Right arrows will modify the setting. The 'Green Tick' Soft Key will save the adjustment, the 'Red Cross' Soft Key will cancel the changes.





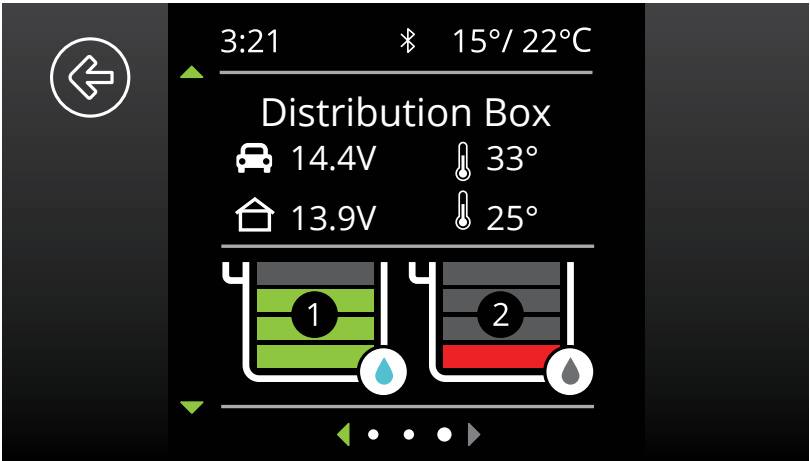
BMS Information

The BMS information screen provides information on charge stage, current flow, State of Charge (SoC), solar input and battery status*². The Soft Keys on the right link to performance logs for SoC/Day, SoC/Hour and Solar Power input. The Soft Key on the left links to the Charging Source information page. Pushing the down arrow displays the Distribution Box Info. screen*³

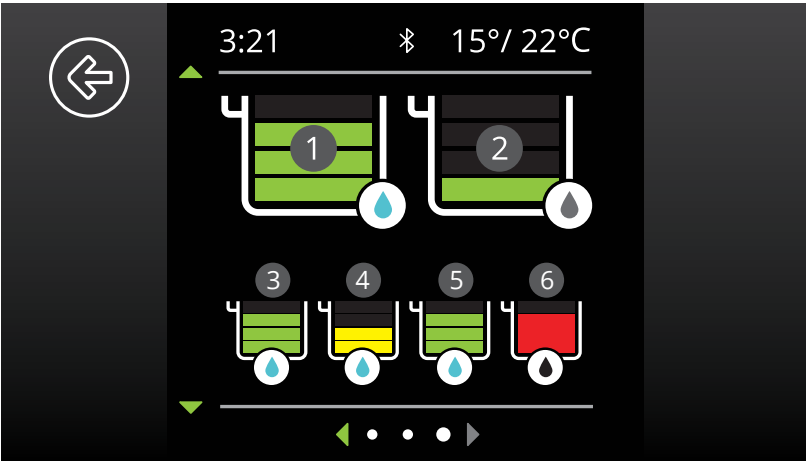
^{*2} When used with a REDARC MANAGER system.
^{*3} When used with a REDARC RedVision Distribution Box.

Distribution Box Information

The Distribution Box information screen provides information on Starter and Auxiliary battery voltages, temperatures, and Water Tank levels. Pushing the down arrow will display the level of up to 6 water level tanks if connected. Pushing the down arrow (again) will display the inverter information screen*⁴.



^{*4} When used with a REDARC Inverter.

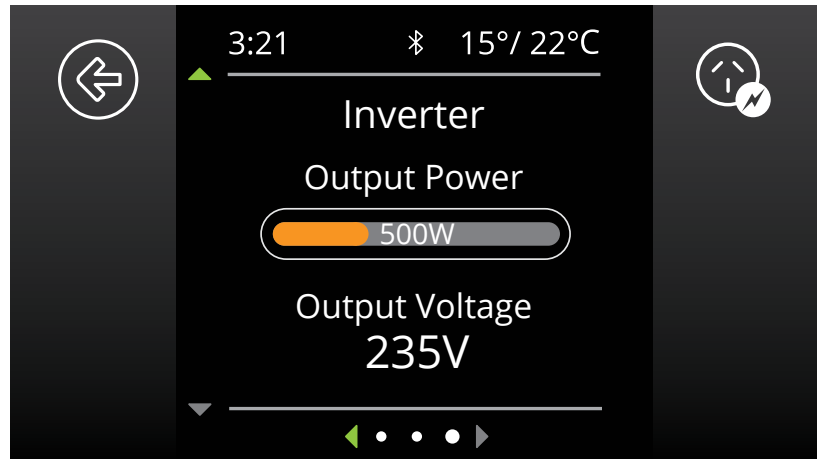


Water Tank Levels

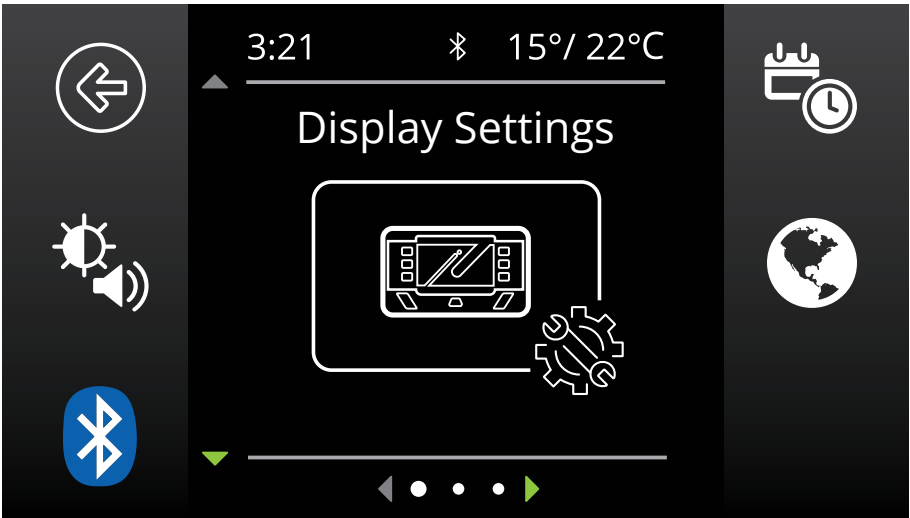
Where there are more Water Tanks sensors connected than showing on the Distribution Box Information page, pushing the down arrow will display the level of ALL connected Water Tank Levels (up to 6 in total). Pushing the down arrow (again) will display the inverter information screen*⁴.

Inverter Information

The Inverter Information screen provides information if a REDARC inverter is connected to the system. The Output Power reading shows the instantaneous output of the inverter as a proportion of the maximum possible output. The Output Voltage reading shows the instantaneous AC output voltage.



4.1.6 Display Settings



Factory Settings

Key Sound:	ON
Key Backlight:	ON
Home Timeout:	1 min
Standby Timeout:	1 min
Brightness Minimum:	20%
Brightness Maximum:	100%
Clock Format:	12 Hour

The Display Settings screen allows setup and modification of Display specific settings as outlined below.



This icon will return to the Home Screen



This icon links to the Screen Settings menu. This menu allows switching of Key Sounds and Backlight and modification of Screen Timeouts and Minimum and Maximum Screen Brightness levels



This icon links to the Bluetooth® pairing screen. This screen allows connection of the Display to a standalone device via Bluetooth®. This process is explained further in Section 4.3.1

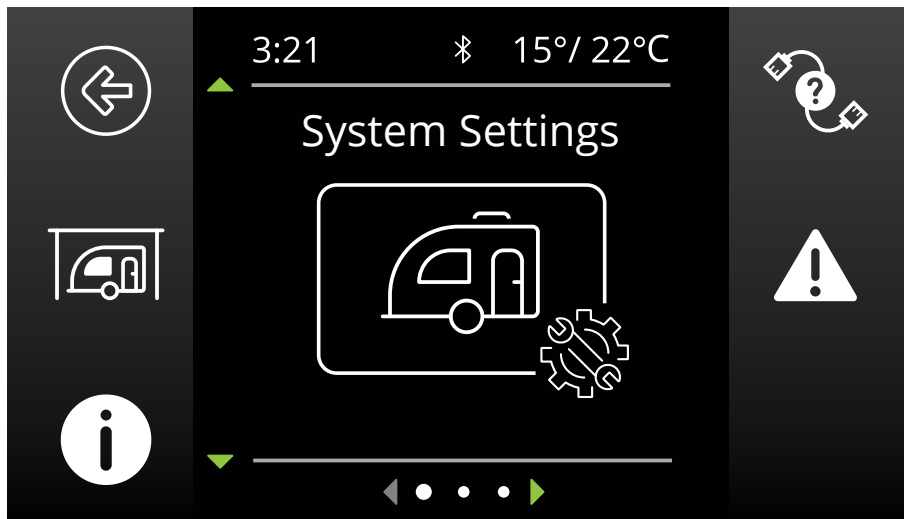


This icon links to the Date and Time settings screen. The user is prompted to enter date and time upon first startup however should this need to be changed, it can be done in this menu



This icon links to the Regional Settings menu. This menu allows toggle of the Clock format between 12 and 24 hour formats and the Temperature units between Celsius and Fahrenheit

4.1.7 System Settings



The System Settings screen allows modification of the current operating mode as well as providing information on the system and previous fault history. Each icon is described below.



This icon will return to the Home Screen



This icon links to the System Mode menu. This menu allows switching of the System Mode between Storage and Touring. Storage Mode will switch off all loads and set the Manager into Storage Mode should one be connected



This icon links to the About Us screen. This screen provides contact information for REDARC

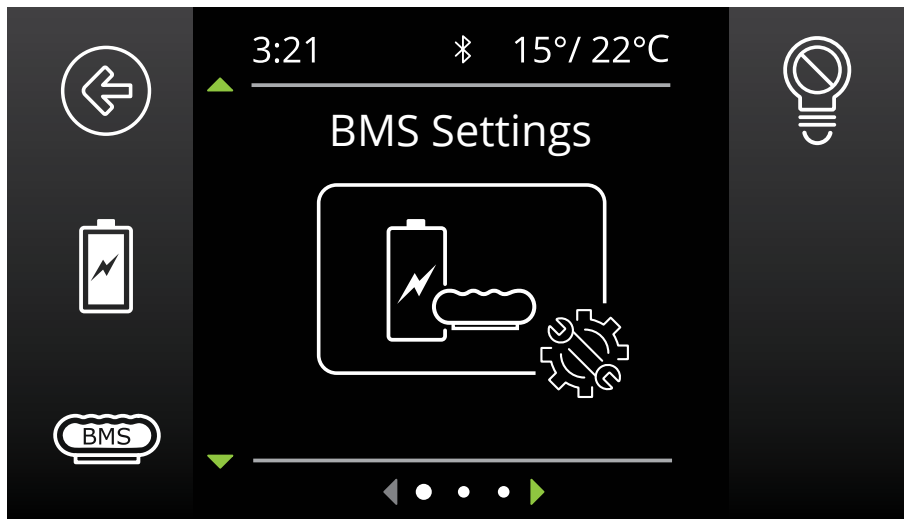


This icon links to the RBus Diagnostics screen. This screen provides a serial number for each REDARC device connected to the system. More information on the selected device can be found by clicking the top right Soft Key



This icon links to the Fault History screen. This screen provides a list of the 10 most recent faults. Clicking the top right Soft Key will provide more information on the selected fault

4.1.8 BMS Settings



When a Battery Management System is connected, the system will allow setup and modification of a number of BMS settings as outlined below.



This icon will return to the Home Screen



This icon links to the Battery Information screen. This screen allows the user to set their battery type and size. This information is critical for the operation of the Manager product so it is important to ensure this is correct



This icon links to the Charger Settings screen. This screen allows setting of the DC input trigger on the Manager and allows modification of the Low Voltage and SoC alarm levels.

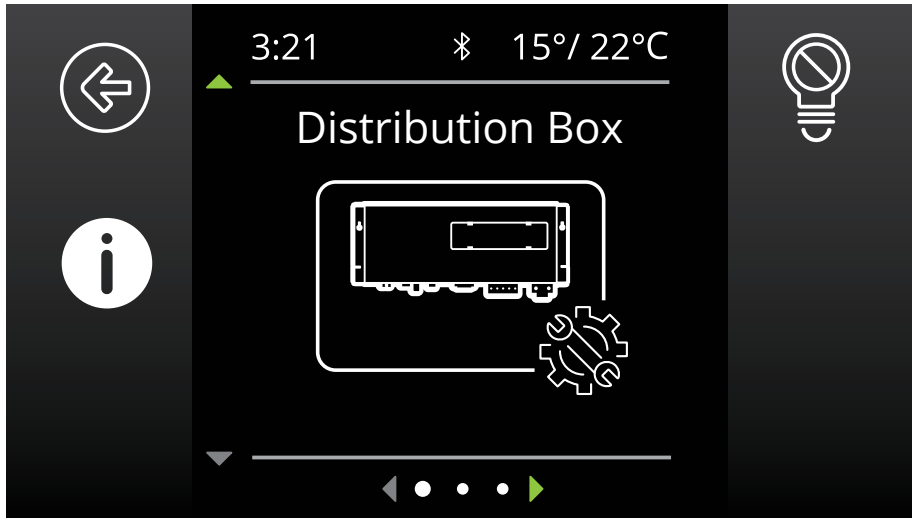


This icon links to the BMS Load Disconnect screen. This allows for setting of the Load Disconnect feature on the Manager.

NOTE: This feature operates similarly but independently to the Distribution Box Load Disconnect feature.

More information about the functionality of these screens can be found in The MANAGER instruction manual.

4.1.9 Distribution Box Settings



This Settings screen allows setup and modification of the Distribution Box Load Disconnect feature and provides information on the Distribution Box's channel setup. Distribution Box settings can only be changed by the system installer.



This icon will return to the Home Screen

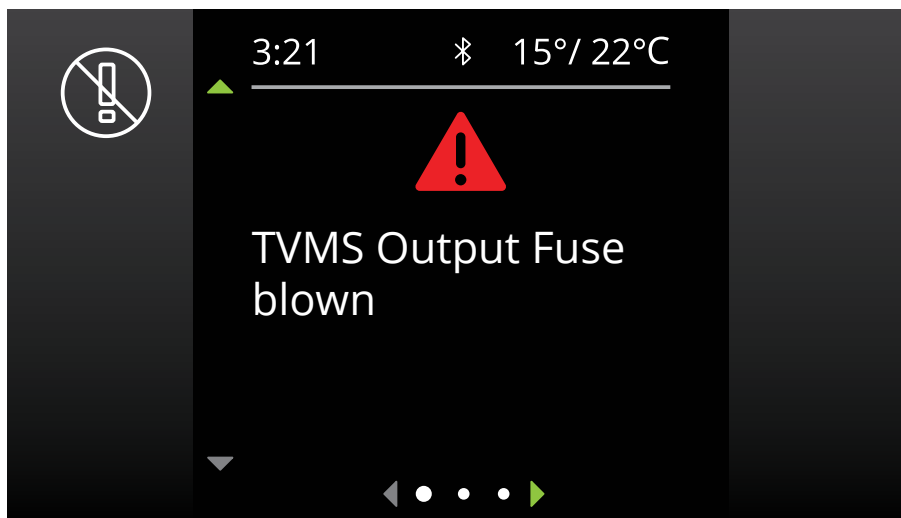


This icon links to the Channel Information screen. This screen provides information on the devices connected to the 22 available channels (input and output) on the Distribution Box. Clicking the top right button will display more information



This icon links to the RedVision Load Disconnect screen. This screen allows setting of the Load Disconnect type (based on SoC or Voltage) and the Disconnect and Reconnect levels

4.2 Fault Display



Fault screens will be shown if either an output fuse is blown, a connected Inverter or Manager has a fault or if the unit encounters a switching fault.

Fuse Faults

When a fuse fault is detected (ie, a fuse is blown) the output channel will be turned off and the corresponding icon on the display will be shown in red. Additionally the LED adjacent to the fuse will illuminate as described in Section 2.5.3 Blown Fuse Indicators on page 17. The fault will clear automatically once the fuse is replaced.

Switching Errors

In the event that a switching error is detected, the relevant output channel will be turned off and the corresponding icon on the display will be shown in red.

After 60 seconds, the channel will be turned ON again;

- If the error has been fixed the channel will remain ON.
- If the error is still present the channel will turn OFF again immediately.

While the channel is ON and in switching error mode, RedVision will re-attempt to turn the load on every 60 seconds. During this time the user may turn the channel OFF permanently. (Note that the ability to turn the channel OFF only applies to user-controlled channels - some channels may be automatically switched depending on the configuration of the system.)

4.3 The RedVision App

The RedVision App allows users to control multiple on-board devices from their smartphone; for example turning lights, inverter, water pumps and other loads such as televisions, electric steps and fridges on or off. It also provides the user with the ability to monitor water levels, temperature, energy (battery power) consumption and storage, with the battery information available when used with a REDARC Manager battery management system. The RedVision App replicates MOST of the display and switching features of the Display.

NOTICE

The RedVision App and its interactions with the RedVision System have not been tested on all smartphones available on the market so is not guaranteed to work on all devices. However, the app has been designed to work with:

- IOS 11.1 (or later)
- Android 7.0 (or later)

and with

- Bluetooth® 4.0 (or later).

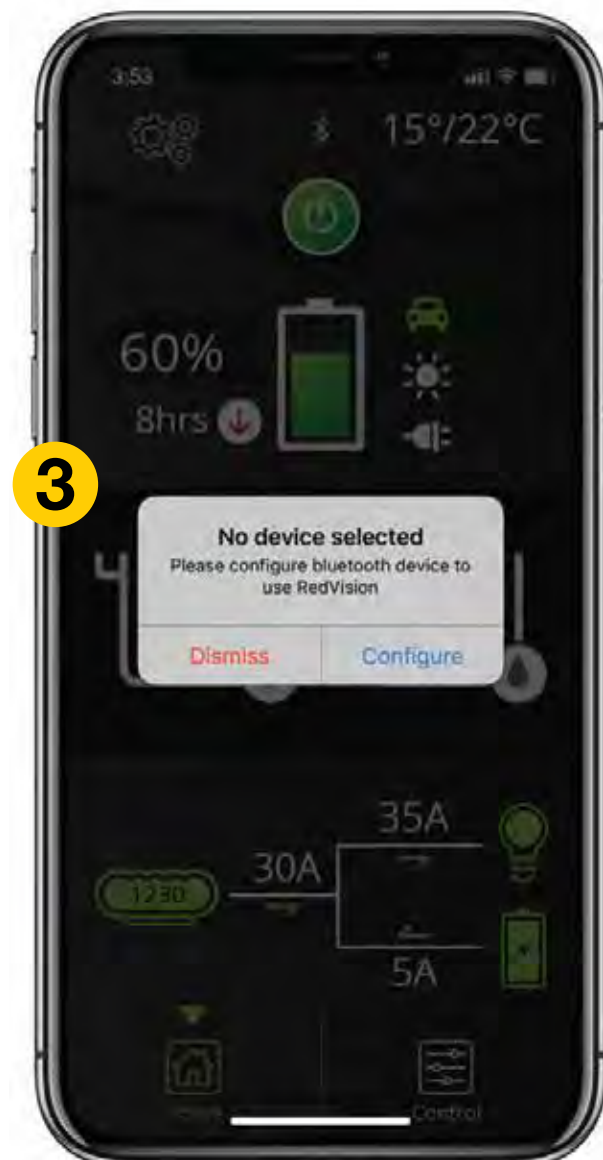
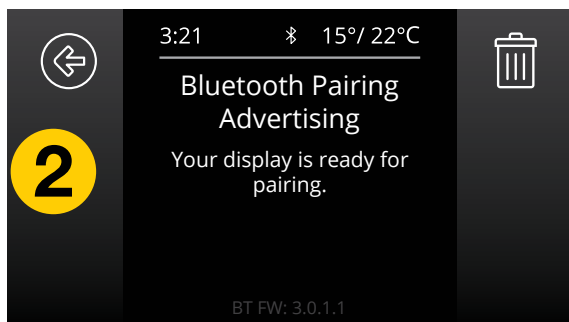
For a full list of compatible devices as they become validated, please visit:

www.redarc.com.au/redvision



4.3.1 Bluetooth® Pairing Instructions

1. Install the RedVision or Configurator App (scan the corresponding QR code **1** or search for “REDARC” on your device’s app store)
2. On the Display, press Left, navigate to display settings & press the Bluetooth® Soft Key – this should say “Your display is ready for pairing” **2**
3. Open the RedVision or Configurator App
4. On the RedVision App, if you get a “No device selected” pop-up, click “Configure” **3**. If using the Configurator App, move to step 5.
5. Choose your Display from the list (this should match the serial number on your Display, which can be found in R-Bus Diagnostics on the display **4**)
6. Read and agree to any disclaimers shown.
7. Wait for passcode prompt (this may pop up or show up as a notification depending on your phone)
8. Enter the 6-digit code shown on Display **4**
9. “Your device is paired.” **5**



4.3.2 Subsequent Connections

Once a smartphone has been paired with a RedVision Display, it will automatically reconnect with that Display when the app is opened.

If you have multiple Redvision Displays paired and you want to switch between which is connected to your smart phone, tap on the 3 gear symbol on the top left of the app. The available paired Displays will be shown. Select the one you want to connect to.

Three Gear Symbol

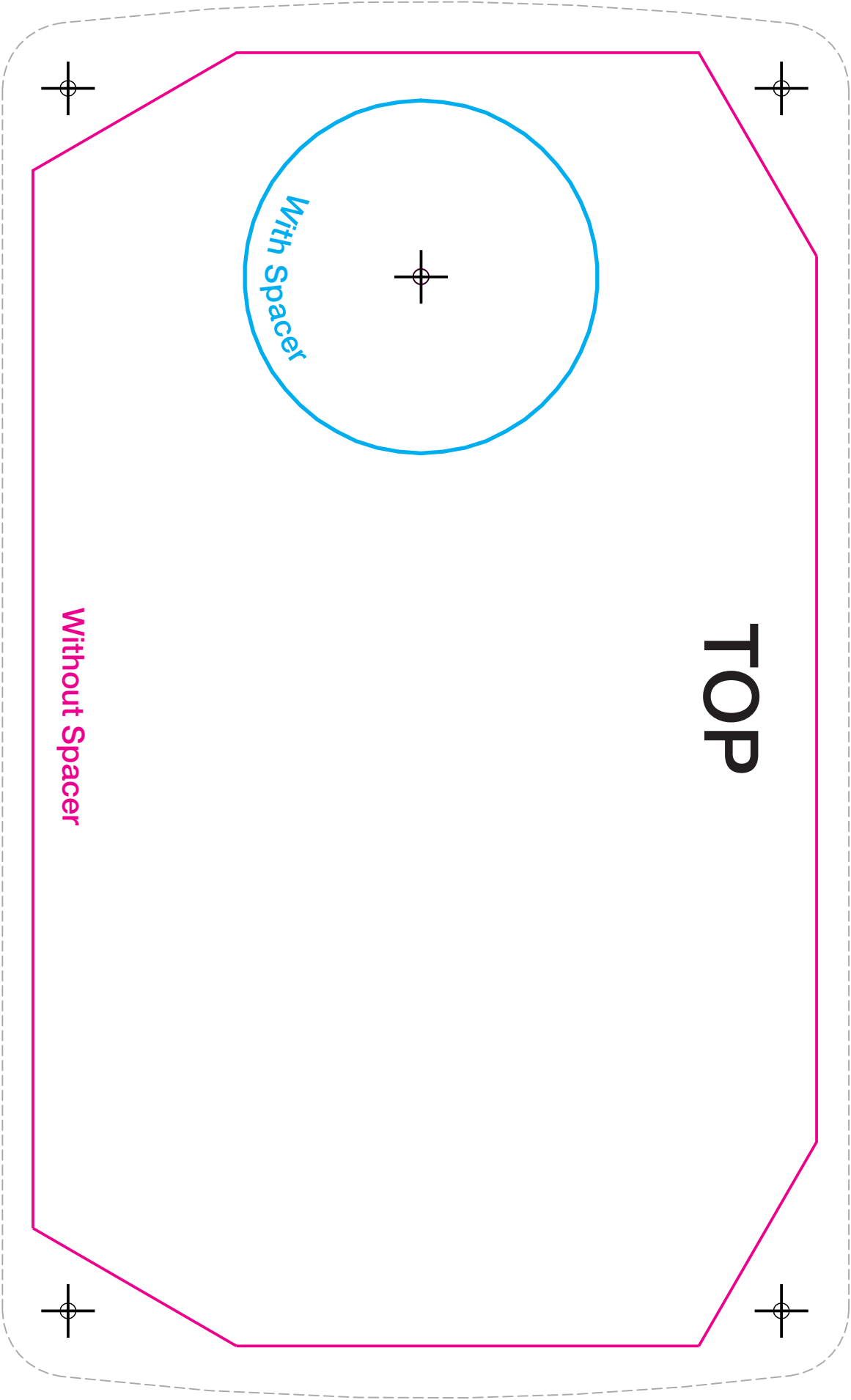


4.3.3 Connecting Multiple Devices

The RedVision Display can manage multiple paired devices although only one can be connected at a time. Closing the app will disconnect the device from RedVision.

Pairing a second device is the same as Section 4.3.1.

When the RedVision App is closed on one device, the RedVision App can be opened on another device and will connect automatically if it has previously been paired.



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6 TWO YEAR PRODUCT WARRANTY

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

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

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

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

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

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

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

Redarc Electronics Pty Ltd atf the Redarc Trust trading as Redarc Electronics ("**Redarc**") offers a warranty in respect of its Products where the Products are purchased from an authorised distributor or reseller of Redarc by a person ("**Purchaser**"), on the terms and conditions, and for the duration, outlined below in this document ("**Warranty**").

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

Offer and duration of product warranties

2. Redarc warrants that its Products will be free, under normal application, installation, use and service conditions, from defects in materials and workmanship affecting normal use, for **2 years** from the date of purchase (**Warranty Period**).
3. Where a Product malfunctions or becomes inoperative during the Warranty Period, due to a defect in materials or workmanship, as determined by Redarc, then subject to further rights conferred by the Australian Consumer Law on the Purchaser, Redarc will, in exercise of its sole discretion, either:
 - 3.1 repair the defective Product;
 - 3.2 replace the defective Product; or
 - 3.3 provide a refund to the Purchaser for the purchase price paid for the defective Product,without charge to the Purchaser.
4. The warranty given by Redarc in clause 3 covers the reasonable costs of delivery and installation of any repaired or replaced Products or components of Products to the Purchaser's usual residential address notified to Redarc, together with the reasonable costs of removal and return of any Products determined by Redarc to be defective.
5. If the Purchaser incurs expenses of the nature referred to in clause 4 in the context of making a claim pursuant to this Warranty that is accepted by Redarc, the Purchaser will be entitled to claim for reimbursement of those expenses which Redarc determines, in exercise of its sole discretion, to be reasonably incurred, provided that the claim is notified to Redarc in writing at the postal address or email address specified in clause 21 and includes:
 - 5.1 details of the relevant expenses incurred by the Purchaser; and
 - 5.2 proof of the relevant expenses having been incurred by the Purchaser.

Exclusions and limitations

6. This Warranty will not apply to, or include any defect, damage, fault, failure or malfunction of a Product, which Redarc determines, in exercise of its sole discretion, to be due to:
 - 6.1 normal wear and tear or exposure to weather conditions over time;
 - 6.2 accident, misuse, abuse, negligence, vandalism, alteration or modification;
 - 6.3 non-observance of any of the instructions supplied by Redarc, including instructions concerning installation, configuring, connecting, commissioning, use or application of the Product, including without limitation choice of location;
 - 6.4 failure to ensure proper maintenance of the Product strictly in accordance with Redarc's instructions or failure to ensure proper maintenance of any associated equipment or machinery;
 - 6.5 repairs to the Product that are not strictly in accordance with Redarc's instructions;
 - 6.6 installation, repairs or maintenance of the Product by, or under the supervision of, a person who is not a qualified auto electrician or technician, or if non-genuine or non-approved parts have been fitted;
 - 6.7 faulty power supply, power failure, electrical spikes or surges, lightning, flood, storm, hail, extreme heat, fire or other occurrence outside the control of Redarc;
 - 6.8 use other than for any reasonable purpose for which the Product was manufactured;
 - 6.9 any indirect or incidental damage of whatever nature outside the control of Redarc.
7. Warranty claims in respect of a Product must be made in writing to Redarc at the postal address or email address specified in clause 21 within the Warranty Period. Such claims must include the following:
 - 7.1 details of the alleged defect or fault and the circumstances surrounding the defect or fault;
 - 7.2 evidence of the claim, including photographs of the Product (where the subject of the claim is capable of being photographed);
 - 7.3 the serial number of the Product, specified on the label affixed to the Product; and
 - 7.4 proof of purchase documentation for the Product from an authorised distributor or reseller of Redarc, which clearly shows the date and place of purchase.The return of any Products without the prior written instructions of Redarc will not be accepted by Redarc.

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

Other conditions of Warranty

12. If the Purchaser acquired a Product for the purpose of resupply, then this Warranty shall not apply to that Product.
13. In particular, the sale of a Product via an online auction, online store or other internet website by a party that is not an authorised distributor or reseller of the Product will be deemed to be a resupply within the meaning of the Australian Consumer Law and will render this Warranty void, as Redarc has no control over the storage, handling, quality or safety of Products sold by such persons.
14. A Purchaser shall only be entitled to the benefit of this Warranty after all amounts owing in respect of the Product have been paid.
15. While Redarc warrants that the Products will be free from defects in materials and workmanship in the circumstances set out in this Warranty, to the maximum extent permitted by law Redarc does not warrant that the operation of the Products will be uninterrupted or error-free.
16. To the maximum extent permitted by law, Redarc's determination of the existence of any defect and the cause of any defect will be conclusive.
17. Spare parts or materials for the Products are guaranteed to be available for a period of at least 2 years after purchase of the Products.
18. The agents, officers and employees of any distributor or reseller of the Products and of Redarc are not authorised to vary or extend the terms of this Warranty.
19. Redarc shall not be responsible or liable to the Customer or any third party in connection with any non-performance or delay in performance of any terms and conditions of this Warranty, due to acts of God, war, riots, strikes, warlike conditions, plague or other epidemic, fire, flood, blizzard, hurricane, changes of public policies, terrorism and other events which are beyond the control of Redarc. In such circumstances, Redarc may suspend performance of this Warranty without liability for the period of the delay reasonably attributable to such causes.
20. If a clause or part of a clause in this Warranty can be read in a way that makes it illegal, unenforceable or invalid, but can also be read in a way that makes it legal, enforceable and valid, it must be read in the latter way. If any clause or part of a clause in this Warranty is illegal, unenforceable or invalid, that clause or part is to be treated as removed from this Warranty, but the rest of this Warranty is not affected.

Redarc's contact details

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



Free technical assistance!

please contact

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