

## TWO YEAR WARRANTY

REDARC Electronics warrants to the original purchaser that the product(s) on the reverse side of this sheet ("Product") will be free, under normal use and maintenance, from defects in material and workmanship for a period of TWO YEARS from the date of purchase, subject to the conditions shown below.

### 1. Warranty

Unless otherwise stated in this warranty, Redarc Electronics will at its sole discretion either replace or repair any of the Product that is defective in material or workmanship within the abovementioned period without charge to the original purchaser.

### 2. Other Warranty

Subject to any terms implied by law, this warranty contains the whole of the Redarc Electronics' obligations and any distributor and the agents, officers and employees of such distributor and of Redarc Electronics are not authorised to vary or extend the terms of the warranty. The benefits conferred by this warranty are in addition to the conditions and warranties implied by applicable legislation conferring rights upon consumers, which apply only to the extent to which they may not by law be excluded.

### 3. Exclusions

This warranty shall not apply to, or include, any of the following:

- 3.1 Any defect or failure due to accident, misuse, abuse, movement of the Product to a new site, negligence, non-observance of any of the instructions supplied with the Product including the instructions on the reverse side of this sheet ("Operating Instructions") or local regulations on the part of any user, choice of location, improper installation, configuration or connection, or faulty power supply.
- 3.2 If the Product is installed, repaired or serviced by a person who is not a qualified auto electrician or electronics technician, or if non-approved parts have been fitted.
- 3.3 Failure to obtain proper maintenance for the Product or any associated equipment or machinery.
- 3.4 Failure to pay for the products in full or comply with Redarc Electronics' Trading Terms.
- 3.5 If the Product is used other than for any reasonable purpose for which it was manufactured, or is used in a way not specified by Redarc Electronics.
- 3.6 If the original purchaser sells, leases or otherwise parts with possession of the Product.
- 3.7 Deterioration due to normal use and exposure, including abnormal environmental conditions such as lightning strike, flood and extreme heat.
- 3.8 Any freight, packing and insurance expenses relating to transportation of the Product.
- 3.9 Any expenses relating to installation and/or removal of the Product.
- 3.10 Any damage, indirect or incidental, of whatever nature.

### 4. Limitations

4.1 Redarc Electronics is not liable for any consequential, indirect or accidental loss or damage or for any service not expressly provided herein (including without limitation liability for any loss or damage caused by a fault in the Product or its external wiring connections) and the liability of Redarc Electronics under this warranty is limited to the repair or replacement of defective material or workmanship by a qualified auto electrician or electronics technician, provided such person and work is approved by Redarc prior to commencement. Subject to **clause 2**, Redarc Electronics is hereby excluded to the maximum extent permitted by law from all other liability in respect of the Product.

4.2 While Redarc Electronics warrants, where applicable, that the Product is free from defects in materials and workmanship under normal use at the time of delivery, Redarc Electronics does not warrant that the Product will meet any user specific requirements or that the operation of the Product will be uninterrupted or error-free.

### 5. Owner's Responsibilities

- 5.1 Maintenance of the Product and associated equipment and/or machinery is the responsibility of the owner. The owner must retain evidence that proper maintenance has been performed on the Product by Redarc Electronics or a qualified auto electrician or electronics technician. Claims made during the warranty term will not be accepted if resulting from lack of maintenance rather than faulty material or workmanship.
- 5.2 The owner must operate the Product in accordance with all of the Operating Instructions.
- 5.3 Upon discovery of a fault the owner must return the Product to the distributor with full details of the nature of the fault. Removal of the Product must be done by a qualified auto electrician or electronics technician to ensure that the warranty remains valid. A written report describing the circumstances of failure must accompany the returned Product with proof of purchase which clearly shows the date of such purchase by the original purchaser.
- 5.4 If the Product is found to be working satisfactorily on return to Redarc Electronics a reasonable charge will be made for the cost of testing, packing and freight. The Product will be returned on receipt of the amount charged.

### FREE TECHNICAL ASSISTANCE

# REDARC

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SAI Global



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ISO 9001:2000  
SAI Global

## CE Series 24V-12V Charge Equalisers.

### FUNCTION

The Charge Equaliser operates in a two battery 24V DC negative earth system. The Output Voltage of the Charge Equaliser is regulated to half the Input Voltage. 12V power is available from the lower battery in a 24V system via the centre tap (bridging link). The Charge Equaliser ensures that the voltage across the lower 12V battery (i.e. the battery whose negative is connected to ground) is equalised to the voltage across the upper 12V battery in the 24V bank.

### APPLICATION

Because of their high peak current capability and fast transient response, REDARC Charge Equalisers are ideally suited to loads requiring a safe, clean and stable 12V supply (Electronics and communication equipment). They are ideal for variable current loads such as winches, motors, lamps, fridges etc. because the 12V supply is taken direct from the lower 12V battery.

### PROTECTION

The charge equaliser will not be overloaded because of inbuilt fast responding current limiting. The charge equalisers' electronic components are protected internally against the large positive and negative transient voltages usually present in mobile electrical systems. When correctly connected there is NO POSSIBILITY of 24V being applied to the load (equipment), because the 12V equipment is supplied by the 12V battery.

### PRECAUTIONS

1. During installation of the Charge Equaliser ensure that the **12V terminal is connected last and disconnected first**. A small spark is normal whilst connecting.
2. A **sound earth connection** is essential (See wiring diagram for fitting the Charge Equaliser).
3. If jump starting the vehicle, the CE **must be isolated** by removal of the fuses to prevent damage.
4. Avoid direct steam/pressure cleaning of the unit as the chemicals used in the fluids can be corrosive.
5. **A fuse must be fitted between the 12V battery terminal and any 12V equipment.**
6. **If fitted to a vehicle with an isolator switch on the negative earth side** the 30, 40 and 60 amp Charge Equalisers' case must then be **insulated from chassis** and the earth wire of the CE returned to the negative pole of the 12V battery.
7. Do not use in conjunction with a Pulsing Desulphator.

### WIRING (Also refer to installation drawing over the page)

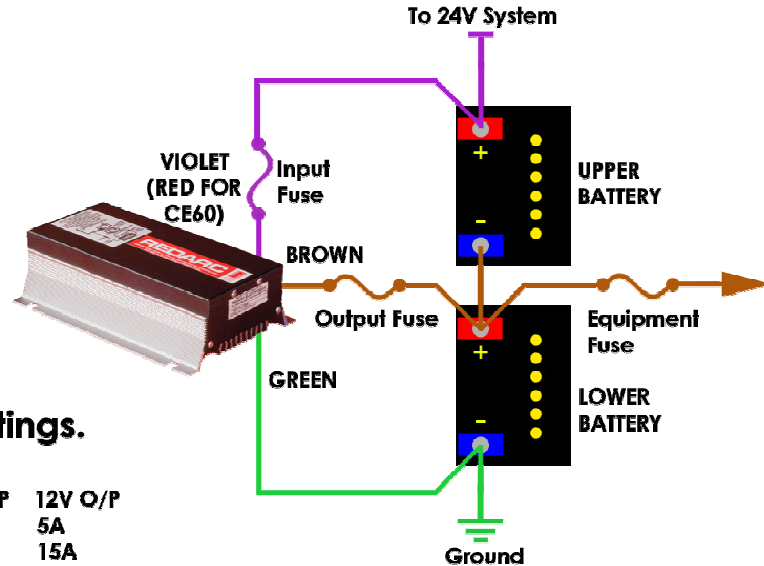
For maximum efficiency the Charge Equaliser must be fitted as close as practical to the lower battery. Fuses (**not provided**) or circuit breakers **MUST** be fitted to the input and output wires as per the above instructions. The fuses are essential to *ensure the safety* of the vehicle's wiring in the event of a short circuit. Connection of the violet wire to 24 volt can be made in two ways;

- If a permanent connection is required, the VIOLET (RED on CE60) wire can be connected to the 24V battery terminal. In this case there is a small standby current and as with any permanent electrical load the fuse should be removed if the vehicle is to be left un-used for extended periods.
- If the Charge Equaliser is to be turned off when the vehicle is not in use or if there is an isolator switch on the positive 24V side, the 24V feed to the violet wire **must** be via a relay operated by the ignition switch. Failure to use a relay will allow the 12V battery to discharge back via the Charge Equaliser to any other equipment connected to the 24V system.
- An incorrect 24V output reading will be recorded if checking the output without a load attached. Refer to in-vehicle testing.
- It is recommended that the case be insulated if negative isolation of the 24V battery bank is used.

FREE TECHNICAL ASSISTANCE, contact Redarc Electronics  
Ph (08) 8322 4848, Fax (08) 8387 2889  
or Email [power@redarc.com.au](mailto:power@redarc.com.au)

Specifications are subject to change without notification.

## Charge Equaliser basic wiring.



### CE Fuse Ratings.

|      | 24V I/P | 12V O/P |
|------|---------|---------|
| CE3  | 5A      | 5A      |
| CE10 | 15A     | 15A     |
| CE20 | 20A     | 20A     |
| CE30 | 35A     | 50A     |
| CE40 | 50A     | 50A     |
| CE60 | 60A     | 80A     |

**Fuses and Circuit breakers are not factory supplied.  
Fuses may be used, but self-reset circuit breakers are recommended.**

### Note:

To prevent serious damage to the CE, care must be taken to avoid the following:

Swapping 24V I/P and ground connections  
Swapping 24V I/P and 12V O/P connections  
Swapping 12V O/P and ground connections

Damage will also occur if:

Any large load is connected to the 24V system while an isolator switch is open. This applies to positive or negative isolator switches in the 24V battery bank.  
(To protect against this fit an ignition relay or SBI24 solenoid)

The CE is charging an auxiliary 12V battery and any battery terminal in the 24V battery bank comes loose while 24V load is applied.

## Specifications

| MODEL              | CE3            | CE10           | CE20           | CE30           | CE40           | CE60           |
|--------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Supply Range       | 19-33VDC       | 19-33VDC       | 19-33VDC       | 19-33VDC       | 19-33VDC       | 19-33VDC       |
| O/P Current Rating | 3 Amps         | 10 Amps        | 20 Amps        | 30 Amps        | 40 Amps        | 60 Amps        |
| Operating Temp.    | -10°C to +50°C | -10°C to +50°C | -10°C to +50°C | -10°C to +50°C | -10°C to +50°C | -10°C to +50°C |
| Dimensions         | 70x135x75mm    | 156x135x75mm   | 200x135x60mm   | 300x135x75mm   | 300x135x75mm   | 450x135x75mm   |
| Weight             | 400g           | 800g           | 1kg            | 1.5kg          | 1.5kg          | 3.5kg          |
| Warranty           | 2 years        | 2 years        | 2 years        | 2 years        | 2 years        | 2 years        |

## Charge Equaliser in-vehicle testing

Equipment needed: Multimeter or voltmeter.  
5W/24V test lamp with connection leads/clips.

- Leave input (VIOLET) wire and earth (GREEN) wire connected.
- Disconnect output (BROWN) wire from battery. (Do not allow BROWN wire to contact chassis/earth).
- Connect 5W test lamp between BROWN wire and vehicle chassis/earth.
- The lamp should light up.
- Using a voltmeter, measure voltage on the BROWN wire. (Voltmeter positive wire to BROWN wire, negative wire to chassis/earth)
- Measure voltage on the input (VIOLET) wire 24V connection. (Voltmeter positive to VIOLET wire connection, negative to chassis/earth):
- Voltage on BROWN wire should be half the voltage on the VIOLET wire (within 0.25V).

### Example 1.

With Motor running, if VIOLET wire measures 28V, BROWN wire should be 14V (+/- 0.25V), i.e. BROWN wire voltage should be in range 13.75V to 14.25V.

### Example 2.

With Motor not running, if VIOLET wire measures 24V, BROWN wire should be 12V (+/- .25V), i.e. BROWN wire voltage should be in range 11.75V to 12.25V.

If these voltages are OK, it indicates the Charge Equaliser is operating correctly.

If 12V battery does not maintain the correct voltage, check that all connections are sound. If this is all OK, measure the 12V current draws and check that the Charge Equaliser is suitably rated.