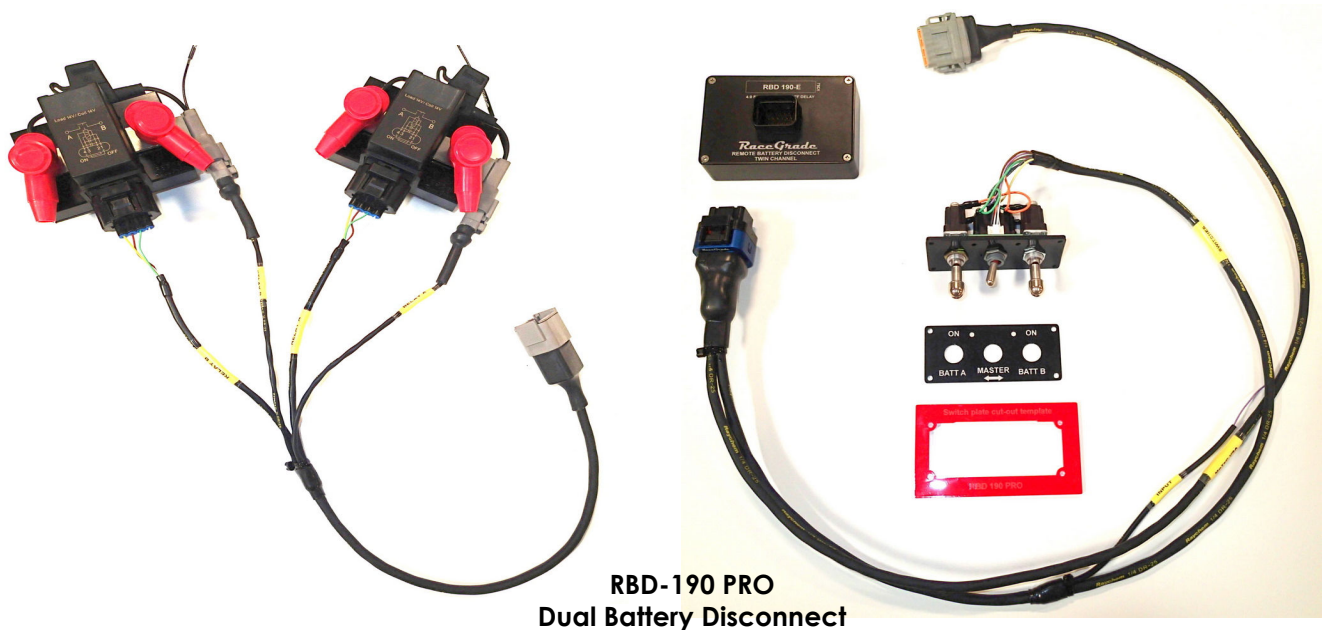


<b>Document Number</b>		RG_TN-0014	
<b>Title</b>		Remote Battery Disconnect	
<b>Revision</b>	<b>Date</b>	<b>Prepared By</b>	<b>Change History</b>
0.9	10/02/2013	Chris Brown	Beta release

## Introduction

The RBD-190 PRO is designed to be the main battery isolator / switching element in a control system utilizing a MoTeC PDM power distribution module which is sold separately. It safely disconnects the battery using simple toggle switches that can be mounted anywhere.



## Specifications

Max Continuous Current: 190 amps

Max Peak Current: 1000 amps

## Switch Panel Installation

Use the provided plastic template for accurate cutout of the panel where you wish to install the faceplate. Feed the harness through the completed opening and secure with 4-40 screws and locking nuts. (not provided)



Cut Out Template

## Switch Panel Information

The switch faceplates are available for either horizontal or vertical orientation. The kit is supplied with one faceplate of your choice.

**Note:** Indicator LEDs turn off when battery voltage falls below 9.8 volts, indicating a low battery.

**Note:** One battery must maintain enough power in for the selector to switch on or off either battery. If both batteries are dead, the electronic control selector can not turn either battery on.



Horizontal Plate



Vertical Plate

## Battery Select Switches

The switch panel has two switches with lock-out toggles, one each for each battery labeled A and B. Each switch has three positions; a center lock-out and two momentary positions to activate **On** and **Off**. To turn on either battery simply move the respective toggle to **On**. If the battery has more than 9.8 volts, an indicator will illuminate. To turn a battery off, toggle the respective switch to **Off**.



## Master Switch

The master switch determines which one of the two battery select switches will kill the engine when toggled off.

Assuming both batteries have a usable charge, either battery can be chosen as master. You may want to alternate back and forth between batteries at selected intervals. To select a battery as master, flip the master toggle lever toward the respective battery. The battery selected as master will automatically shutoff four seconds after a kill sequence is initiated. The battery **Not** selected as master can be turned on or off at will without invoking the kill function.

Attach any other parallel emergency switches as required per drawing. In order for the external switches to provide simultaneous battery shutdown, dual pole switches should be chosen.

## Connection to MoTeC PDM

Attach purple wire to any MoTeC PDM input and program the PDM to use that input as the master kill switch to control which devices turn off in a specific sequence if required.

### Kill Function

In case of an emergency or accident, additional switches (not provided) may be added in parallel to the driver operated battery selector switches. These additional switches maybe be used to allow course workers or bystanders to shutoff the engine and electrical system manually. Alternatively a roll-over or inertia switch may be fitted to compliment the kill function.

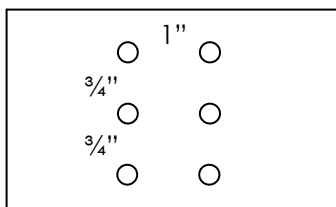
**Note:** These additional kill switches should be double pole variety to allow both batteries to be disconnected at once irrespective of master switch position. All such switches should be wired active low.

**To Test:** With engine running, start a **Kill** sequence by momentarily toggling the battery (which has been chosen as master) to **Off**. If the PDM kill function is set correctly, the engine will stop immediately and that battery will disconnect within 4 seconds. To disconnect the remaining (non-master) battery, toggle its respective switch **Off**.

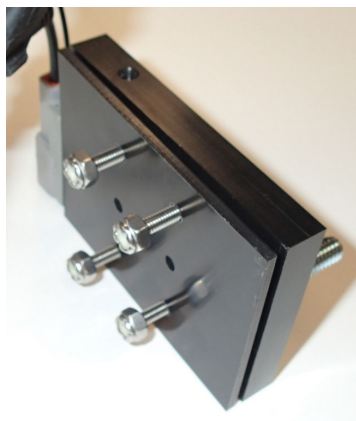
### Operation During Emergency

During an emergency simply turn off any battery in use with the battery select switches. Engine should quit running immediately. Batteries will disconnect four seconds later.

### Mounting RBD-190 Relays

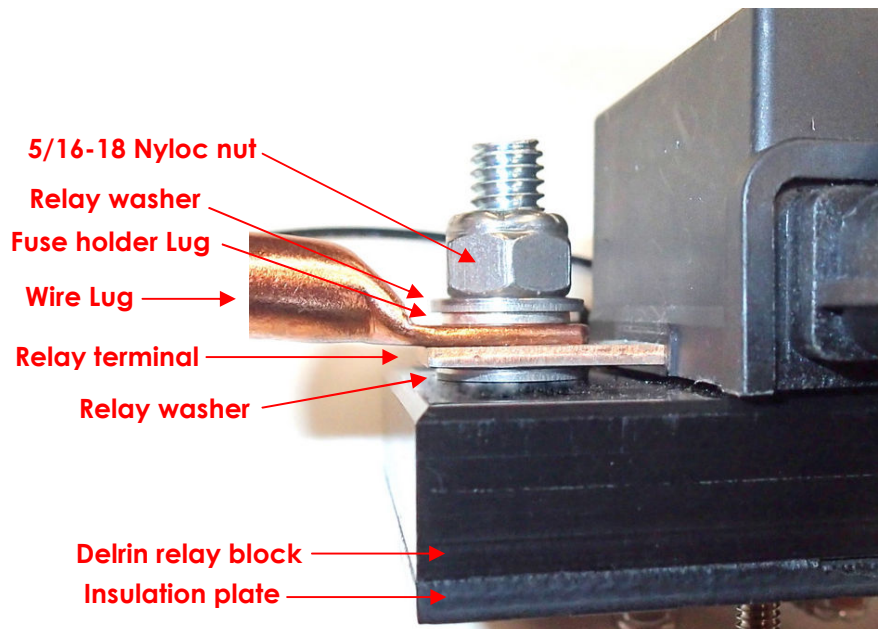
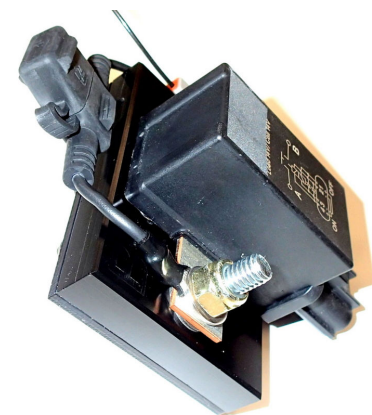


- Locate a suitable mounting location for the relays.
- For the best water ingress protection, mount with electrical plug facing downward.
- The relay plate has 6 possible holes to utilize.
- Minimum of two screws required. Four will provide a more secure mounting.



Remove the nut, washers, lugs and relay to access the mounting screws. Use the provided 8-32 screws. Once secured, return the washers, lugs and relay in the order shown below. The provided mounting plate must be used behind the relay block to prevent accidental shorting of the power studs to the mounting location.

When mounting two relay packs back to back on a single plate, please contact RaceGrade for additional options.



## Attach Battery-side Power Cables to RBD-190

Slip one of the provided red boots onto the lead from battery positive. Attach battery positive lead to the B+ side of the RBD-190 block using a 5/16" eye terminal. For best electrical performance the terminal should sit directly on the relay without a washer in between. Place a washer over the eye terminal and tighten down a nut on top. It is not permitted to run the ground wire through this relay. Maintain the positive polarity across relay as shown.

## Attach Car-side Power Cables to RBD-190

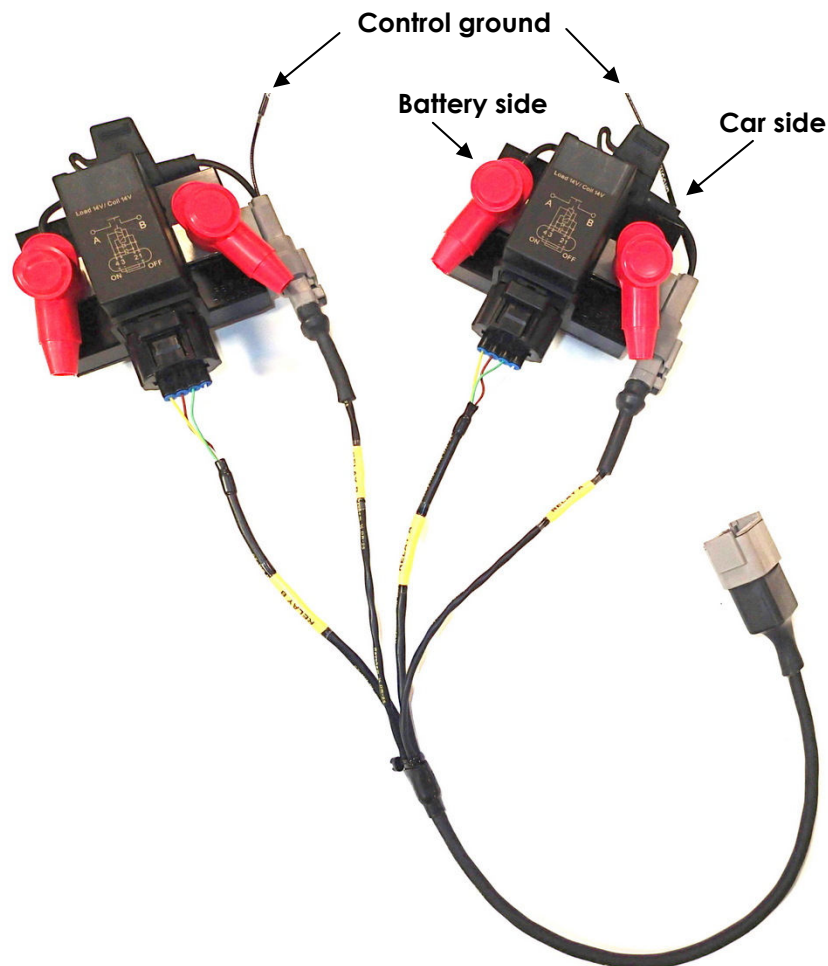
Slip a red boot over the main power lead from the car's wiring harness, (Usually the starter lead).

Attach lead to the other side of the RBD-190 with another 5/16" eye terminal. Place a washer over the eye terminal and tighten down a nut on top.

Note: Batteries turned off will not receive charging from alternator.

## Attach control cables to RBD-190

Control cables are attached via polarized plugs to each relay package. Be mindful that connections are not inadvertently mixed up such as A vs B.



## Storage notes

With both batteries turned off, the control circuitry draws about one milliamp of current out of each battery. To temporarily eliminate this draw, pull the fuse out of the fuse holder. Replace the fuse in order to restore normal operation.

## Optional Accessories

### Kill Switches

Master Red Shut Down Switch



Hood Pin Switch



Switch Pancake Seal

