THE POWER OF REDARC

REDVISION® ESSENTIALS DISPLAY

RedVision Display for Battery Level Monitoring

MODEL:

- **DISP4000**



AUSTRALIAN MADE

INST433-1

CONTENTS

WARNINGS & SAFETY INSTRUCTIONS **3**

KIT CONTENTS/PARTS **4**

SYSTEM EXAMPLES **5**

INSTALLATION — MOUNTING **6**

Mounting Check List 6

Mounting Steps 6

Remove the Display 6

INSTALLATION — WIRING **7**

OPERATION **8**

Calibration 8

State of Charge Display States 8

Power Button 9

Control Button 9

Charging Source Status LEDs 9

Control LED 9

Bluetooth Pairing 9

Pair to the RedVision® App 9

Vehicle Battery Recovery Mode 10

Adjust Display Brightness 10

TROUBLESHOOTING **10**

TECHNICAL SPECIFICATIONS **11**

Compliance and Standards 11

ADDITIONAL INFORMATION **12**

Limited Warranty 12

Product Serial Number 12

Contact 12

MOUNTING TEMPLATE **13**

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

⚠ WARNING

1. Any attempt to disassemble/reassemble the Essentials Display or make unapproved repairs or modifications will void the warranty and the user's authority to operate the product.
2. DO NOT mount the Essentials Display in the vehicle dashboard or where it may distract the driver of the vehicle. Distracting the driver may result in an accident.
3. This equipment is not designed for use in environments such as homes, schools, or other locations where children or untrained individuals may be present without supervision.

⚠ CAUTION

1. Ensure that a correct grounding point is used. Vehicles often have ungrounded metal reinforcements under the dashboard and these points are not suitable grounds. Bad grounding of the unit will result in poor or no operation.
2. DO NOT route cables over hot surfaces or sharp objects, or over/through parts of the vehicle that move during operation or maintenance.

NOTICE

1. DO NOT install in areas where the Essentials Display may get splashed or exposed to rain or excessive moisture.
2. DO NOT install the Essentials Display in the engine bay, it is not designed to operate in that environment.
3. DO NOT connect computers or IT equipment to the R-Bus inputs on the Essentials Display. Damage may occur.
4. The Essentials Display is designed for use only with secondary/auxiliary batteries.

PERSONAL SAFETY PRECAUTIONS:

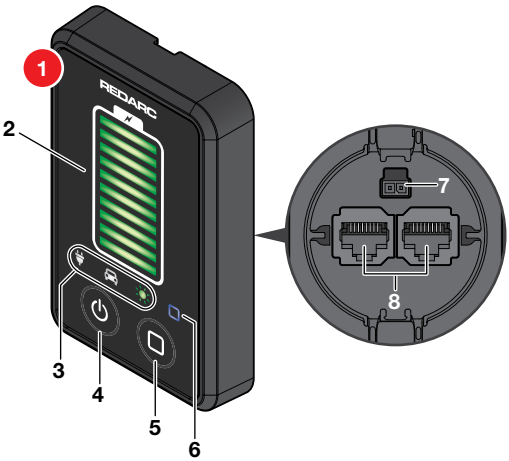
To assist with the safe installation of the product:

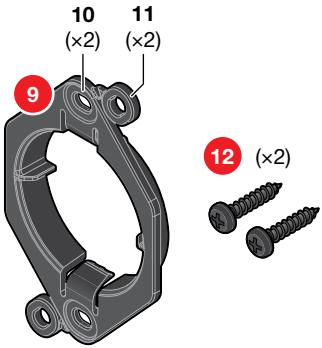
1. Use Personal Protective Equipment (PPE). Wear complete eye protection and clothing protection. Avoid touching eyes while working near a battery.

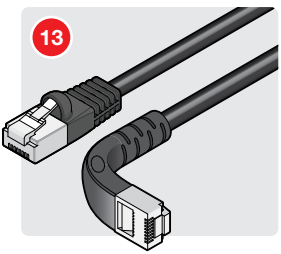


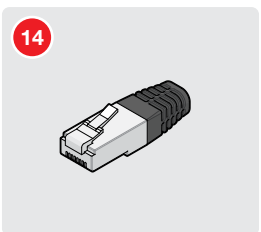
2. If battery acid contacts your skin or clothing, remove the affected clothing and wash the affected area of your skin immediately with soap and water. If battery acid enters your eye, immediately flood the eye with running cold water for at least 10 minutes and seek medical assistance immediately.

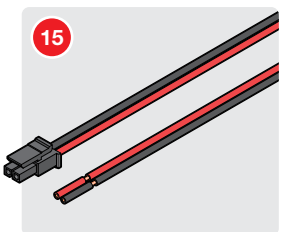
KIT CONTENTS/PARTS











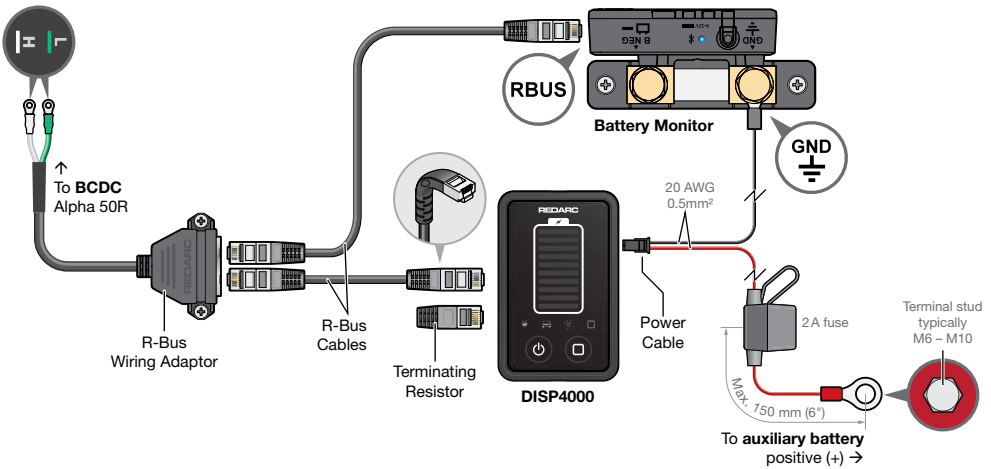
1. **REDVISION ESSENTIALS DISPLAY**
2. SoC (State of Charge) Display
3. Charging Source Status LEDs
   - AC Mains
   - Vehicle
   - Solar
4. Power Button
5. Control Button
6. Control LED
7. Power Input
8. R-Bus Port (×2)
9. **MOUNTING BRACKET**
10. Mounting Holes (×2)
11. Spacer Tabs
12. **MOUNTING SCREWS** (×2)
    #8G × ¾" self-tapping
13. **R-BUS (RJ45) CABLE — 3 m (9'10")**
    with right-angle and straight connectors
14. **TERMINATING RESISTOR**
15. **POWER CABLE**
    with Molex connector

SYSTEM EXAMPLES

The below diagrams are examples only. In most cases, the Essentials Display (DISP4000) is interchangeable with the RedVision Pro Display (DISP4300). *Only direct connections to the Essentials Display are shown. Refer to the manual supplied with individual devices in your system for complete wiring instructions.*

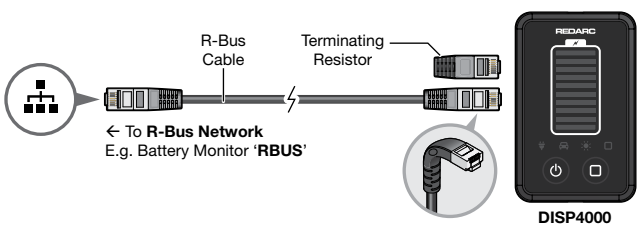
CONNECTING TO SYSTEMS WITHOUT POWERED R-BUS

This example shows wiring to a system where the RedVision Essentials Display requires power, in this case the BCDC Alpha 50R.



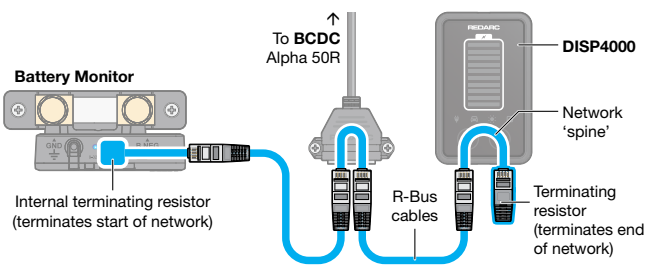
SYSTEM WITH POWERED R-BUS

This example shows installation of the Essentials Display into a system with powered R-Bus. The Power Cable supplied with the Essentials Display does not need to be used.



TERMINATING RESISTORS

The R-Bus network connects devices in a continuous daisy-chain. There must be Terminating Resistors at each end of the daisy-chain to complete the R-Bus system. The Battery Monitor has its own built in terminating resistor.



INSTALLATION — MOUNTING

MOUNTING CHECK LIST

❑ STRUCTURAL

Mount only to a fixed, flat surface using both mounting points.

❑ VISIBLE AND ACCESSIBLE

Mount where the SoC Display is visible, and the buttons are easily accessible.

Make sure the location is not excessively dirty/dusty, as dirt build-up will reduce the visibility of LED's.

❑ SAFE ENVIRONMENT

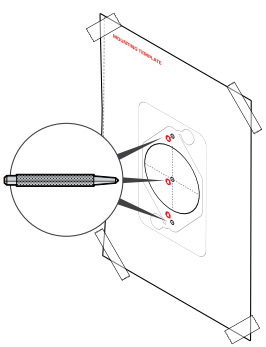
The Essentials Display is rated for interior installation in occupant areas of the vehicle or inside caravan/ camper trailers.

NOTICE: DO NOT install in areas where the Essentials Display may get splashed or exposed to rain or excessive moisture.

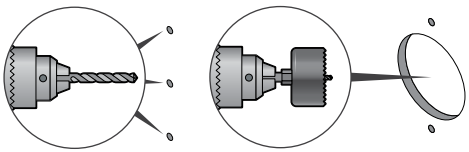
NOTICE: DO NOT install the Essentials Display in the engine bay, it is not designed to operate in that environment.

MOUNTING STEPS

1. Confirm your mounting location meets all requirements in the Mounting Checklist.
2. Cut-out and tape the Mounting Template (page 13) at the mounting location, making sure it is completely flat and straight (not slightly rotated).
3. Use a centre-punch to mark all centres labelled **A** and **B**. Remove the template.

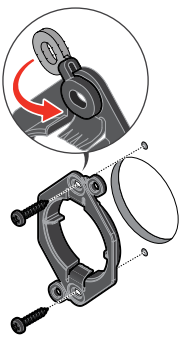


4. Drill pilot holes at **A** and **B** at a suitable size for the mounting substrate.
5. Drill location **B** again, this time using a 50.8 mm (2") hole saw. De-burr the holes and touch up any exposed bare metal surfaces with a rust inhibitor.



6. Fasten the Mounting Bracket in place using the supplied screws.

   Option: If mounting on a soft surface (such as marine carpet), bend the two Spacer Tabs on the Mounting Bracket under the Mounting Points.



7. Align the Display with the Mounting Bracket and press firmly until it clicks into place.



REMOVE THE DISPLAY

Insert a flat-head screw driver into the pry-slot in the top or bottom of the Display and gently pry it off.



INSTALLATION — WIRING

> ⚠ **CAUTION:** Wiring must only be carried out by a suitably qualified installer.

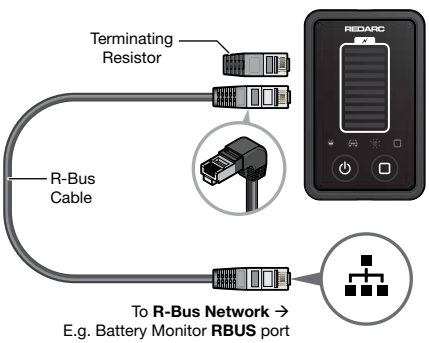
1. CONNECT TO THE R-BUS NETWORK

1.1 Connect the right-angled connector of the supplied R-Bus Cable to either of the R-Bus Ports on the back of the Essentials Display.

1.2 Connect the other end to the '**RBUS**' port on the Battery Monitor (or to the Manager or Wiring Adaptor, depending on your system).

1.3 If required, connect the supplied Terminating Resistor into the remaining R-Bus Port on the back of the Essentials Display.

NOTE: The Terminating Resistor is only required if the Essentials Display is at the end of the R-Bus network—see 'Terminating Resistors' (page 5).



If your system has a powered R-Bus,
this completes installation.

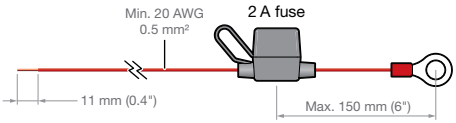
REDARC devices with powered R-Bus include TVMS Rogue, The Manager and BCDC Alpha100 R.

If your Essentials Display requires power,
(because it's connected to a system that does NOT have a powered R-Bus), continue the following steps.

2. EXTEND & FUSE THE POWER CABLE

NOTE: This wiring is only required if you are installing into a system that does NOT have a powered R-Bus, e.g. when connecting to a BCDC Alpha 50R.

2.1 Assemble a RED wire (min. 0.5 mm² / 20 AWG) fused with a 2 A fuse (located ~150 mm/6" from your battery) and a suitable ring terminal for connecting your battery's negative (–) terminal.



2.2 Assemble a BLACK wire (min. 0.5 mm² / 20 AWG) with a suitable ring terminal for connecting to the Battery Monitor's '**GND** ⏚' terminal.

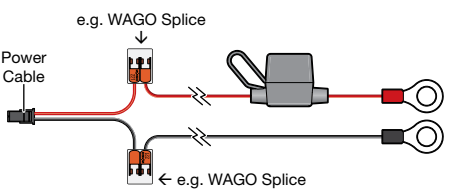


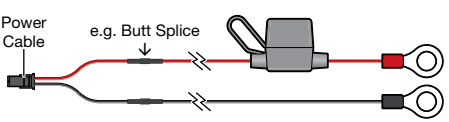
3. CONNECT TO POWER

3.1 Route the pre-assembled RED and BLACK wires from the battery to the Essentials Display—DO NOT connect to the battery yet. Secure the wires every ~200 mm (~8") using cable ties.

3.2 Splice the RED and BLACK wires into the corresponding wires on the supplied Power Cable. WAGO splicing connectors or butt splices are recommended.

3.3 If routing outside the vehicle, add PVC corrugated tube or similar to protect the wiring.

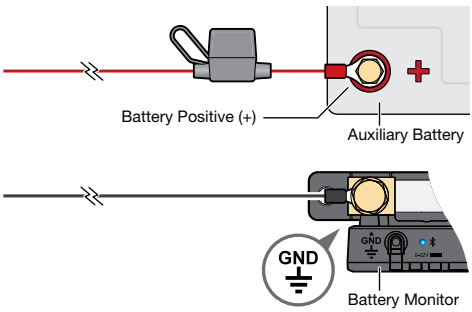




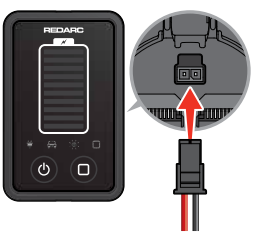
3.4 Connect the RED wire to the auxiliary battery's positive (+) terminal. Torque to the manufacturer's specification.

> ***NOTICE:*** The Essentials Display is designed for use only with secondary/auxiliary batteries.

3.5 Connect the BLACK wire to the Battery Monitor's '**GND** ⏚' terminal. Torque to the manufacturer's specification.



3.6 Plug the Power Cable into the Power Input on the back of the Essentials Display.



OPERATION

CALIBRATION

When the system is first powered on, the Battery Monitor needs to perform a calibration. This includes charging the battery to full and can take some time. During calibration process, a chasing animation is displayed (a bottom-to-top cascading) on the Essentials Display. Once calibration is complete, the SoC will be displayed.



Calibrating…



SoC display mode

STATE OF CHARGE DISPLAY STATES

In SoC Display mode, it indicates the battery's current level. When charging, the segment that is currently charging will flash.



Full



Low



Critical

When cycling through the Control menu, the SoC display may change colour to indicate the selected setting and/or show the current settings' status e.g. Brightness level and Recovery progress.

POWER BUTTON

- Press to turn display illumination On/Off (i.e. enters/exits standby mode, so is still communicating with R-Bus network).
- Press from within the settings menu to exit.
- Press during the Start Battery Recovery process to cancel it.

CONTROL BUTTON

- Press to cycle through the settings menu.
- Press during the Start Battery Recovery process to cancel it.

CHARGING SOURCE STATUS LEDS

The illumination/colour of the Charging Source Status LEDs (AC Mains, Vehicle and Solar) indicates the input's state.

White
Charging source detected but not in use

Green
Charging source in use/operational

Off
Charging source not available

CONTROL LED

Standby Mode / Storage Mode (off)

Bluetooth (blue)
Only available in systems containing compatible bluetooth devices.

Vehicle Battery Recovery (green)
Only available in systems with recovery-capable devices.

LED Brightness Adjustment (purple)

Fault (red solid or flashing)
Indicates there is a fault in your system. Refer to the RedVision App for further information.

BLUETOOTH PAIRING

If there are no supported Bluetooth devices detected on the R-Bus network (e.g. BSEN500), the menu will skip to the next available menu setting.

PAIR TO THE REDVISION® APP

Download the free
RedVision User App

1. Download and open the RedVision App, and make sure Bluetooth is enabled on your device.
2. Power on the system. If the Control LED on the Essentials Display is not already flashing blue, press the Control Button once.
3. In the app, tap **Menu** (☰), then tap **+ Add Device**.
4. Select the device matching the product serial number on the Smart Battery Monitor.
5. Tap **Pair** when prompted. The **Reading Device** screen will display. Once complete, the Essentials Display SoC will begin calibrating, and in the App, the system home screen will appear.
6. If this is the first time powering on the system, you may need to set up the Battery Configuration and Charger Options. Refer to the instruction manual for those devices for further information.

If you have trouble pairing, do the following the try again:

1. In the app, tap the menu (☰). In the **Devices** section, tap **Edit**, then tap the delete icon (🗑), then tap **Forget** to forget the device.
2. Forget the device in your phone's bluetooth devices list.

CLEAR BLUETOOTH PAIRINGS

1. Press the Control Button to cycle to the Bluetooth setting (solid blue).
2. Press-and-hold the Control Button. The SoC display will begin to count up. When it reaches the top, all segments will flash rapidly and pairings will be cleared.



Preparing to clear all pairings



Pairings cleared (flashing)

VEHICLE BATTERY RECOVERY MODE

Vehicle Battery Recovery is only available in systems with recovery-capable devices.

If the vehicle's start battery is flat, the Recovery process safely transfers charge from the auxiliary battery to the vehicle battery. Once Recovery is initiated, the flat vehicle battery will charge for approximately 15 minutes to transfer enough charge to safely start the vehicle.

RECOVERY PROCEDURE

1. Press the Control Button to cycle to the Recovery setting (flashing green).
2. Long-press the Control Button to initiate the Recovery process.

   To cancel the Vehicle Battery Recovery process, press the Control or Power button.
3. The top five segments of the SoC Display will illuminate, then begin to count down as the vehicle battery charges. Once the Recovery is complete, the top five segments will flash.



Recovery countdown (solid)



Recovery complete (flashing)

ADJUST DISPLAY BRIGHTNESS

1. Press the Control Button to cycle to the Brightness setting (flashing purple).
2. Press and hold the Control Button to adjust the brightness. To reverse the adjustment direction release the button then press and hold again.



Minimum brightness



50% brightness



Maximum brightness

TROUBLESHOOTING

If the Control LED flashes red, there is a communications faults somewhere in the R-Bus network. Check all connections and cables within the R-Bus network and replace any faulty cables.

If the Control LED turns solid red, there is an active fault on an R-Bus device within the system, or the Essential Display is not receiving system information.

Connect to the RedVision User App and view the fault code so that you can decide the course of action.

Note: If you press the Control Button and enter the menu while there is an error, solid red indication will change to alternating between red and the menu item colour, e.g. red/blue, red/purple, etc.



TECHNICAL SPECIFICATIONS

GENERAL SPECIFICATIONS

Part Number	DISP4000
Main Unit Weight	75g (2.65 oz)
Main Unit Dimensions	99.79 × 63.04 × 23.98 mm (3.93 × 2.48 × 0.94")
Mounted Dimensions	99.79 × 63.04 × 15.5 mm (3.93 × 2.48 × 0.61")

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	–20°C to 75°C (–4°F to 167°F)
Storage Temperature	–40°C to 90°C (–40°F to 194°F)
Operating Humidity	0% to 95%

INPUTS

Operating Voltage	9 to 32 V DC ⎓
Operating Current	< 250 mA
Standby Mode Power Consumption	< 120 mW
Storage Mode Power Consumption	< 30 mW

COMPLIANCE AND STANDARDS

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 PART 15 AND ISED RSS COMPLIANCE

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.

MODIFICATION

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

ADDITIONAL INFORMATION

LIMITED WARRANTY

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

PRODUCT SERIAL NUMBER

The product serial number is located on the back of the Essentials Display and on the product packaging.

CONTACT

IMPORTER CONTACT INFORMATION

For written request please email power@redarcelectronics.eu

UK: OZPARTS UK Ltd, 1 Prospect Place, Pride Park, DE24 8HG, Derby, UK
Europe: OZPARTS PL sp. z o.o. ul. Słowackiego 32/5 87-100, Torun, Poland

MANUFACTURER

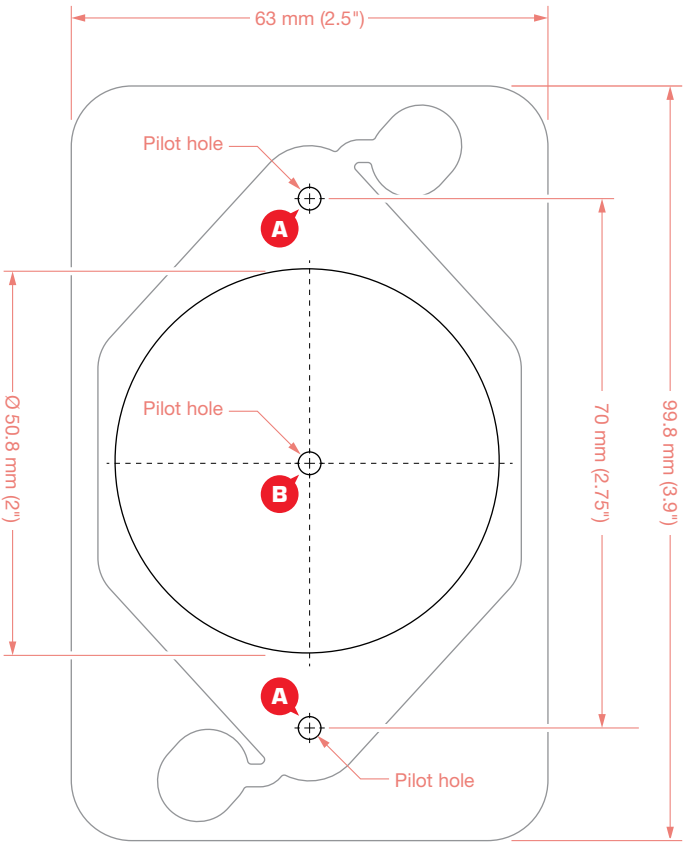
REDARC Electronics Pty Ltd, 23 Brodie Road (North), Lonsdale SA 5160, Australia | +61 8 8322 4848

RESPONSIBLE PARTY

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

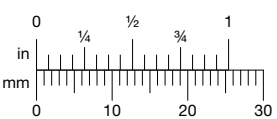
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REDARC Electronics Pty Ltd | ABN 77 136 785 092 | REDARC Electronics Pty Ltd, 23 Brodie Road (North), Lonsdale SA 5160, Australia

MOUNTING TEMPLATE



Cut out page to use as mounting template

PRINT THIS PAGE AT 100% SCALE
Before drilling holes, make sure that this template is printed at the correct size.



Back of
Mounting Template

NOTES

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