

# DCCDPro.com - Dual Mode Controller Installation Manual

Thank you for your purchase!

## Technical Details:

- Microchip's PIC microprocessor running at 4mhz
- 2 axis high resolution g-sensor
- custom firmware with driver adaptive capability
- several internal modes based on driver throttle behavior and g- sensor behavior that switch on the fly automatically
- DCCD calculations are using advanced formula's instead of unintelligent "static mapping" or "lookup tables"

## Installation:

Installation is recommended to be performed by a licensed auto mechanic.

"Red" = 12v positive (**switched power**) \*Do not connect to "always on" power

"Green" = 0v negative (ground)

"Black" = DCCD "B128 pin 1" (See attached Subaru DCCD Schematic)

"White" = DCCD "B128 pin 4" (See attached Subaru DCCD Schematic)

"Brown" = Ebrake cutout wire (ground this to stop DCCD activity)

"Blue" = TPS: Non-DBW "B135 pin B7" (See attached Subaru ECM Schematic)

DBW <2006MY "B136 pin B18" (See attached Subaru ECM Schematic)

DBW 2006MY+ "B134 pin B18" (See attached Subaru ECM Schematic)

The suggested location for installation of the control module is behind the dashboard in the knee crash pad area, there is a large open area behind the metal bars there.

Switched power and ground are also available nearby at the fuse panel to tap into. Due to the differences in swap wiring you will have to source these wires yourself with a multimeter. It is recommended to have at least a 10 amp fused circuit powering the DCCD.

I would also suggest running an extension if needed for the two DCCD wires to the top passenger side of the center diff tailpiece where you can solder in the two wires you need on the B128 DCCD connector. (See Subaru Schematics attached.) Use liquid electrical tape or silicone caulking to keep everything sealed up after soldering the wires at the DCCD plug since they are exposed under the vehicle.

A suggested location for installation of the dual axis g-sensor is on the horizontal metal surface under the center console. ~1 meter of wire between the control module and the sensor is provided for this purpose. Any other level horizontal surface will do as long as the sensor case can be attached firmly using epoxy or other strong adhesive. Do not use 2 sided tape, or foam carpet tape, use a 2 part epoxy or contact cement made for plastics.

Note the orientation arrow, and install the sensor with its arrow pointed toward the front of the car! (The wires exit the g-sensor module towards the front of the car and the screws in the cover face upwards.)

The ebrake cutout installation is simply to attach the brown wire to your ebrake circuit such that the ebrake will ground the wire when pulled. It is advisable to disconnect the wire coming from the car so that there will be no interference from the ebrake indicator system. Alternatively you could place a small signal diode (ie. 1N4148) on each wire with the stripe towards ground so that the dccd and ebrake indicators circuits are isolated from each other but the ebrake can still ground both circuits when needed.

### Operational Details:

The hardware and firmware were designed to work together to be as "driver transparent" as possible. My philosophy is that the less you need to adjust or monitor while driving the more you can concentrate on the road / race.

During development I considered various options including a knob to select "modes" and / or different formula as well as an LCD to monitor the DCCD output, but when it came down to it they added greater cost to the final product and had little to offer in terms of real functionality.

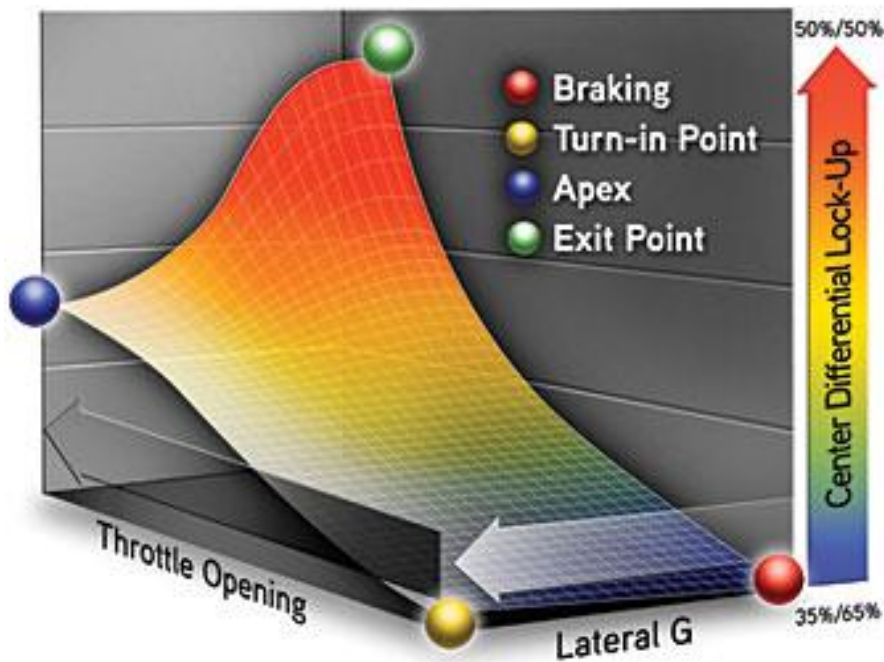
The control knob for the system is used to scale the DCCD "aggressiveness". Fully CCW turns the unit essentially "off" which will heavily bias the rear wheels, full CW gives it full "aggressiveness" maximizing traction and thusly increasing under-steer. In this setting the system will attempt to give you maximum traction at all times by trying to maximize the amount of DCCD lock. The system is infinitely variable between these two extremes. Start at lower settings (over-steer) and increase the knob setting until you find the car handles the way you would like it to in the corners. You can alter the setting at any time and on the fly as conditions change.

This DCCD controller constantly and frequently monitors the attached sensors, updating the DCCD output based on how the car is behaving in reaction to driver inputs. It features several firmware modes that it switches between on the fly. Without going into a detailed explanation of the firmware formulas, the system automatically switches between formula appropriate for "parking lot / highway cruise", "aggressive cornering", "aggressive straight line", and "stuck in snow/mud" based on what information it receives from the sensors.

(con't) It monitors the output level as well as the speed at which the various sensors change. For example it can differentiate between slow gradual throttle application vs. rapid throttle acceleration and respond accordingly.

The internal firmware formula's try to mimic the behavior of the OEM STi DCCD auto mode. (See illustration below.)

### **DCCD Firmware Response Illustration:**



### **Warning:**

For Off-road use only

Installation of the controller indicates your acceptance of responsibility for risk and peril to yourself and / or your vehicle.

**Use at your own risk. If you disagree with the above statements please return the uninstalled product for full refund.**

### **Limited warranty**

The 90 day warranty is limited to the repair, replacement or refund of the purchase price to be determined upon receipt and analysis of returned product. Shipping and handling, installation and removal fees and/or damage to the vehicle will not be covered under

any circumstances