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Commander 400
Model# CDR-400
Installation & Instruction Sheet

Specifications:

Overall Size (including mounting tabs)
: 6-3/8”L x 3-7/8”W x 2-1/2”H
Operating Input Voltage: 9-18VDC
Off State Current Draw : 6.5mA
Output Current Rating : 1200A peak current
225A continuous @ 85°C
275A continuous @ 75°C
ON Resistance : 0.00022 Ohm
Operating temperature : -40°C to +85°C
Environmental : IP67

Features:

- Selectable 1 to 30 minute Shut-Down Delay OFF Timer (10 steps).
- Loss of ground and faulty ground protection.
- Low voltage shut down < 8VDC.
- Controlled ramp ON and OFF.
- Rapid ON/OFF cycling prevention protection.
- SYSTEM ON LED and OVERRIDE LED indication.

Electrical Connections:

Caution: Prior to making any electrical connections, remove the NEG. (ground) terminal from the vehicle’s battery.

Connections to the unit consist of two 3/8” bolts labeled Power In and Power Out, and a color-coded 18AWG 5-conductor wire harness.

WARNING: Ensure “Power In” is connected to battery +12VDC source and “Power Out” is connected to the vehicle loads. Ensure that any charging circuitry (alternator, battery charger, etc..) is connected to the +12VDC battery connection and NOT to the “Power Out” connection. Permanent damage will result if this device is not the only power source to the vehicle loads.

Power Connections:

Power In – This connection is a 3/8” bolt that is used to bring power into the unit. A high current cable should be used to connect this bolt to either the +12VDC

battery terminal or the alternator output. Torque nut to 16 ft-lbs.

Power Out – This connection is a 3/8” bolt that is used to deliver +12VDC to the vehicle. The Power Out bolt is switched on (+12VDC) and off by the control inputs in the 5-conductor harness outlined in the following schematics. Torque nut to 16 ft-lbs.

CAUTION: Nuts for these connections MUST be torqued to 16 ft-lbs. Failure to comply will result in a fire hazard!

System LEDs:

Green LED - The System ON LED will be on steady any time the unit is supplying power to the Power Out.

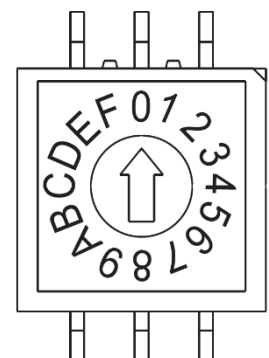
Red LED - Whenever the unit is in its delayed shutdown period the OVERRIDE LED will blink.

Shut-Down Delay OFF Timer:

To use the Shut-Down Delay OFF timer feature, the unit must be wired according to Schematic 2 or 3.

To access the Shut-Down Delay Timer OFF settings, use a Philips screwdriver to remove the large 1/2” head screw located on the front of the enclosure. Use a small flathead screwdriver to adjust the settings on the 16 position selector switch. When finished, replace screw to maintain water tight seal. The CDR-400, as shipped from factory, is set to a 5 minute Shut-Down Delay OFF option.

Position	Delay Minutes
1	1
2	3
3	5
4	7
5	10
6	12
7	15
8	20
9	25
A	30



Rapid ON/OFF Cycling Prevention Protection Feature:

There is a **3 second delay** from when the CDR-400 is turned OFF until it is allowed to turn back ON again. This feature protects over stressing the internal MOSFETs and also protects the sensitive connected equipment from rapid power cycling.

Low Voltage Shut Down < 5.2VDC Feature:

When the voltage between the POWER IN stud and the BLACK – GROUND wire is less than approximately 5.2VDC, the CDR-400 will turn OFF. The CDR-400 will not turn back ON until the voltage is 9VDC and above for **5 seconds**. This **delay** protects the CDR-400 from damage if there is faulty or intermittent ground or power connection.

Control Inputs:

Note: All control inputs have a 50ms turn ON and turn OFF debounce time delay to prevent false readings during mechanical switch transitions.

BLACK – GROUND: This ground wire must be connected securely to vehicle ground for the CDR-400 to function properly.

WHITE – IGNITION: This input is used to enable the time delayed shutdown feature as described in Schematic 2 & 3. If unit is wired according to Schematic 2 or 3 and this wire is tied to the vehicle ignition key accessory source, the ignition key in the OFF position will cancel the delay timer and instantly shut off the unit if S1 and S2 are both OFF.

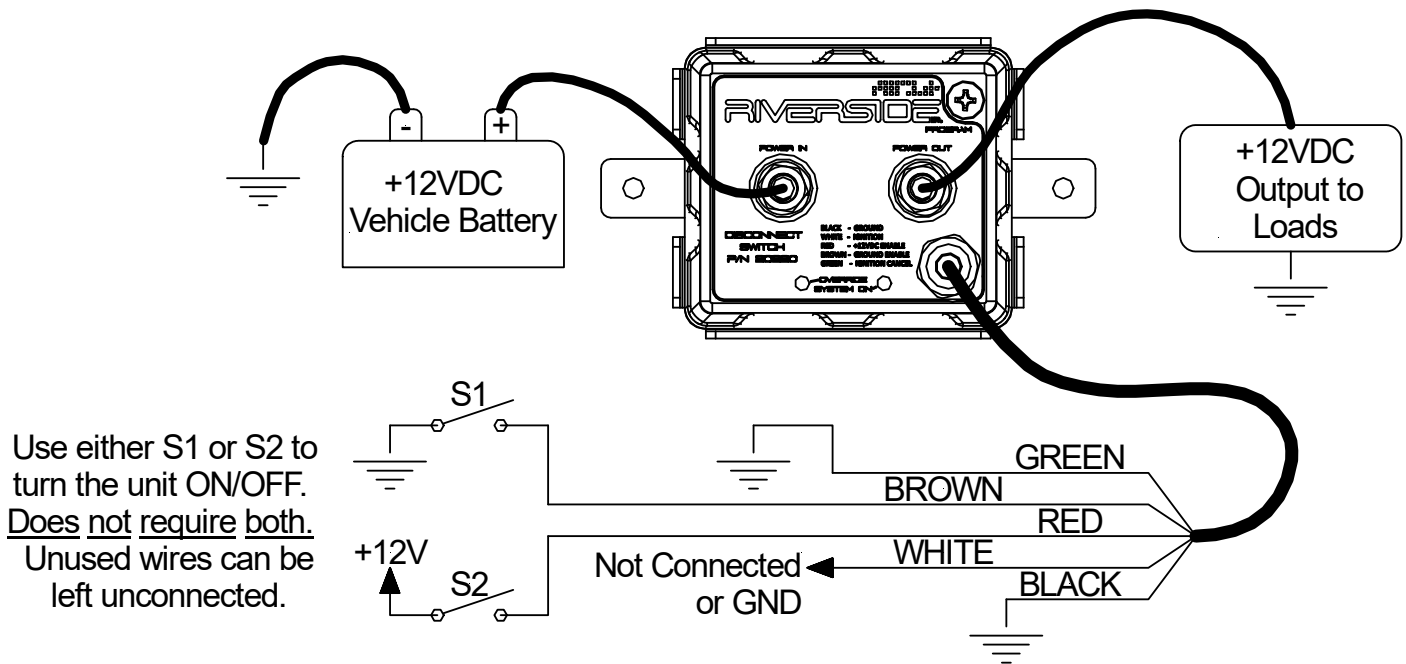
RED - +12VDC ENABLE: This input will turn the unit ON when +12VDC applied; if wired according to the Schematics 1, 2, or 3.

BROWN – GROUND ENALBE: This input will turn the unit ON when ground applied; if wired according to the Schematics 1, 2, or 3.

GREEN – IGNITION CANCEL: This input will cancel the delay timer when ground applied; if wired according to Schematic 3.

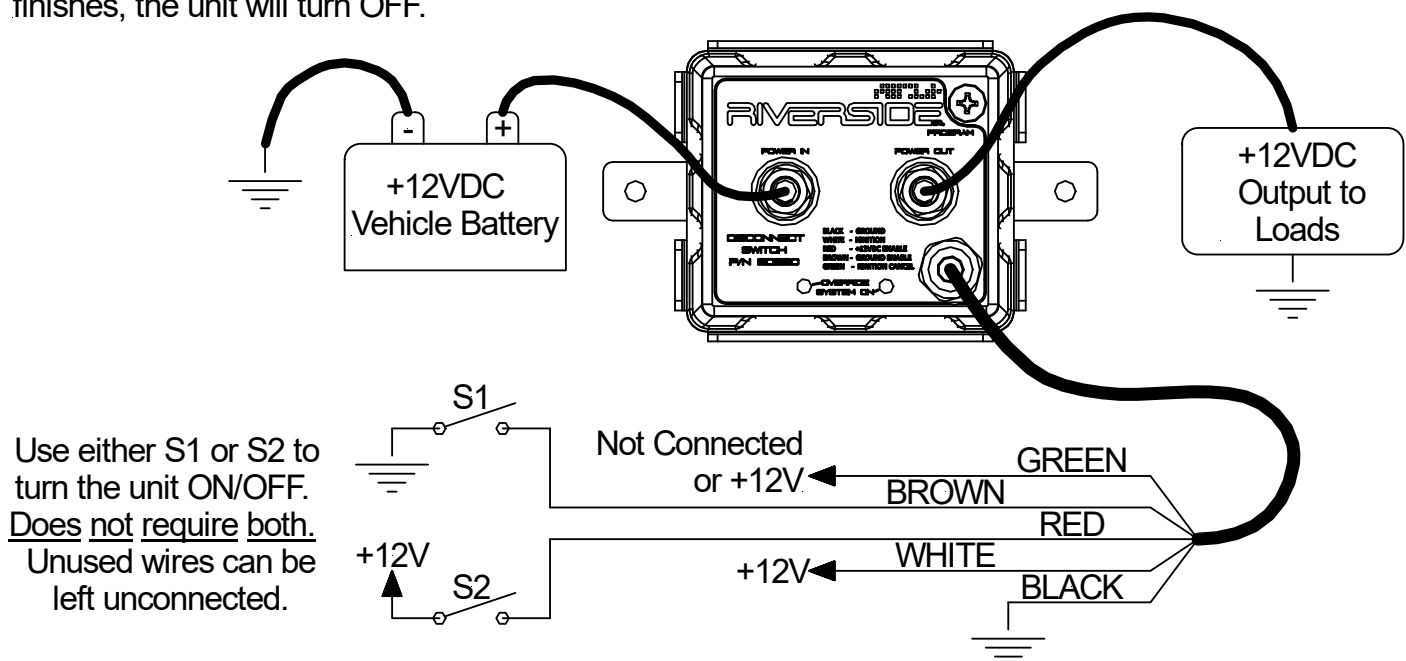
Special Note: Gold plated contacts are recommended for long term reliability of S1, S2, and PB1. Silver plated contacts can build up an oxidation layer over time. Use switch manufacture recommendations for a load current under 2.5mA at 12VDC.

Schematic 1: Simple ON / OFF



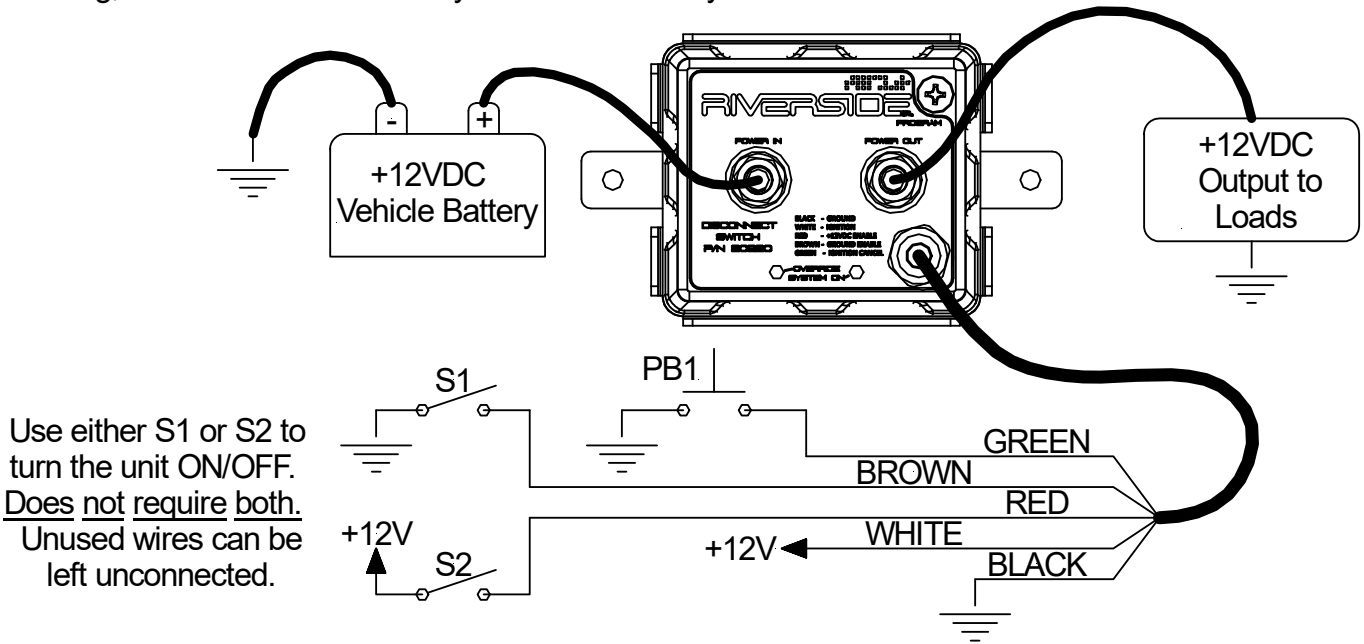
Schematic 2: ON / Shut-Down Delay OFF

When S1 or S2 (either one can be installed) are switched off (open), the unit will remain ON and a delay timer will begin counting down with the OVERRIDE LED flashing. When the delay timer finishes, the unit will turn OFF.



Schematic 3: ON / Shut-Down Delay OFF with Timer Cancel PB

When S1 or S2 (either one can be installed) are switched off (open), the unit will remain ON and a delay timer will begin counting down with the OVERRIDE LED flashing. When the delay timer finishes, the unit will turn OFF. When the delay timer is counting down and the OVERRIDE LED is flashing, PB1 can cancel the delay timer and instantly shut OFF the unit.



Schematic 4: IGNITION with Master ON/OFF Switch

When Ignition (S2) and Master (S1) switch are ON (closed), the unit will turn ON. If Ignition (S2) turns OFF (open) when Master S1 is ON (closed) the delay timer will begin counting down with the OVERRIDE LED flashing. When the delay timer finishes, the unit will turn OFF. If Ignition (S2) is OFF (open) when Master (S1) is turned ON (closed) the unit will turn ON and the delay timer will begin counting down with the OVERRIDE LED flashing. When the delay timer finishes, the unit will turn OFF.

