Dual Input Multi-stage 12V In-vehicle Battery Charger

BCDC1225D, BCDC1240D
The BCDC1225D/BCDC1240D Dual Input In-vehicle Battery Chargers feature technology designed to charge your auxiliary batteries to 100%, regardless of their type or size. The Dual Input In-vehicle Battery Chargers also feature a Maximum Power Point Tracking (MPPT) solar regulator. The unit will always take as much power from the unregulated Solar input as it can before supplementing that power, up to the maximum rated output, from Vehicle power input. The Dual Input In-vehicle Battery Chargers are suitable for all common types of automotive lead acid batteries and LiFePO₄ lithium type batteries.

**WARNING & SAFETY INSTRUCTIONS**

SAVE THESE INSTRUCTIONS - THIS MANUAL CONTAINS IMPORTANT SAFETY INSTRUCTIONS FOR THE BCDC1225D/BCDC1240D BATTERY CHARGER.

DO NOT OPERATE THE BATTERY CHARGER UNLESS YOU HAVE READ AND UNDERSTOOD THIS MANUAL AND THE CHARGER IS INSTALLED AS PER THESE INSTALLATION INSTRUCTIONS. REDARC RECOMMENDS THAT THE CHARGER BE INSTALLED BY A SUITABLY QUALIFIED PERSON.

**WARNING**

**RISK OF EXPLOSIVE GASES:**

WORKING IN VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL OPERATION. FOR THIS REASON, IT IS OF UTMOST IMPORTANCE THAT YOU FOLLOW THE INSTRUCTIONS WHEN INSTALLING AND USING THE CHARGER.

**CAUTION**

1. The Battery Charger 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 Battery Charger.

2. Do NOT alter or disassemble the Battery Charger under any circumstances. All faulty units must be returned to REDARC for repair. Incorrect handling or reassembly may result in a risk of electric shock or fire and may void the unit warranty.

3. Only use the Battery Charger for charging Standard Automotive Lead Acid, Calcium Content, Gel, AGM, SLI, Deep Cycle or Lithium Iron Phosphate type 12V batteries.

4. Check the manufacturer’s data for your battery and ensure that the ‘Maximum’ voltage of the profile you select does not exceed the manufacturer’s recommended maximum charging voltage. If the ‘Maximum’ voltage is too high for your battery type, please select another charging profile.

5. Check the manufacturer’s data for your battery and ensure that the ‘Continuous Current Rating’ of the charger does not exceed the manufacturer’s recommended maximum charging current.

6. When using the Battery Charger to charge a Lithium Iron Phosphate battery, only batteries that feature an inbuilt battery management system featuring inbuilt under and over voltage protection and cell balancing are suitable.

7. The Battery Charger is not intended to supply power to a low voltage electrical system other than to charge a battery.

8. Cable and fuse sizes are specified by various codes and standards which depend on the type of vehicle the Battery Charger is installed into. Selecting the wrong cable or fuse size could result in harm to the installer or user and/or damage to the Battery Charger 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 Battery Charger.

9. NEVER smoke or allow a spark or flame in vicinity of battery or engine. This may cause the battery to explode.

**PERSONAL SAFETY PRECAUTIONS**

10. To assist with the safe operation and use of the Battery Charger when connected to the battery:
   a) Wear complete eye protection and clothing protection. Avoid touching eyes while working near a battery.
   b) 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.
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SPECIFICATIONS

<table>
<thead>
<tr>
<th>Part Number</th>
<th>BCDC1225D</th>
<th>BCDC1240D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous Current Rating</td>
<td>25A</td>
<td>40A</td>
</tr>
<tr>
<td>Vehicle Input Fuse Rating</td>
<td>40A (Not Supplied)</td>
<td>60A (Not supplied)</td>
</tr>
<tr>
<td>Output Fuse Rating</td>
<td>REDARC FK40 recommended</td>
<td>REDARC FK60 recommended</td>
</tr>
<tr>
<td>Output Power</td>
<td>375W</td>
<td>600W</td>
</tr>
<tr>
<td>Vehicle Input Voltage Range(^*)</td>
<td>9-32V</td>
<td></td>
</tr>
<tr>
<td>Solar Input Voltage Range(^*)</td>
<td>9-32V (unregulated only)</td>
<td></td>
</tr>
<tr>
<td>Output Battery Type</td>
<td>Standard Lead Acid, Calcium content, Gel, AGM or LiFePO(_4) type only</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Charging Profile</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>Li</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Maximum Voltage(^*) (refer to section 1.2.1)</td>
<td>14.6V</td>
<td>15.0V</td>
<td>15.3V</td>
<td>14.5V</td>
</tr>
<tr>
<td>- Float Voltage(^*)</td>
<td>13.3V</td>
<td>13.6V</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| No Load Current | <100mA |
| Standby Current | <8mA |
| Operating Temperature | -15°C to 80°C / 5°F to 175°F |
| Minimum O/P Battery Volts | 0.1V |
| Weight | 1kg |
| Dimensions | 165x120x37mm |
| Warranty | 2 years |
| Standards | CISPR11, ECE Reg. 10 |

\(^*\) Voltages Specified are ±100mV
The BCDC1225D/BCDC1240D is a three-stage, 12V DC-DC battery charger that operates from an alternator input of 12V or 24V and an unregulated 12V nominal solar panel input. The input voltage of the BCDC1225D/BCDC1240D can be above, below or equal to the output voltage making it ideal for charging an auxiliary 12V battery where the distance from the main battery may cause a significant voltage drop. The BCDC1225D/BCDC1240D is also designed to isolate the main battery from the auxiliary battery, to avoid over-discharging the main battery.

1 PRODUCT FUNCTION

1.1 Display Panel

The front panel features 7 LEDs to display the charge profile and charge status.

Figure 1.1.1 - The BCDC1225D and BCDC1240D Front Panels

1.2 Charge Profile LEDs

The Dual Input In-vehicle Battery Chargers feature 4 different charging profiles designed to suit your battery’s charging requirements. It is recommended to refer to the charging specifications stated by the battery manufacturer and the installation temperature chart below (Figure 1.2.1) before selecting the profile for your installation.

The selected Profile LED will be on solid when the unit is ON and charging. A flashing profile LED indicates that the unit is in standby mode and NOT charging.

<table>
<thead>
<tr>
<th>Maximum Battery Voltage Specification</th>
<th>Auxiliary Battery Location</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cabin Install</td>
</tr>
<tr>
<td>14.6</td>
<td>A</td>
</tr>
<tr>
<td>15.0</td>
<td>B</td>
</tr>
<tr>
<td>15.3</td>
<td>C</td>
</tr>
<tr>
<td>14.5 (LiFePO₄)</td>
<td>Li</td>
</tr>
</tbody>
</table>

Figure 1.2.1 - Charge Profile Selection

⚠️ CAUTION

Check the manufacturer’s data for your battery and ensure that the ‘Maximum’ voltage of the profile you select does not exceed the manufacturer’s recommended maximum charging voltage. If the ‘Maximum’ voltage is too high for your battery type, please select another charging profile.
1 PRODUCT FUNCTION

1.3 Charge Status LEDs

The Charge Status LEDs indicate to the user which inputs are available and what stage of the charge process the unit is currently in.

1.3.1 Solar & Vehicle LEDs

The Solar and Vehicle LEDs will be ON when the input is available and in use and OFF when the input is not available or not in use.

If both LEDs are ON, both input sources are available and in use.

The Dual Input In-vehicle Battery Charger uses Green Power Priority technology. This means the unit will always supply as much power as possible from the Solar input before supplementing this with power from the Vehicle input, to the maximum output of the unit or required by the battery at the time.

1.3.2 Stage LED

The Stage LED indicates the charge profile stage. With any profile selected the charger will output a 3-Stage type charging profile with *Boost*, *Absorption* and *Float* Stages.

Figure 1.3.2.1 outlines the LED sequences which indicate these stages and figure 1.3.4.1 explains the Charging Process.

<table>
<thead>
<tr>
<th>LED Sequence</th>
<th>Profile Stage (Lithium)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous</td>
<td>OFF / No Output</td>
</tr>
<tr>
<td>Continuous</td>
<td>Boost (Constant Current)</td>
</tr>
<tr>
<td>2 Seconds</td>
<td>Absorption (Constant Voltage)</td>
</tr>
<tr>
<td>2 Seconds</td>
<td>Float</td>
</tr>
</tbody>
</table>

Figure 1.3.2.1 - Charge Stage LED Sequences
1 PRODUCT FUNCTION

1.3.3 Optional External LED

To provide charge status and error feedback away from the main unit, a basic 3V LED can be wired as show in Figures 2.7.1 and 2.7.2.

If used, this external LED is either OFF (BCDC not charging), ON (BCDC charging) or FLASHING (see error codes in Section 1.5 Error Codes). A “12V” LED (3V with integrated resistor) will not operate correctly if installed.

1.3.4 Charging Process

When the Charger is turned on, it will move into the Boost stage. The Boost stage maintains a constant current until the battery voltage reaches its Absorption Voltage. The current in Boost stage may vary during operation in order to maintain safe operating temperature, or to limit the difference between input and output voltages. The Charger will then move to Absorption stage which maintains a constant voltage level for a predetermined period of time or until the current being drawn by the output battery drops to less than 4A for 30 seconds; after which the Charger will enter Float stage.

Float stage maintains 13.3V (13.6V for LiFePO₄) on the output battery, keeping the battery topped up. This counteracts the battery’s self discharging or loads applied to the battery. When the battery loses charge, the Charger will move back into the Boost stage.

⚠ CAUTION

When using the Battery Charger to charge a Lithium Iron Phosphate battery, only batteries that feature an inbuilt battery management system featuring inbuilt under and over voltage protection and cell balancing are suitable.
1.4 Turn On/Off Thresholds

<table>
<thead>
<tr>
<th>Input Open Circuit Low voltage conditions *1</th>
<th>12V Vehicle Input</th>
<th>24V Vehicle Input</th>
<th>Solar</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input Trigger Settings</strong></td>
<td><strong>Standard</strong></td>
<td><strong>Low Voltage</strong></td>
<td><strong>Low Voltage</strong></td>
</tr>
<tr>
<td>Turn ON ABOVE</td>
<td>13.2V</td>
<td>12.0V</td>
<td>26.4V</td>
</tr>
<tr>
<td>Turn OFF BELOW</td>
<td>12.7V</td>
<td>11.9V</td>
<td>25.4V</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Input Loaded Low voltage conditions*2</th>
<th>12V Vehicle Input</th>
<th>24V Vehicle Input</th>
<th>Solar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turn OFF instantly BELOW</td>
<td>8.0V</td>
<td>16.0V</td>
<td>9.0V</td>
</tr>
<tr>
<td>Turn OFF after 20s BELOW</td>
<td>9.0V</td>
<td>18.0V</td>
<td>N/A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Input Over voltage shutdown</th>
<th>12V Vehicle Input</th>
<th>24V Vehicle Input</th>
<th>Solar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turn ON BELOW</td>
<td>15.5V</td>
<td>32V</td>
<td></td>
</tr>
<tr>
<td>Turn OFF instantly ABOVE</td>
<td>16.0V</td>
<td>32.5V</td>
<td>33.0V</td>
</tr>
<tr>
<td>Turn OFF after 20s ABOVE</td>
<td>15.6V</td>
<td>32.1V</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Output Under voltage shutdown *1

- Shutdown if Output Battery < 4V

*1 Tested every 100 Seconds.  

There is a maximum 20 second delay before the charger will produce an output any time a source is introduced into the system, this allows the unit to provide optimum input sharing and effective battery isolation.

1.5 Error Codes

In the event of a fault with the unit installation, either battery or solar panel, ALL the LEDs on the unit will flash to indicate the fault type. Flashing sequences are described in the table below.

<table>
<thead>
<tr>
<th>LED State</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 flash (1 flash followed by 3.5 second off)</td>
<td>Internal Hardware Fault</td>
</tr>
<tr>
<td>2 flash (2 flash followed by 3.5 second off)</td>
<td>Unit under temp fault</td>
</tr>
<tr>
<td>3 flash (3 flash followed by 3.5 second off)</td>
<td>Unit over temp fault</td>
</tr>
<tr>
<td>4 flash (4 flash followed by 3.5 second off)</td>
<td>Output Battery Fault (Volts too high)</td>
</tr>
<tr>
<td>5 flash (5 flash followed by 3.5 second off)</td>
<td>Input under voltage (Battery)*3</td>
</tr>
<tr>
<td>6 flash (6 flash followed by 3.5 second off)</td>
<td>Input over voltage (Battery or Solar panel)</td>
</tr>
</tbody>
</table>

*3 If the unit is being supplied power from the vehicle and solar simultaneously and ONE of those sources is undervoltage, that specific source LED will flash 5 times. If the unit is being supplied power from the vehicle and solar with BOTH sources undervoltage, OR if the unit is being supplied power from one input only and that input is undervoltage, ALL LED’s will flash 5 times.
1 PRODUCT FUNCTION

1.6 Battery Test Mode

The unit features a battery test mode which occurs every 100 seconds. The test mode is designed to both test that the input conditions are still met and check for the presence of a battery on the output of the unit. This feature is designed to protect the vehicle battery from over discharge and protect the vehicle and wiring in the event of damage to the output connection. During low output current situations (when in Float mode for example) this battery test may take up to 60 seconds to complete.

2 INSTALLATION

2.1 Install Location

The charger is suitable for mounting in the cabin of the vehicle, along a chassis rail or in the engine bay (ensure the unit does not become covered by a build up of mud or other). If mounting in an engine bay, locate the unit away from high temperature areas for maximum performance. Choose locations such as on the inner guard, behind a headlight or behind the grille to one side of the radiator. The unit will operate optimally below 55°C/130°F with good airflow. At higher temperatures the unit will degrade output current up to 80°C/175°F at which point the unit will turn OFF.

It is important to ensure the charger is mounted as close as possible to the battery being charged (auxiliary battery). Certain batteries are better suited to each of these types of installations so it is important to select the correct battery type. For more information consult your battery manufacturer’s specifications. Lithium type (LiFePO₄) batteries are not suitable for engine bay installations. Refer to Figure 1.2.1 for selecting the best Charge Profile for your installation.

The charger should be mounted in any orientation (so that the front decal is visible) using the 4 mounting tabs provided on the heatsink (refer Figure 2.1.1) using suitably sized screws.

Figure 2.1.1 - Mounting the Charger
2.2 Charge Profile Selection (ORANGE Wire)

The ORANGE wire is used to select the Maximum output voltage. This is achieved by connecting in the following way:

To select Profile A leave the ORANGE wire disconnected. This will set the Maximum voltage to 14.6V.

To select Profile B connect the ORANGE wire to Common Ground. This will set the Maximum voltage to 15.0V.

To select Profile C connect the ORANGE wire to the RED wire (Input source positive). This will set the Maximum voltage to 15.3V.

To select the Li Profile connect the ORANGE wire to the GREEN wire (LED output). This will set the charger to Lithium mode.

⚠️ CAUTION ⚠️

Check the manufacturer’s data for your battery and ensure that the Maximum voltage of the profile you select does not exceed the manufacturer’s recommended maximum charging voltage. If the Maximum voltage is too high for your battery type, please select another charging profile.

---

**Profile A**

Not Connected

**Profile B**

Orange Wire

**Profile C**

Orange Wire, Red Wire, Input Source Positive

**Profile Li**

Optional LED

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Figure 2.2.1 - Charge Profile Selection
2 INSTALLATION

2.3 Input Trigger Settings (BLUE Wire)

The BLUE wire is used to switch the vehicle input turn ON trigger mode between:

- **Standard trigger** *(for fixed voltage or temperature compensating alternators)*
- **Low Voltage trigger** *(for variable voltage alternators)*

![Setting the Input Trigger Settings](image)

<table>
<thead>
<tr>
<th>Input Mode</th>
<th>Blue Wire Connection</th>
<th>12V Mode</th>
<th>24V Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>ON above</td>
<td>OFF below</td>
</tr>
<tr>
<td>Standard</td>
<td>Not Connected</td>
<td>13.2V</td>
<td>12.7V</td>
</tr>
<tr>
<td>Low Voltage</td>
<td>Vehicle Ignition</td>
<td>12.0V</td>
<td>11.9V</td>
</tr>
</tbody>
</table>

2.4 Cable sizing

Below is a table outlining the required cable size for a given cable install length. Please refer to this table for Vehicle Input, Solar Input, Ground and Battery Output cable thickness requirements. Always choose a wire cross sectional area equal to or greater than what is specified below.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Cable Install Length (m)</th>
<th>Recommended Wire Cross Section (mm²)</th>
<th>Closest (BAE, B&amp;S, AWG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCDC1225D</td>
<td>1 - 5</td>
<td>7.71</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>5 - 9</td>
<td>13.56</td>
<td>6</td>
</tr>
<tr>
<td>BCDC1240D</td>
<td>1 - 5</td>
<td>13.56</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>5 - 9</td>
<td>20.28</td>
<td>4</td>
</tr>
</tbody>
</table>

⚠️ CAUTION

Cable and fuse sizes are specified by various codes and standards which depend on the type of vehicle the Battery Charger is installed into. Selecting the wrong cable or fuse size could result in harm to the installer or user and/or damage to the Battery Charger 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 Battery Charger.
2.5 Wiring

The heavy gauge wires on the BCDC1225D and BCDC1240D unit carry peak currents of up to 35 and 50 Amps respectively, and it is important to make a good, low resistance, electrical connection that will not degrade over time. Failure to make a good, reliable contact may result in breakdown of the wire insulation and cause a short circuit, or worst case a fire. We recommend that this activity be undertaken by an appropriately trained person.

REDARC recommends using a soldered butt splice crimp connection that is covered with heatshrink. See Figure 2.5.1. REDARC does not recommend using standard red/blue/yellow blade connections as they are not rated for either the current required or gauge of wire supplied on the unit.

Crimping provides good mechanical connection, soldering provides a long lasting electrical connection and forming of the heatshrink will prevent any shorting/contact with your vehicle chassis.

Crimp both wires to the butt splice using single-indent type crimpers. Fold the cable over before inserting into the butt-splice as required. Single-indent crimpers should also be used on any lugs used.

Solder the wires to the butt splice. Ensure that a good connection is made. Keep heatshrink away until after soldering is complete and has cooled.

Figure 2.5.1 - Ensuring a good wiring connection

2.6 Fusing

REDARC recommend using MIDI style bolt down fuses as they ensure a low resistance connection. The REDARC FK40 and FK60 fuse kits are recommended.

Blade type fuses are not recommended as they can result in a high resistance connection which causes excess heat and may damage the fuse holder and/or the wiring.

Self-resetting circuit breakers are not recommended as they may trip prematurely due to the heat generated by the current flowing through the wires.

A single fuse and holder setup from the Fuse Kits available from REDARC. Part number FK40 (40A) or FK60 (60A).
2 INSTALLATION

2.7 Typical Setup

NOTE: BCDC1225D/BCDC1240D will only accept input from an *unregulated* solar panel.

*Fuse Ratings as per table on Page 2
There are no LEDs ON at all…
This indicates that there is no battery connected to the output (BROWN wire) or that battery is not at a suitable voltage level to be charged AND the input (YELLOW/RED wire) of the charger is not connected.
1. Check the Auxiliary battery is above 4.2V
2. Check all wiring to the charger and battery, particularly the Ground (BLACK wire).
3. Check fuses are intact and properly connected.
If the problem is still evident please contact your local Auto-Electrician.

The ‘Charge Profile’ LED is flashing…
This indicates that either Output or Input is not valid. Specifically, an Auxiliary battery, at a suitable voltage level to be charged, is connected to the output of the charger however there is currently no valid charging source OR a valid charging source is available but the Auxiliary battery is not at a suitable voltage level to be charged or is not connected.
1. Check that the Vehicle (RED wire) and/or Solar (YELLOW wire) are electrically connected
   a. The Vehicle (RED wire) should connect directly to the Vehicle battery positive terminal via an adequately rated fuse
   b. The Solar (YELLOW wire) should connect directly to the Solar Panel positive terminal/wire.
2. Check that the Ground (BLACK wire) is connected to the Auxiliary battery and Chassis Earth and/or the Solar Panel negative terminal/wire.
3. Check the Auxiliary battery is above 4.2V
4. Check all wiring to the Auxiliary battery, particularly the Ground (BLACK wire).
5. Check fuses are intact and properly connected.
If the problem is still evident please see the relevant points below.

I have Solar connected but the ‘Solar’ LED is OFF…
This indicates that the required turn ON conditions for this source have not been met. Either the Open Circuit Voltage at the YELLOW wire on the charger is below 9V or there is not sufficient power available from the Solar Panel (due to poor light conditions or a faulty panel).
1. Is the sun out? No or low sunlight levels mean low power to your solar panels.
2. Check that the solar panel is not being shaded (by a tree etc.)
3. Check the voltage at the YELLOW wire, as close as possible to the charger, is above 9V.
4. Check all wiring to the Solar Panel, particularly the Ground (BLACK wire).
5. Ensure you have an unregulated solar panel.
Allow up to 2 minutes after any change for the unit to recognise the input, if the problem is still evident please contact your local Auto-Electrician.

The BCDC is connected to the ‘Vehicle’ but the Vehicle LED is OFF…
This indicates that the required turn ON conditions for this source have not been met OR the Solar input is supplying the full input power requirements of the charger. With the BLUE wire left unconnected, the voltage at the RED wire must be above 13.2V for a 12V installation or above 26.4V for a 24V installation. With the BLUE wire connected to Ignition, Ignition must be on and the voltage at the RED wire must be above 12.0V for a 12V installation or above 24.0V for a 24V installation.
1. Check that the vehicle is running.
2. Check the voltage on the RED wire is above the required turn ON threshold for your installation.
   (See section 1.4 on page 6)
3. Check all wiring to the Vehicle battery, particularly the Ground (BLACK wire).
If the problem is still evident please contact your local Auto-Electrician.
Q The BCDC Dual Input turns ON at 13.2V(12V) and OFF at 12.7V(11.9V), but you say it operates down to 9V, explain?
A The BCDC Dual Input will turn OFF for a split second every 100 seconds to measure the unloaded voltage at the battery. When the BCDC Dual Input turns off it is not drawing any load from the start battery, no load means that there is no voltage drop over the cable run. This allows the BCDC Dual Input to measure the actual battery voltage, or the voltage at the battery. If this actual battery voltage is below 12.7V(11.9V), the BCDC Dual Input will turn OFF. At any other time during the charging process, if the voltage at the BCDC Dual Input drops below 9V the BCDC Dual Input will turn OFF.

Q How does the BCDC Dual Input charge an Auxiliary battery at 14V when it only gets 9V in?
A The BCDC Dual Input can act as both a reducer and a booster, so it can operate from a voltage of above, equal to or below the desired output voltage. The unit is also microprocessor controlled allowing it to output a Redarc proprietary charging algorithm independent of the input. This allows the unit to charge specific to the battery type even if the input voltage is low due to voltage drop.

Q Where should I mount the BCDC Dual Input Unit?
A The BCDC Dual Input should be mounted as close as possible to the battery being charged (generally called the Auxiliary or House battery). If the Auxiliary battery is located under the bonnet, pick a location for the BCDC Dual Input that is close to the battery and away from any direct engine heat. If the BCDC Dual Input is to be mounted into a Caravan or Camper, near or in the battery compartment is generally the best position. It is also a good idea to mount the BCDC Dual Input to a metal surface if possible to ensure optimal heat dissipation, though this is not crucial.

Q What does the charger do if the temperature around it rises above its operating temperature?
A As the temperature of the BCDC Dual Input rises above a certain level the current capacity of the output is decreased gradually in order protect both the battery and the BCDC Dual Input unit.

Q If I use the BCDC Dual Input to charge my auxiliary battery do I still need to install a battery isolator?
A The BCDC Dual Input incorporates the functionality of a battery isolator, it will turn ON and start charging when it senses that the vehicle has started and similarly it will turn OFF when the vehicle is turned OFF.

Q I've heard that you shouldn't charge 2 batteries of different chemistries from the same source, will I have any problems charging my AGM or Gel auxiliary battery from my Lead Acid start battery?
A The BCDC Dual Input does not 'link' the batteries together like a battery isolator does, it is a DC-DC battery charger. The output from the unit is tailored specifically to the selected output battery type, and therefore allows the optimal charging of the auxiliary battery, no matter what chemistry your start battery is.

Q My BCDC Dual Input is setup for 12V Alternator input but will not start when the vehicle is turned On, I've followed the trouble shooting guide and the setup is fine, what's the problem?
A The most likely cause of this issue is that the BCDC Dual Input is somehow ‘stuck’ in 24V mode. Try removing the ‘Vehicle’ (RED) wire and reconnecting it. If the problem still exists please contact Redarc Electronics.

Q Can the BCDC Dual Input charge from Solar and Vehicle power at the same time?
A Yes. The BCDC Dual Input will always attempt to supply power from the Solar source first (when available) and will supplement this input with power from the Vehicle source (when available).

Q Can the BCDC Dual Input operate with only a single power source input?
A Yes. The BCDC Dual Input will operate as a stand-alone solar regulator when only Solar (YELLOW wire) is connected or it will operate as a DC charger when only the Vehicle (RED wire) is connected.
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 the Purchaser's rights conferred by the Australian Consumer Law on the Purchaser, Redarc will, in exercise of its sole discretion, either:
   1. repair the defective Product;
   2. replace the defective Product; or
   3. refund to the Purchaser 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 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:
   1. details of the relevant expenses incurred by the Purchaser; and
   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:
   1. normal wear and tear or exposure to weather conditions over time;
   2. accident, misuse, abuse, negligence, vandalism, alteration or modification;
   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;
   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;
   5. repairs to the Product that are not strictly in accordance with Redarc's instructions;
   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;
   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;
   8. use other than for any reasonable purpose for which the Product was manufactured;
   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 for clause 21. Such claims must include the following:
   1. details of the alleged defect or fault and the circumstances surrounding the defect or fault;
   2. evidence of the claim, including photographs of the Product (where the subject of the claim is capable of being photographed);
   3. the serial number of the Product, specified on the label affixed to the Product; and
   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.

Redarc Electronics Pty Ltd at 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").
Free technical assistance!

For product and technical support contact your regional distributor, call our head office between 8:00am to 5:30pm Australian Central Standard Time, Monday to Friday or send an email using the regional specific details outlined below.

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For specific USA Warranty terms please visit...

www.redarcelectronics.com

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