

## TWO YEAR WARRANTY

This Two Year Warranty is subject to and shall not derogate from any mandatory statutory provisions to the contrary. In particular, this Two Year Warranty does not exclude, restrict or modify any condition or warranty that cannot be excluded by applicable legislation, including without limitation consumer protection legislation.

Redarc Electronics Pty Ltd (trading as Redarc) warrants to the original purchaser of the product(s) on the reverse side of this sheet ("Product") that are purchased from an authorised distributor or reseller ("Purchaser"), that the Product will be free, under normal use and maintenance, from defects in materials and workmanship affecting normal use for a period of TWO YEARS from the date of purchase ("Warranty Period"), subject to the conditions set out below ("Warranty").

1. **Warranty**
  - 1.1 Unless otherwise stated in this Warranty, Redarc will at its sole discretion either replace or repair a Product that is defective in materials or workmanship within the Warranty Period without charge to the Purchaser. To the extent permitted by law, Redarc's determination of the cause of any defect will be conclusive.
  - 1.2 While Redarc warrants, where applicable, that the Product is free from defects in materials and workmanship under normal use at the time of delivery, Redarc 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.
  - 1.3 To the extent permitted by law, this Warranty contains the whole of the Redarc's obligations and any distributor and the agents, officers and employees of such distributor and of Redarc are not authorised to vary or extend the terms of this Warranty.
  - 1.4 Redarc's Trading Terms contain important information about Redarc's liability for the Product. In particular these are set out at paragraphs 10, 11 and 13 of Redarc's Trading Terms.
  - 1.5 The benefit of this Warranty is personal to the Purchaser and is not transferable.
2. **Warranty void**  
Any of the following circumstances will render this Warranty void:
  - 2.1 Failure to ensure proper maintenance of the Product or any associated equipment or machinery;
  - 2.2 Failure to pay for the Product in full or comply with Redarc's Trading Terms;
  - 2.3 If the Purchaser sells, leases or otherwise parts with possession of the Product;
  - 2.4 If the Purchaser moves the Product to a new site;
3. **Deemed second hand sales**  
The sale of the Product via an online auction (such as eBay), 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 second hand sale and will render this Warranty void, in accordance with paragraph 2.3 of this Warranty, as Redarc has no control over the storage, handling, quality or safety of products sold by such persons.
4. **Exclusions**  
This Warranty shall not apply to, or include, any of the following:
  - 4.1 Any defect, damage, fault, failure or malfunction 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, faulty power supply, normal wear and tear or any occurrence outside of Redarc's control;
  - 4.2 A Product that is not installed or maintained strictly in accordance with the Operating Instructions;
  - 4.3 A Product that 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;
  - 4.4 A Product that is used other than for any reasonable purpose for which it was manufactured, or is used in a way not specified by Redarc;
  - 4.5 Deterioration due to normal use and exposure, including abnormal environmental conditions such as lightning strike, flood and extreme heat;
  - 4.6 Any freight, packing and insurance expenses relating to transportation of the Product;
  - 4.7 Any expenses relating to installation and/or removal of the Product; and
  - 4.8 Any indirect or incidental damage of whatever nature.
5. **Purchaser's obligations**
  - 5.1 The Purchaser must retain proof of purchase documentation for the Product.
  - 5.2 Installation and maintenance of the Product and associated equipment and/or machinery is the responsibility of the Purchaser. The Purchaser must retain evidence that the Product was installed, and that proper maintenance has been performed on the Product, by Redarc or a qualified auto electrician or electronics technician, in accordance with the Operating Instructions.
  - 5.3 The Purchaser must operate the Product in accordance with all of the Operating Instructions.
  - 5.4 Upon discovery of a defect the Purchaser must return the Product to the distributor with full details of the nature of the defect. A written report describing the circumstances of failure must accompany the returned Product with proof of purchase which clearly shows the date and the place of such purchase by the Purchaser.
  - 5.5 Removal of the Product must be effected by a qualified auto electrician or electronics technician to ensure that the Warranty remains valid.
  - 5.6 The Purchaser must prepay shipping and transportation charges, and insure the shipment or accept the risk of loss or damage during such shipment and transportation.
  - 5.7 Redarc will ship the repaired or replacement Product to the Purchaser freight prepaid.
  - 5.8 If the Product is found to be working satisfactorily on return to Redarc, the Purchaser must pay Redarc's reasonable costs of testing and inspecting the Product in addition to shipping and transportation charges. The Product will be returned to the Purchaser on receipt of the amount charged.

### FREE TECHNICAL ASSISTANCE

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## 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.

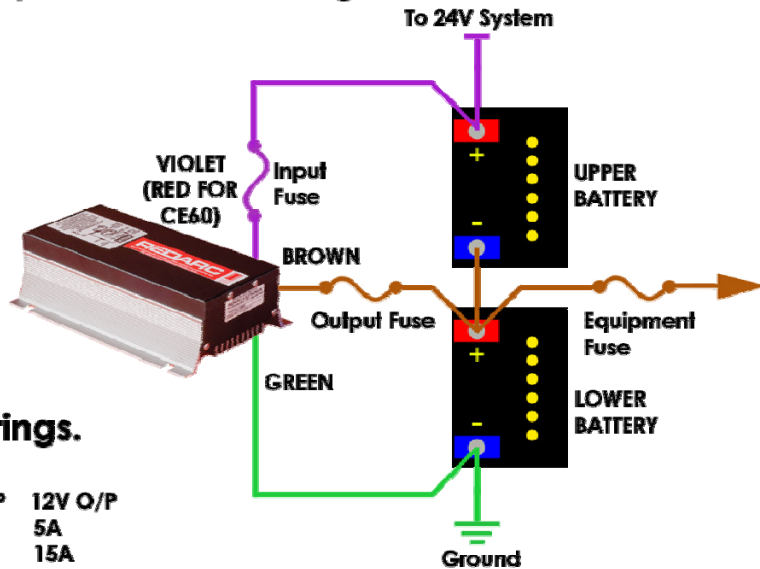
### WIRING (Also refer to installation drawing over the page)

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	70x135x75 mm	156x135x75 mm	200x135x60 mm	300x135x75 mm	300x135x75 mm	450x135x75 mm
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.