

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 at the Redarc Trust trading as Redarc Electronics ("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

REDARC

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N3533

Smart Start[®] SBI Dual Battery Isolator Solenoid

Basic Operation The Smart Start[®] SBI is a microprocessor controlled Smart Battery Isolator. The Smart Start[®] SBI is designed specifically for use in multi battery applications as a solenoid priority system to protect the start battery from being excessively discharged by auxiliary loads, whilst still allowing the auxiliary battery to supply non essential loads. Put simply, once the start battery is charged by the alternator, the Smart Start[®] SBI will connect an auxiliary battery to the charge circuit. Similarly, if the start battery voltage drops too low, the Smart Start[®] SBI will disconnect any auxiliary batteries or loads to conserve charge in the start battery.

Power Saving Technology The Smart Start[®] SBI microprocessor uses Power Saving Technology to control the solenoid. This enables the Smart Start[®] SBI to run cooler and use less energy.

Fault Recognition If there is a fault during operation of the Smart Start[®] SBI, it will, through a series of flashes from the LED, indicate the fault type.

Protector Caps The Smart Start[®] SBI comes with protector caps for the battery terminals, to guard against accidental short circuits.



General Specifications

Part No.	Dimensions (mm)	Weight(kg)	Voltage System	Off Volts	On Volts	Max Cont. A	Max Inrush A
SBI12	75L x 63W x 80H	0.2	12 Volt	12.7V	13.2V	100 Amps	400 Amps
SBI24	75L x 63W x 80H	0.2	24 Volt	25.4V	26.4V	100 Amps	400 Amps
SBI212	90 L x 95 W x 100 H	0.6	12 Volt	12.7V	13.2V	200 Amps	600 Amps
SBI224	90 L x 95 W x 100 H	0.6	24 Volt	25.4V	26.4V	200 Amps	600 Amps

FREE TECHNICAL ASSISTANCE, contact Redarc Electronics

Ph (08) 8322 4848, Fax (08) 8387 2889

or Email power@redarc.com.au

Specifications are subject to change without notification.

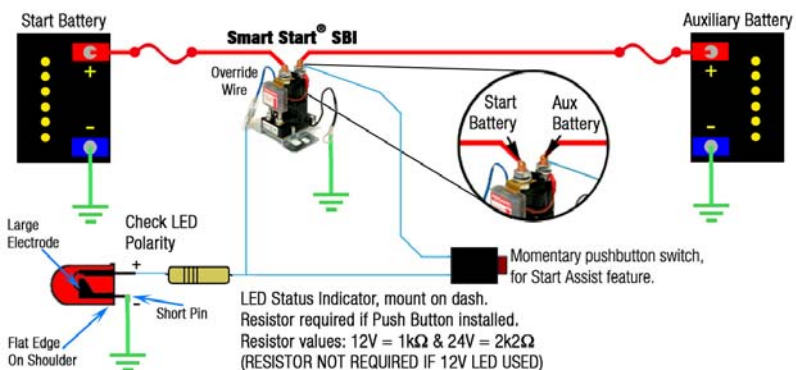
Standard Installation Instructions

- Mount the Smart Start® SBI in a convenient location near the start battery bank. Do not mount in direct engine heat.
- We recommend installing a fuse close to and connected to the positive terminal of both batteries. Refer to the chart below for suggested ratings.
- Connect one end of cable of the correct size to the start battery terminal of the Smart Start® SBI. Refer to the chart below for suggested cable size.
- Connect the opposite end of the cable installed in step #3 to the other end of the start battery positive (+) fuse.
- Connect one end of a new cable of correct size to the auxiliary battery terminal of the Smart Start® SBI. Refer to the chart below for suggested cable size.
- Connect the opposite end of the cable installed in step #5 to the other end of the auxiliary battery positive (+) fuse.
- Make sure the auxiliary battery is properly grounded to the vehicle chassis.
- Ground Connection.** Connect the Smart Start® SBI ground terminal to chassis ground. Remove any paint to ensure a good ground connection. **Note:** A good ground will ensure correct switching voltage.
- LED Connections (optional).** We suggest installing an external LED indicator on the dashboard of the vehicle. Connect a wire from the "Override" terminal of the Smart Start® SBI to the positive end of an indicator LED (15mA limited current draw) or LED/resistor combination as specified in diagram **See Standard Setup Below.** **Note:** a resistor must be used if "Override" switch is connected. Connect the negative end of the LED to the chassis ground. This lamp will illuminate when the Smart Start® SBI is activated.
- Start Assist Feature (optional).** We suggest installing the Start Assist switch on the dashboard of the vehicle. Connect a wire from the "Override" terminal of the Smart Start® SBI to a momentary push button switch. Connect the opposite end of the momentary push button switch to the auxiliary battery supply. It is recommended to fuse this wire. To manually operate the Smart Start® SBI, hold the momentary push button switch and the Smart Start® SBI will manually operate until the switch is released.
- Checking the Operation:** The Smart Start® SBI should now be operational. Start the vehicle or apply a charge to the main battery. Once the main battery voltage rises the Smart Start® SBI will activate, you will hear the solenoid click and see the LED illuminate. Now turn off the vehicle or remove the charge to the main battery. The Smart Start® SBI will disconnect the auxiliary battery once the voltage on the main battery drops, you will hear the solenoid click and the LED will go out. **Note:** The amount of time it takes for the battery voltage to drop low enough for the solenoid to turn off will vary due to battery condition, age and state of charge. (For a new, fully charged battery, it may take days). **Note:** See table on first page for specific voltage levels.



WARNING! Do not make any connections to the control terminals found on the front of the unit.

Standard Setup



CABLE SIZE & FUSE CHART

Model	Wire Length	Start Feature with Push button Override		No Override	
		Fuse	Wire	Fuse	Wire
SBI12/ SBI24	Up to 3m	100 Amps	19mm ² (4B&S)	60 Amps	8mm ² (8B&S)
	3m to 6m	100 Amps	32mm ² (2B&S)	60 Amps	13mm ² (6B&S)
SBI212/ SBI224	Up to 3m	200 Amps	32mm ² (2B&S)	120 Amps	19mm ² (4B&S)
	3m to 6m	200 Amps	40mm ² (1B&S)	120 Amps	25mm ² (3B&S)

Cable and Fuse sizes are suggested only. Circuit breakers may be used instead of fuses.

Frequently Asked Questions

Question: Is the unit protected against voltage spikes?

Answer: Yes, the Smart Start® SBI incorporates a number of spike protection components specifically designed to reduce the risk of damaging the unit. The Smart Start® SBI is also designed to prevent any spikes generated by the solenoid coil from affecting any vehicle equipment.

Question: What does the red LED indicate?

Answer: The red LED indicates the solenoid is activated and both batteries are connected together and therefore are both being charged simultaneously. A flashing red LED during operation indicates a fault. See **Fault Indication Below**.

Question: Can the voltage limits and time delay settings be changed?

Answer: Yes! Both upper and lower voltage limits & on and off times can be changed. However, this needs to be done at the time of manufacture and will incur a relatively minor cost.

Question: We are experiencing repetitive switching of our Smart Start® SBI. What could be causing this?

Answer: This can occur for one of two reasons. Firstly, switching a poorly charged second battery into the system loads the voltage at the Smart Start® SBI to below its lower voltage limit, which will cause the Smart Start® SBI to switch back off. Also voltage drop due to cable length (Smart Start® SBI mounted too far from start battery) can cause the voltage at the start terminal on the Smart Start® SBI to be lower than at the start battery, which can also cause the unit to switch off. Charge seen by the Smart Start® SBI will now rise again until the Smart Start® SBI switches back on. This switching will continue until the source of voltage drop is removed. On and Off Time delays are built into the product to avoid the solenoid contacts chattering in this scenario.

Question: Is the REDARC Smart Dual Battery Isolator suitable for use on modern vehicles fitted with the latest alternators using Smart electronics?

Answer: Yes! We have conducted field trials on our Smart Start® SBI with many consumers owning current model 4WDs, the feedback from these customers is all positive.

Question: Can I use the Smart Start® SBI to control a load (e.g. fridge) without using an auxiliary battery?

Answer: Yes. The voltage monitoring is done on the start battery side of the unit. If a load is connected on the auxiliary side instead of a battery, the unit will still operate when the start battery is charged, providing power to your load.

Question: Does the internal LED illuminate when I use the external override switch?

Answer: Yes.

Question: Can I use my Smart Start® SBI to winch off both batteries?

Answer: Yes. We recommend that the Smart Start® SBI be wired so it automatically connects both batteries when the winch is turned on, through use of the Start Assist feature on the override wire. We also recommend the use of our 200Amp Smart Start® SBI for this application.

Question: Can I use the Smart Start® SBI on a positive chassis vehicle?

Answer: Yes. Please contact REDARC for further information.

Question: Why does the LED stay on after the vehicle is turned off?

Answer: The LED stays on (indicating the Smart Start® is on & the batteries are linked) until the voltage drops to 12.7V (25.4V for SBI24). This can take a few minutes to many hours, depending on size & state of charge of the batteries as well as load on the batteries. To test the operation of the Smart Start®, with the engine turned off, turn the headlights on and the Smart Start® LED should go out, this may take a couple of minutes.

Fault Indication

Should a fault occur, the Smart Start® SBI is set to notify the operator of the fault. The LED will flash repeatedly with the following sequences:

CODE 1	2 Flashes	Over-Voltage
CODE 2	3 Flashes	Voltage Drop or Excessive Current Draw Fault

FAULT CODE 1: 2 FLASHES (Over-Voltage Detection)

If the batteries connected to either terminal of the Smart Start® SBI should rise above 15.5 volts (31 volts on a 24 volt system), the Smart Start® SBI will:

Disconnect, if connected, to isolate the source of over-voltage.

Flash the LED 2 times for 20 seconds, then reassess the fault condition, continuing until the fault is cleared.

This fault mode serves the purpose of protecting the good battery and informing the user.

This fault is caused by either a faulty charger or alternator.

FAULT CODE 2: 3 FLASHES (Voltage Drop / Excessive Current Draw)

If the Smart Start® SBI detects a voltage drop across its contacts of greater than 1 volt for more than ½ a second (caused by excessive current or a serious fault), then the unit will:

Immediately protect itself by disconnecting the auxiliary battery; and

Repetitively flash the LED 3 times for 20 seconds, then reassess the presence of a fault. This will continue until the fault is cleared.

This fault may be caused by excessive current or an internal fault in the Smart Start® SBI.