

CARTEK

AUTOMOTIVE ELECTRONICS

SOLID STATE BATTERY ISOLATOR

Xs



Specification

Size:	L = 60mm, W = 45mm.
Weight:	70g.
Operational Voltage:	8v - 18v.
Current consumption:	0mA OFF, 42mA ON.
Battery negative cranking current:	600A cranking, 2000A surge.
Storage temperature:	-40°C - +125°C
Operating temperature:	-20°C - +85°C
Battery negative terminal:	M8 stud.
Connector:	Binder, M9, IP67, 5 Pole.

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INTRODUCTION

The Cartek Solid State Battery Isolator is a fully electronic 'master/kill switch' system designed specifically for race car applications. This system contains no moving parts and the solid construction provides very high resistance to shock, vibration, water and dirt. Using the latest MOSFET technology this isolator provides safe, spark-free isolation of the vehicle's battery and engine electrics in accordance with FIA safety regulations.

PRINCIPLE OF OPERATION

All race and rally master switches must perform two functions, (1) disconnect the battery from all electrical circuits and (2) kill the engine. The Battery Isolator XS performs the battery disconnection function by breaking the connection between the NEGATIVE battery terminal and CHASSIS/EARTH. The Battery Isolator XS performs the engine kill function by outputting a signal which can be used to enable/disable ECUs or PDMs or used to control an engine relay. This signal outputs 12v when the Isolator is ON and switches to chassis/earth when the Isolator is OFF.

The electronic circuits are controlled by a microprocessor and incorporate various safety systems including over-temperature and over-current monitoring. The microprocessor also monitors the kill switch for instant activation while eliminating false triggering. The unit will instantly trigger into isolation mode when any of the internal or external switches are operated or on detection of any fault or break in the switch wiring circuits.

The Isolator also incorporates an LED which displays status as well as fault codes.

FITTING

The Isolator should be mounted directly to the vehicle's metal chassis close to the vehicle's battery but away from any high temperature sources. The Isolator should be mounted securely with unpainted screws/bolts to provide good electrical contact with the chassis. If mounting directly to the metal chassis is not possible then an 'earth' cable should be used to connect the metal casing of the Battery Isolator to a suitable point on the chassis or engine block.

When fitting or removing the Isolator always connect the battery last and disconnect first.

OPERATING INSTRUCTIONS

Once fully installed, the Isolator is switched ON by activating the internal ON-OFF switch. On activation the Isolator performs an initial system check during which the LED will flash twice. If any fault is detected then the Isolator will remain OFF and display the fault status via the LED with a sequence of flashes:

- 1 flash - External kill button pressed or circuit broken.
- 2 flashes - Maximum temperature exceeded.
- 8 flashes - Maximum current exceeded (Battery Negative).

Once the fault is remedied the Isolator can be reset by switching off the internal ON-OFF switch then switching on again.

ELECTRICAL CONNECTIONS

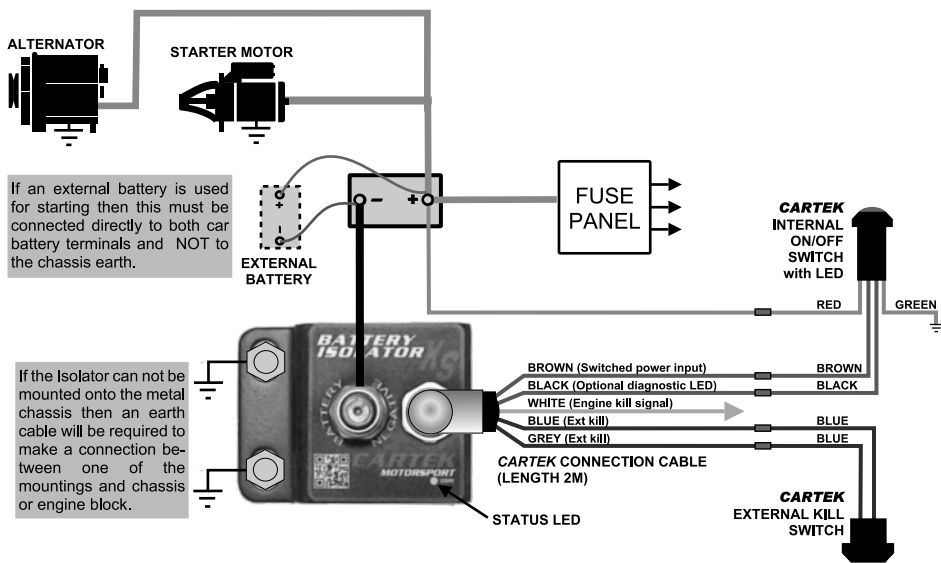
The large 8mm stud is used to carry the connection to the negative terminal of the vehicle battery. This connection can be made short and with cable of 100-200Amp capacity. All other connections can be made using thin, low current wiring.

SWITCH CONNECTIONS

The Isolator can be controlled by any number of on-off/kill switches although the usual configuration is one internal ON/OFF switch and one external KILL switch.

The internal switch needs to be of a latching type, either toggle or pushbutton, such that the ON position makes the circuit while the OFF position breaks the circuit. If an LED type button is used then the polarity of the switch is important when connecting across the Brown and Black wires of the internal switch circuit.

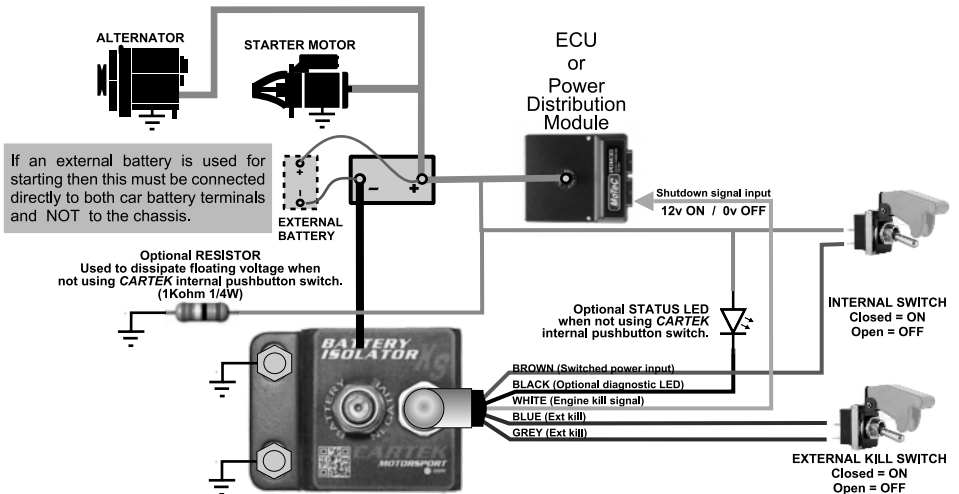
The external kill switch should be of a non-latching, normally-closed (NC) type and connected across the Blue and Grey wires of the external switch circuit. If required, multiple kill switches/devices can be incorporated by connecting in series. If only a single internal on-off switch is to be used with no external switch then the external circuit needs to be made by joining the Blue and Grey wires together. If any wire connections become broken due to fatigue or accident then the Isolator will automatically trip into isolation mode.



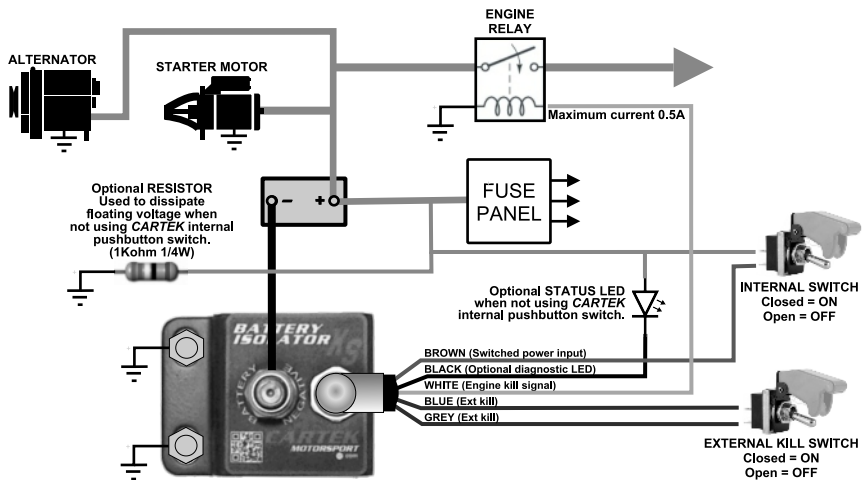
**Typical installation using
CARTEK pushbutton switches**

Warning:

The Isolator must be disconnected if any electric welding is being carried out on the car.



Alternative installation (1)



Alternative installation (2)

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 THIS PRODUCT IS DESIGNED FOR MOTORSPORT USE ONLY AND SHOULD NOT
 BE USED ON ROAD/STREET VEHICLES OR ON PUBLIC HIGHWAYS.
 NO WARRANTY IS MADE OR IMPLIED REGARDING ANY CARTEK PRODUCTS TO
 PROTECT USERS FROM INJURY OR DEATH.
 USER ASSUMES ALL RISKS.