CARTEK
AUTOMOTIVE ELECTRONICS

SOLID STATE BATTERY ISOLATOR

Specification

Size:	***L = 93mm, W = 50mm.***
Weight:	***140g.***
Operational Voltage:	***7v - 18v.***
Current consumption:	***0.03A (Max ON & OFF)***
Battery negative switching current:	***(Std) 200-250A typ, 1000A surge.***
	(GT) 450-600A typ, 2000A surge.
Positive power switching current:	***30A maximum.***
Storage temperature:	***-10°C - +125°C***
Operating temperature:	***0°C - +85°C***
Battery negative terminal:	***M8 brass stud.***
Positive power terminals:	***M6 brass stud.***

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Made in UK

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 its 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

The unit contains two isolating/switching circuits. The first breaks the connection between the negative side of the vehicle's battery from chassis-earth, thereby isolating the battery power, while the second cuts electrical power to the engine electrics causing the engine to stop and electrical power generation by the alternator/generator to cease. The electronic isolation circuits are controlled by microprocessors and incorporate various safety systems including over-temperature and over-current monitoring. The microprocessor also monitors the kill switches/buttons for instant activation without false triggering. The unit will instantly trigger into isolation mode when any of the kill buttons are struck or on detection of any fault or break in switch wiring circuits.
The Isolator also incorporates an LED which can display status as well as fault codes.

FITTING

The Isolator should be mounted directly to the vehicle's metal bodyshell/chassis close to the vehicle's battery but away from any high temperature sources. The Isolator should be mounted securely with unpainted screws/bolts. When the engine is being cranked the starter motor will draw high electrical current from the battery via the Isolator and is therefore essential that the mounting method provides good electrical contact to the chassis.
Once the electrical connections are made, according to instructions on next page, then all three power terminals should be covered using insulation caps supplied to prevent an accidental short-circuit. When fitting or removing the Isolator always disconnect the battery first and reconnect last.

OPERATING INSTRUCTIONS

Once fully installed, the Isolator is switched ON by activating the internal ON-OFF switch/button. On activation the Isolator performs a system check before electrical power is turned on. If any fault is detected then the Isolator will remain in Isolation mode and display the fault status via the LED in a sequence of flashes.

1 flash -	External kill button pressed or circuit broken.
2 flashes -	Maximum temperature in negative circuit exceeded.
4 flashes -	Maximum temperature in positive circuit exceeded.
6 flashes -	Maximum ambient temperature exceeded.
8 flashes -	Maximum current exceeded.

Once the fault is remedied the Isolator can be reset by switching off the internal ON-OFF switch/button then switching on again. The unit will also be fully reset by disconnecting from the vehicle battery then reconnecting.

NOTE

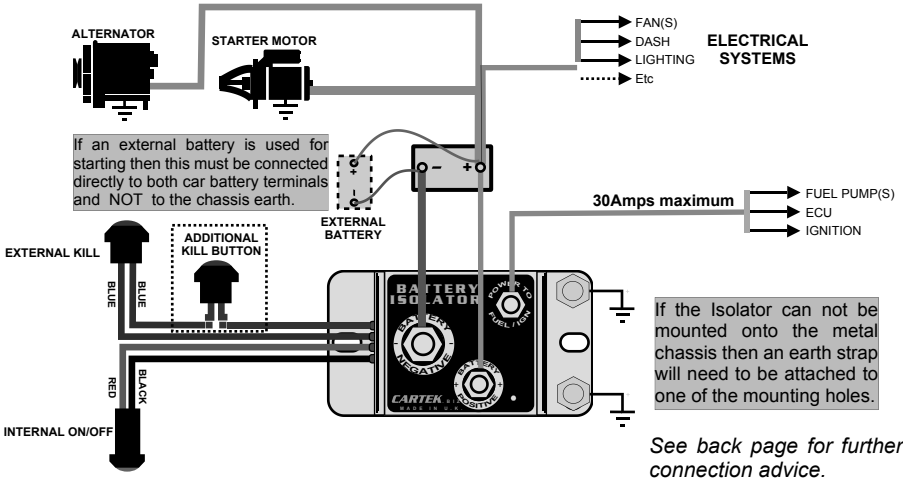
It should be noted that this electronic device does consume a very small amount of current even when off. If the car is fitted with a small capacity battery then it is recommended that the battery be disconnected if the vehicle is not to be used for several days.

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

POWER CONNECTIONS

Connections from the Isolator to the battery positive terminal and from the Isolator to the vehicle's electrical systems should be made using cable of 30-50Amp capacity. Only engine electrical systems such as ignition, fuel pump, ecu should draw power from the Isolator output power terminal to stop the engine when the isolator is activated. Power to the starter motor, and output power from the alternator, must be connected directly to the vehicle's battery positive terminal and not connected via the Isolator.

The large 8mm stud is used to carry the connection to the negative terminal of the vehicle battery. This connection should be made as short as possible and with cable of 100-200Amp capacity. This connection should be made last of all.



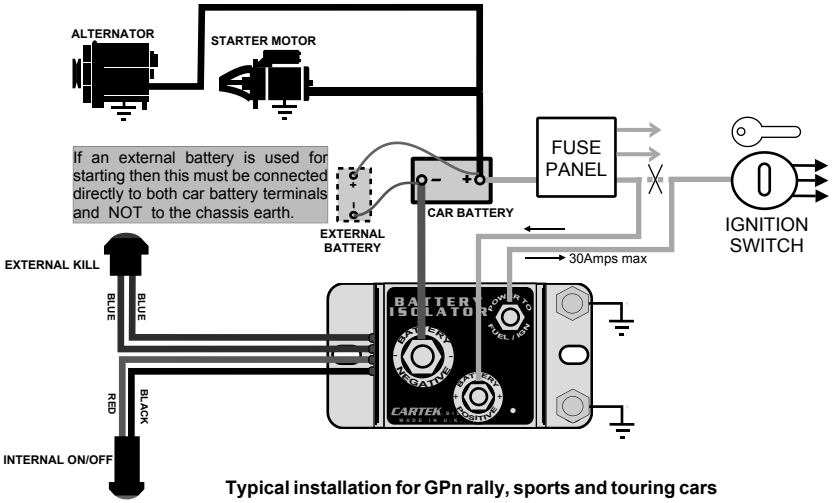
See back page for further connection advice.

SWITCH CONNECTIONS

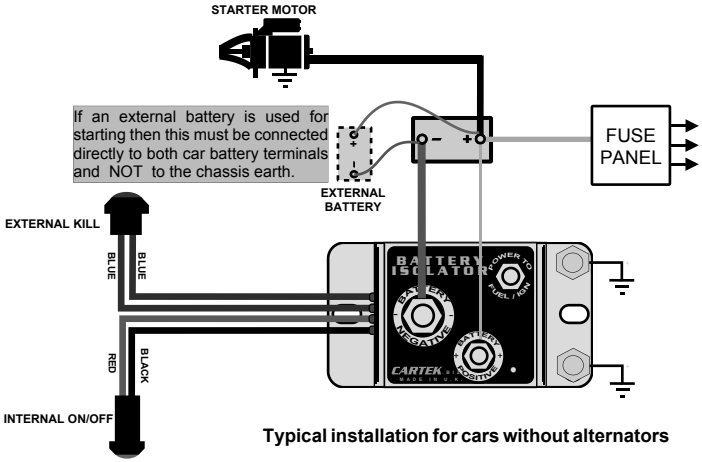
The Isolator can be controlled by any number of on-off/kill switches although the usual configuration is one internal on-off button and one external kill button.

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 Red and Black wires of the internal switch circuit.

The external kill switch should be of the non-latching, normally-closed (NC) type and connected across the blue 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 two blue wires together. If any wire connections become broken due to fatigue or accident then the Isolator will automatically trip into isolation mode.



Typical installation for GPn rally, sports and touring cars



Typical installation for cars without alternators

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USER ASSUMES ALL RISKS.