



MapDCCD G2 - Installation and setup guide V2.3





Overview of operation modes

There are three main operation modes available. Any of the modes can be selected at any time. The three main modes are: manual, automatic and mappable modes 1 to 4. The MapDCCD controller lights indicate the current operation mode and the live DCCD output.

Manual mode

Manual mode is static DCCD control. The front dial or external thumbwheel input is used to vary the DCCD lock from 0 to 100%.

Automatic mode

Automatic mode is simple and automated DCCD control based on your throttle position and your vehicles lateral acceleration using a built in 3- axis precision accelerometers that senses your vehicles movement.

DCCD lock is calculated using current and rate of change values from accelerometer sensors and throttle in a mathematical vehicle dynamics model that predicts the required amount of DCCD lock as you drive.

The front dial or external thumbwheel input is used to vary the aggression of the vehicle dynamics model. Setting the dial high will bias the vehicle toward understeer tendencies, while setting the dial low will bias the vehicle toward oversteer tendencies. The dial can be adjusted to any position to allow you to precisely tune your vehicles response to your driving style.

Map modes 1-4

The map modes provide advanced DCCD control and are most suitable for a motorsports environment. The map modes allow fine tuning of all conditions including those of acceleration, braking, corner turn in and corner exit. The effect is increased driver confidence from a vehicle that has more stability and grip. This allows you to drive faster in a motorsports environment.

Each map mode has two main sections – a throttle section and a braking section. The braking section is activated when the foot brake is pressed. The throttle section is otherwise default.

Throttle section

The throttle section allows mapping of the DCCD lock based on four parameters: RPM, TPS, Vehicle speed and a sensor input. The sensor inputs available include internal lateral or longitudinal accelerometers or an external sensor.

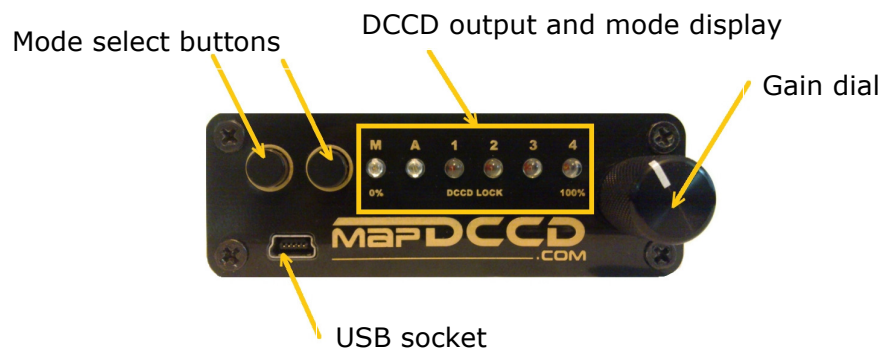
Braking section

The braking section has two braking maps – one for when only the foot brake is applied and another for when the foot brake is applied and the throttle is also applied (and above a set threshold), deemed "left foot braking".

The braking section allows mapping of the DCCD lock based on four parameters: The foot brake being activated, TPS, vehicle speed and a sensor input. Like for the throttle section, the sensor inputs available include internal lateral or longitudinal accelerometers or any external sensor.



Hardware – Display interface



Mode select The mode select buttons are used to click through the operation modes of the MapDCCD controller in the left or right directions. The operation modes are ordered: Manual, Auto, Map 1, Map 2, Map 3, Map 4. When a mode select button is pressed, the MapDCCD controller will beep and the LED corresponding to the operation mode will flash rapidly before reverting to show the live output.

Note that the first time a mode select button is pressed the display will indicate the current operation mode. A second button press will change to the next operation mode.

In the software, the OEM thumbwheel input may optionally be selected to change the operation mode based on the thumbwheel dial position. The mode select buttons will be inactive when this option is selected.

Display The display has six LED lights. A mode indicator is located above each light where "M" = manual mode and "A" = Auto mode (green LEDs), and "1, 2, 3, 4" correspond to the four maps stored in the controller (orange LEDs).

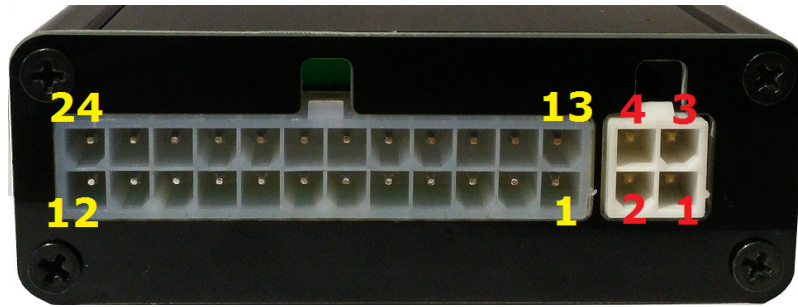
By default, the six LED lights will show the current operation mode by flashing rapidly when a mode select button is pressed. After approximately 2 seconds, the display will revert to showing the live DCCD output. However, the display can be switched to only show the operation mode in the software setup page.

Gain dial In manual mode the gain dial sets the static DCCD lock from 0 to 100%. In auto mode, the gain dial sets the aggression of the vehicle dynamics algorithm. When the dial is low the vehicle will be biased toward oversteer and when the dial is high the vehicle will be biased toward understeer. The dial can be set anywhere between max and min to set the vehicle response you desire.

USB Socket For connecting to your PC to configure the MapDCCD controller (USB cable supplied)



Hardware - Connections



Rear of MapDCCD Controller

B4 Connector

Pin	Function	Wire Colour	Specifications
1	DCCD Output (to transmission)	White (thick wire)	High current PWM
2	Ground (High Current)	Black (thick wire)	Power ground
3	DCCD Output (to transmission)	White (thick wire)	High current PWM
4	Ignition switched high current power input	Red (thick wire)	+12~15V

B24 connector

Pin	Function	Wire Colour	Specifications
1	Ground1 (Low Current) *Note1	Black (thin wire)	Signal/Sensor ground
2	External Module Ground (optional)	"Optional"	Ground
3	TPS Input (Analog)	Purple	0 to 5V
4	4D Input (Analog)	Brown	0 to 5V
5	Thumbwheel input (Analog)	Aqua or Red *Note2	0 to 5V
6	External Module Data Output (optional)	"Optional"	0 to 5V Data
7	Dash light dimmer input	Orange	0 to 5V or 12V
8			
9			
10			
11			
12			
13	External Module Power Output (optional)	"Optional"	12V Power Output
14	RPM input (Pulses)	Green	0 to 5V or 12V
15	Data logging output (Analog)	White (thin wire)	0 to 5V
16	Speed Sensor Input (Pulses)	Blue	0 to 5V or 12V
17	Brake Input (Digital)	Pink	0 to 5V or 12V
18	Handbrake Input (Digital)	Yellow	0 to 5V or 12V
19	AUX input (Digital)	Grey	0 - 5V
20			
21			
22			
23			
24			

***Note 1:** Pin 1 must be connected to ground for device to operate.

***Note 2:** Aqua wire colour on units shipped before 15-MARCH-2024 , red wire from this date onwards.
Empty pins are reserved for future use



Connection guide (basic)

Manual

Required connections:

- power (11~15V)
- Ground 1 (low current sensor ground)
- Ground 2 (high current power ground)
- Two DCCD control signal wires to gearbox

Auto

Required connections:

- Power (11~15V)
- Ground 1 (low current sensor ground)
- Ground 2 (high current power ground)
- Throttle position sensor
- Two DCCD control signal wires to gearbox

Maps 1 – 4

Required connections:

- Power (11~15V)
- Ground 1 (low current sensor ground)
- Ground 2 (high current power ground)
- Throttle position sensor
- RPM/tachometer signal
- Two DCCD control signal wires to gearbox

Optional map mode connections:

- Vehicle speed sensor
- Brake pedal
- 0-5V external input signal
- 0-5V OEM thumbwheel input

Further optional connections:

- Hand brake (overrides DCCD output signal to unlock center differential)
- ABS (overrides DCCD output signal to unlock center differential)
- 0-5 V analog output (for data logging, driving OEM DCCD control manual mode, or switching external device)



Connection guide (detailed)

Power connection (Thick red wire)

The power connection should be a high current feed that is ignition switched. Suggested locations are the power feed to the vehicle ECU or a dedicated ignition switched relay. The feed should be fused at 10 Amps. However, the MapDCCD control unit is also fused internally at 10 Amps.

If your vehicle already has a switch high current voltage feed to an existing or previous DCCD controller (OEM or otherwise), we highly recommend this high current voltage feed is used.

Ground connections (Two black wires)

The MapDCCD requires two separate ground connections. This is needed because the MapDCCD drives the cars DCCD directly which requires high currents but also accommodates low current signals like the TPS sensor. Combining the low and high current ground connections may introduce unwanted electrical noise to your vehicle sensors which may in turn cause poor running of the engine.

Ground 1 is the low current ground which runs the MapDCCD unit. This can be connected to any ground location but the ideal and recommended place is the sensor or signal ground input to the vehicles ECU. This enables the MapDCCD unit to get a clear reading from the car sensors without any interference.

Failure to connect the Ground 1 connection to ground will result in the MapDCCD not powering on.

Ground 2 is the high current ground which must be connected to either the vehicle chassis, directly to the battery negative terminal or to known power ground wiring that can handle 12 amps.

To check your ground connections once the unit is installed you can perform the following;

- ✦ Connect the MapDCCD USB to a laptop and start the MapDCCD software
- ✦ Connect the software to the MapDCCD and switch it to "Setup" mode
- ✦ Set the MapDCCD to manual mode and adjust the gain adjustment to around 80%, but not full.
- ✦ Move the throttle pedal while watching the throttle position in the software. If the TPS position is smooth and doesn't jump around then the grounding is good. (The engine should be off for this test but the ignition may need to be on to power the MapDCCD)
- ✦ This may also be a good time to check/set the TPS calibration in the software. Calibration sets the MapDCCD TPS input to match your cars range for zero and full throttle. Review the software section of this document for more information.

Throttle position sensor input (0-5V, Purple wire)

The throttle position sensor is located on the throttle body on the engine and connects to your vehicle ECU. The voltage range is 0 to 5V (usually around 0.2V at no throttle and 4.2V at full throttle). The suggested TPS connection should be at or near the vehicle ECU. Consult your ECU pin out diagram to determine the TPS signal wire.

The TPS wire should not be cut. The MapDCCD TPS wire should be connected in parallel with the existing TPS signal wire to the ECU.

DCCD control signal wire (Thick white wires)

A DCCD gearbox has two DCCD control wires. These should be connected to the two thick white wires on the MapDCCD cable. The order of the wires does not matter. The gearbox DCCD wires should be connected only to the MapDCCD unit. Connecting the DCCD gearbox wires to any other place may damage the MapDCCD unit. The gearbox will vibrate and move when the car is in use, avoid running wires in any pinch points where they may be crushed.

RPM/tachometer signal input (0 - 2.5+V, Green wire)

The RPM/tachometer signal connection is a pulsed signal provide by your vehicle ECU to drive the dashboard tachometer. Consult your ECU pin out diagram to determine the RPM signal output.

The RPM/tachometer wire should not be cut. The MapDCCD RPM input wire should be connected in parallel with the existing RPM/Tachometer signal wire from the ECU.

The RPM input and other sensor inputs will switch when the voltage rises over approximately 2.5V. A signal that rises from 0V to ~5V or ~12V is fully supported.

Vehicle speed sensor input (0 - 2.5+V, Blue wire)

The vehicle speed sensor signal is provided from a speed sensor located in the gearbox or dashboard. The vehicle ECU is supplied with a pulsed signal corresponding to the vehicle speed. Consult your ECU pin out diagram to determine the speed sensor signal input.

The speed sensor signal wire should not be cut. The MapDCCD speed sensor input wire should be connected in parallel with the existing speed sensor wire to the ECU.

The vehicle speed can be calibrated in the MapDCCD control software to account for variations in tire size.

Brake pedal input (0 - 2.5+V, Pink wire)

A brake light input is not (usually) connected to the vehicle ECU. Suggested locations for connecting the MapDCCD brake signal input wire include the brake pedal switch located above the brake pedal, or a brake light wire near the rear of the car.

The existing brake light wiring should not be cut. The MapDCCD brake input wire should be connected in parallel with an existing brake light wire.

To verify the brake pedal connection has been made the brake pedal signal wire should be approximately 11 to 14 Volts when the brake pedal is pressed and approximately 0 Volts when the brake pedal is released. The brake pedal logic polarity can be reversed in the MapDCCD control software if required. The brake pedal input signal can be disabled in the MapDCCD control software if it is not used.

Hand brake input (0 - 2.5+V, Yellow wire)

The handbrake input wire should be connected to the switched connection located at the hand brake mechanism.

To verify the hand brake connection has been made the hand pedal signal wire should be approximately 11 to 14 Volts when the hand brake is released and approximately 0 Volts when the hand brake is applied. This polarity can be reversed in the software if required. The hand brake input signal can be disabled in the MapDCCD control software if it is not used.

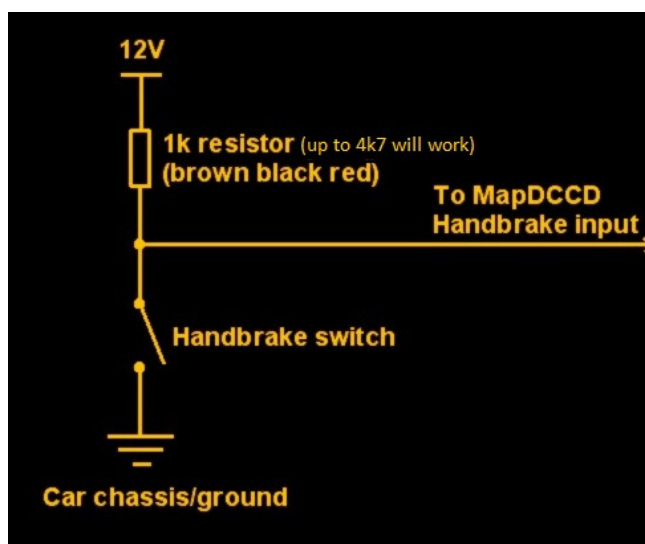
After-market hand brakes / Hydraulic hand brake switches

The OEM Subaru wiring includes what is called a “pull-up resistor”. This resistor ensures the hand brake signal wire switches between a high voltage and ground so that associated electronics correctly recognise the state change. If you are using an after-market hand brake or are not using the OEM wiring, you will need to install a pull up resistor into your hand brake wiring loom. You will need a 1k Ohm resistor connected as shown in the following diagram.

Note: We can install this resistor to your unit at no extra cost. Please tell us you want a pull up resistor installed when you order if you intend to use non-OEM wiring.

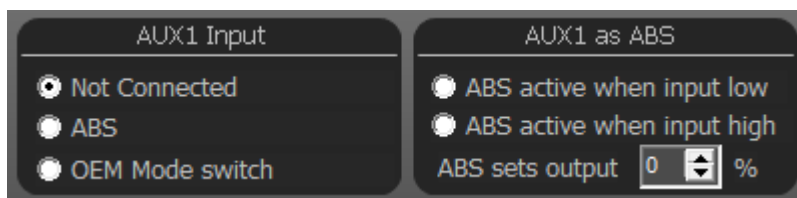
This resistor may cause complications when used in conjunction with the OEM wiring. Do not install when using OEM wiring.

Pull up resistor wiring guide:



AUX1 input (Grey wire)

The Aux 1 input can be configured as an ABS activation signal input or an OEM Auto/Manual switch input. The software allows selection of how you want this input configured:



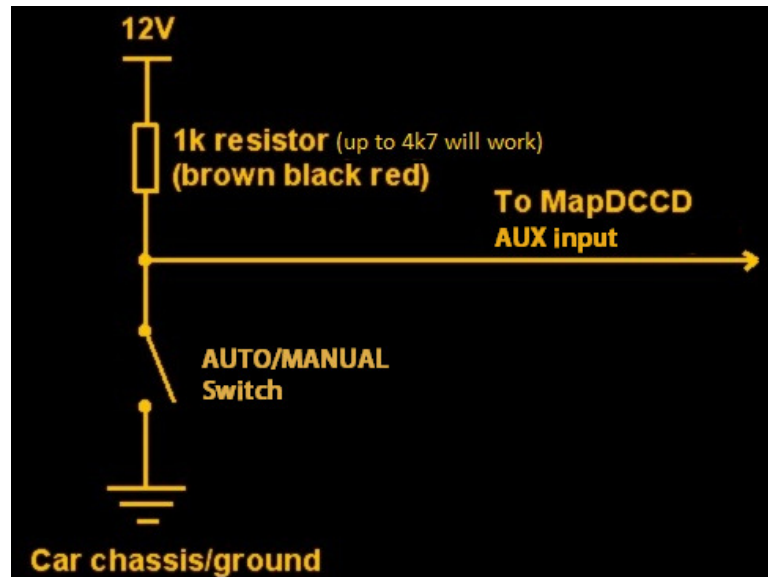
Configured as an ABS input: The ABS input should be connected to the ABS control signal wire provided to the OEM DCCD controller on ABS equipped vehicles. The MapDCCD control system monitors the ABS signal input voltage and reduces the DCCD lock when the ABS is activated.

Note that an alternative use of the ABS input is to switch to a preset DCCD lock level. For example, some rally cars have set this switch input up as a momentary “full lock” switch activated by the co-driver or a button on the steering wheel. Circuit racers have also found use for this feature for digging out of a gravel trap without changing operation modes.

Configured as an OEM Auto/Manual Switch input: The OEM auto/manual switch (or indeed any momentary toggle switch) can be configured as a mode switch – pressing the switch will cycle through

the MapDCCD operation modes. The switch will operate to provide the same function as the right hand MapDCCD mode button.

If no OEM wiring is used with the switch, a pull up resistor must be installed into the wiring as follows:



The Aux 1 input can be disabled in the MapDCCD control software if this input is not required.

Analog output (0-5V, thin white wire)

The analog output is 0-5 Volt and can be used for data logging by connection to your programmable ECU or data logging device. The data logging output provides an analog voltage that represents the DCCD output PWM duty. For example, 0V = 0%, 2.5V = 50 and 5V = 100% DCCD lock.

OEM DCCD thumbwheel input (0-5V, Aqua wire)

The 0-5V OEM DCCD thumbwheel input provides a signal that can be used to control a parameter in the MapDCCD control system or switch maps. The MapDCCD 0-5 Volt thumbwheel input can be connected in parallel or series with the wire from the thumbwheel depending on whether the MapDCCD controller is driving an existing DCCD controller or replacing it.

The thumbwheel input can be used to adjust the lock when in manual mode and the aggression when in auto mode, or can be used as a sensor input in the map modes, or can be used to change the operation mode.

4D input (0-5V, Brown wire)

This feature is subject to a future firmware upgrade. Additional sensors can be added as requested by users. Check the website regularly for firmware updates or contact us if you wish to have a particular sensor added.

The 0-5 Volt input provides a signal that can be used to control a parameter in the MapDCCD control system where desired. The MapDCCD 0-5 Volt input can be connected in parallel or series with a wire providing 0-5 Volts. The 0-5 Volt signal could be provided, for example, from a programmable ECU or an external sensor desired to be part of the DCCD control.

Dash light input (0 - 2.5+V, Orange wire)

The dash light input can be used to change the brightness of the MapDCCD controller display lights when the headlights are switched. Use as desired.



Overriding an OEM DCCD controller

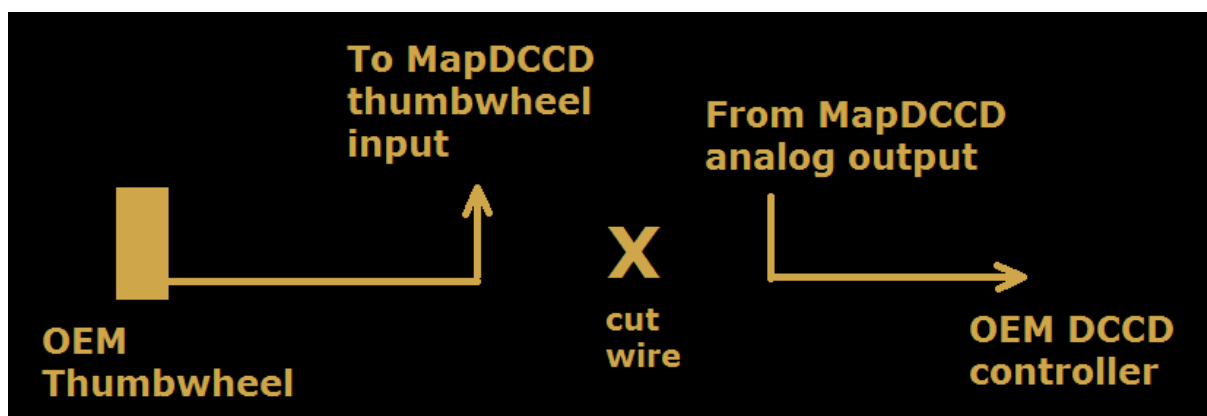
The MapDCCD analog output can also be used to override an existing DCCD controller that has a manually adjustable lock mode, for example, the GC8 manual controller or the GD, GR OEM DCCD controllers when set in manual mode. This option is especially recommended for GC8 users who have the factory manual DCCD control as the DCCD dashboard lights are functionally retained.

If the 0-5 Volt output is used to drive an existing DCCD controller, the handbrake, ABS inputs and MapDCCD gearbox output wires can be omitted from your wiring and these inputs should be set to "Not connected" in the MapDCCD software.

The MapDCCD controller analog output replaces the thumbwheel input to the existing OEM DCCD controller. To implement this feature, cut the center (usually solid green) wire from the DCCD thumbwheel, connect the cut wire end going to the existing DCCD controller to the MapDCCD analog output wire.

The OEM thumbwheel may also provide functionality to the MapDCCD control system to adjust the lock when in manual mode and the aggression when in auto mode, or can be used as a sensor input in the map modes, or can be used to change the operation mode. To implement this feature, the cut wire end going to the OEM DCCD thumbwheel can be connected to the 0-5V OEM thumbwheel input on the MapDCCD unit.

When overriding an OEM DCCD controller in this way the DCCD output on the MapDCCD controller is unused and the wires not connected. To avoid the MapDCCD controller detecting this as a 'fault' you must set 'Internal DCCD Driver' to 'disabled' in the software app. However, even when disabled, please ensure the white DCCD output wires are insulated and cannot short to themselves or other components in your car.





Verifying your wiring

We highly recommend checking your wiring before the MapDCCD control unit is connected to the loom and powered. This can potentially avoid creating a bigger issue that can take time, effort and cost to rectify.

We recommend testing the following:

1. **Measure the resistance between the two DCCD output wires (thick white wires) on the loom plug.**

These wires connect to the DCCD coil inside the transmission. The coil resistance should measure 1.8 to 3 Ohms for a six speed transmission; or 4 to 5 Ohms for a five speed transmission.

Resistance below the applicable range indicates a short circuit that may cause a fuse to blow, wiring or the MapDCCD controller to be damaged. Carefully inspect all of the DCCD output wires between the loom plug and the transmission for breaks in the insulation that may contribute to a short circuit. Short circuits are most commonly caused by wires that are jammed between metal surfaces

If your wiring appears good, locate the 2-wire plug approximately 12 inches/30 cm from where the wires exit the transmission housing. Measure the resistance of the coil across this plug to verify the same measurement you made at the loom.

If your resistance measurement is still low, there may still be a fault within the transmission housing. The rear section of the transmission that houses the DCCD coil should be removed and the wiring inspected for faults.

Resistance above the applicable range may indicate a bad connection or a damaged DCCD unit. Contact us for advice before powering your control unit.

2. **Measure the voltage between the switched power and ground (thick red and thick black wires) on the loom plug.**

The expected voltage range is 11 to 15 volts when the ignition is switched on and 0 volts when the ignition is off.

3. **Measure the continuity or resistance between each individual DCCD output wire and the vehicle ground on the loom plug.**

If there is continuity or your meter registers a resistance, there is a wiring problem that could cause a fuse to blow, wiring or the MapDCCD controller to be damaged. Carefully inspect your wiring. If your wiring appears ok there may still be a fault within the transmission housing. The rear section of the transmission that houses the DCCD coil should be removed and the wiring inspected for abrasion damage.



Controller mounting position

The MapDCCD controller can be mounted in different orientations if recalibrated. Normally it is installed facing the front of the car as indicated by the arrow in the below diagram. The controller should be held securely in place and should not move during vehicle use. Mechanical fasteners or double sided tape are adequate securing methods.

It is not necessary to mount the controller perfectly flat and level, although this is recommended. Once the controller is mounted run the accelerometer calibration function in the MapDCCD application to correct for slight angle errors.

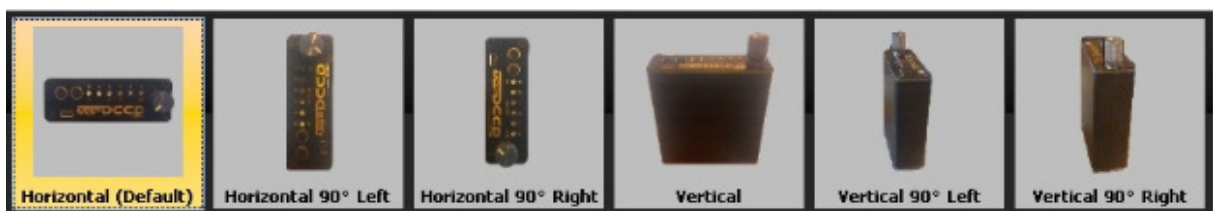
Front of vehicle



Possible mounting positions (Configurable in the application):

The MapDCCD configuration software allows you to mount your controller in a variety of positions. The software requires you set a reference position first (see below). The accelerometer calibration function can then be run to fine tune any alignment errors within a small margin.

Please ensure you first select your mounting position from the software options, then run the accelerometer calibration function.





DCCD dash light cluster driver

We offer a separate DCCD dash light cluster driver for driving the six DCCD lock lights and the optional auto mode light on the OEM gauge cluster.

The MapDCCD cluster driver accepts digital data from the MapDCCD controller and selectively drives seven lights connected to the output.

Usual practice is for us to integrate the MapDCCD cluster driver to a MapDCCD controller wiring loom before the unit is shipped, however it can be shipped separately with institutions for the user to install the pins into the connector.

Pin 6 on the B24 connector provides Mode and Lock digital data to the cluster driver module. This digital protocol can be provided on request if you wish to design your own dash display system.

The dash cluster driver can be purchased from the website separately, or in a combo package. Refer to our website www.mapdccd.com or contact us for more information info@mapdccd.com



Software – installation and setup

Connecting the MapDCCD controller to your computer

Download the MapDCCD Install program to your computer and double click on the file to begin the install process. During the install you will be asked which units you would prefer, metric or imperial, (this can also be changed later if desired). Once the install is complete you, will have a MapDCCD shortcut on your desktop to launch the application.

To connect to the MapDCCD device plug the USB cable into the laptop and MapDCCD. The first time this is done your computer may download and install a driver. This can take a few seconds.

When the driver has finished installing, launch the desktop MapDCCD shortcut. In the software click the “Connect” and the program should find and automatically connect to the MapDCCD controller within a few seconds. The maps and settings currently stored in the MapDCCD unit will then automatically download.

Note:

If you do not have an internet connection available when your laptop is in the car you can download the drivers here <https://www.silabs.com/products/development-tools/software/usb-to-uart-bridge-vcp-drivers> Download and unzip the driver to a folder. Inside the “CP210x_Universal_Windows_Driver” folder run “CP210xVCPInstaller_x64.exe” for 64bit Windows or “CP210xVCPInstaller_x86.exe” for 32bit Windows.

TPS calibration

The voltage levels from throttle position sensors (TPS) can sometimes be different between models. The MapDCCD comes set to OEM specified throttle range. However it is not uncommon to require some tweaking. To check if the default works for you, change to the “Setup” page of the software and watch the “Throttle” level as you put your foot on the throttle pedal. If the maximum and minimum throttle level matches your foot position then this setting does not need changing.

If the “Throttle” level in the software isn't covering the correct range you can make adjustments to correct for this. In the “Throttle calibration” sub-window, adjust with the up/down buttons for either the zero or full throttle setting changes until the range spans correctly.

Vehicle speed multiplier

This setting allows you to match the speed in the software with your speedometer. A difference may exist due to over or under sized tires. Click the up/down buttons to get the desired correction.

ABS, Footbrake and Handbrake inputs.

All of these three inputs can be set to "Not connected", "Active when low" and "Active when high". It is important to get this correct or the MapDCCD may not function correctly.

Not connected – Set this when you are not using the input at all. The MapDCCD will ignore the input regardless of any noise or shorts on the wire.

Active when low – Set this mode if the signal is inverted and outputs zero volts to represent the input (like ABS active, Handbrake active or Footbrake active).

Active when high – Set this mode if the signal outputs a high signal level (5-12V) to represent the input (e.g. ABS active, Handbrake active or Footbrake active).

The Setup Display

The setup display screen shows live information on the state of the MapDCCD inputs. The setup display can also be used to confirm that wiring and input selection is correct.

For example, pressing the foot brake should light up the "Foot brake" indication light. You can also use it to see the current throttle position display to help setting the throttle voltage limits.

Do not attempt to set the vehicle speed sensor while driving the car alone. This should be done by a passenger. Alternatively, if you know your car is 10kph fast it is usually acceptable to just set the speed multiplier to correct for this without needing a road test.

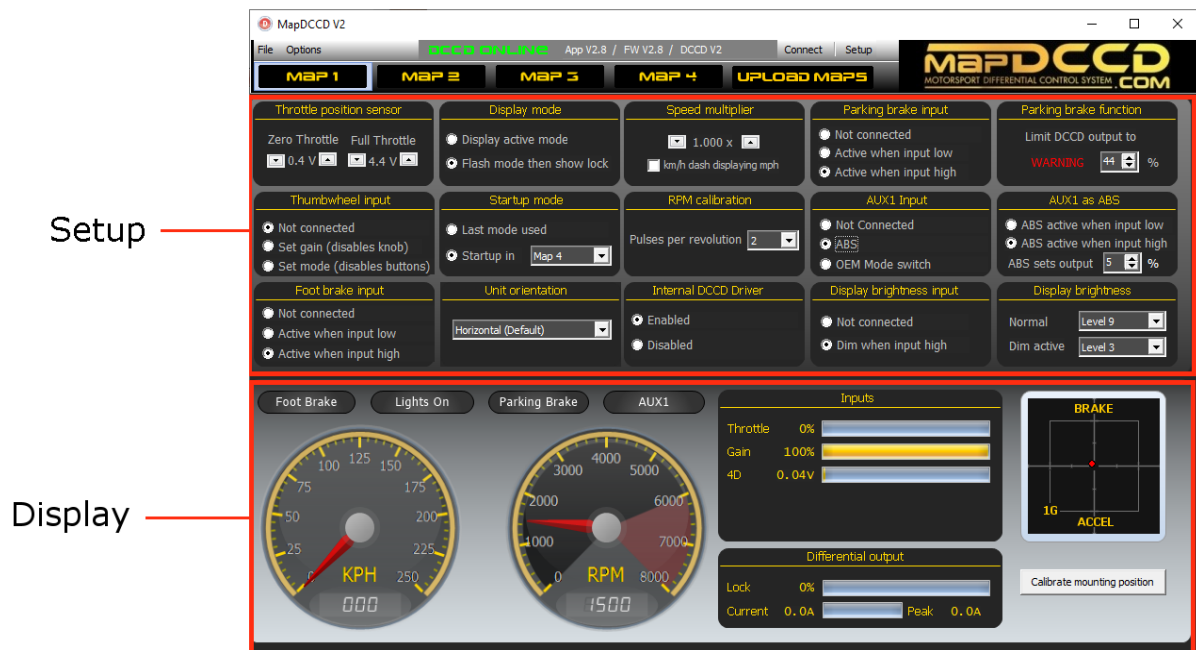
Saving your changes

Setting changes made on the **setup** window are saved automatically.

Changes made to any of the **maps** must be uploaded to the MapDCCD controller by clicking the "Upload" button. Uploading will take approximately 10 seconds.

Changes to any of the maps can be saved to a .DMF file by clicking "File">"Save all maps to file" and naming the file. Note this only saves the map you currently have displayed, not all four maps.

Software – Setup page



Setup options

Throttle position sensor	Zero and full throttle voltage levels used for setting throttle range.
Thumbwheel input	Sets the function of the thumbwheel input (if used). It can be set to control the gain or the mode.
Foot brake input	Sets how the foot brake is connected. If you are using the footbrake input then this can be set normal (active high) or inverted (active low).
Display mode	Sets how the MapDCCD front display behaves. They can show either the current mode or both the mode and current lock.
Start-up mode	Sets what mode the MapDCCD is in when it powers up. This can be any one of the six modes or the mode last used.
Unit Orientation	Sets the mounting orientation of the MapDCCD controller.
Speed calibration	Sets a multiplier to correct for inaccurate vehicle speed readings.
RPM calibration	Sets the number of pulses used to read the vehicle RPM (OEM is 2 pulses).
Internal DCCD driver	Configures if the MapDCCD controller is responsible for driving the DCCD directly.
Parking brake input	Sets how the parking brake is connected. If you are using the parking brake input then this can be set normal or inverted.
Parking brake function	Sets what DCCD lock limit to use when the parking brake is active.
AUX input	Sets how the AUX is connected.
ABS Function	Sets what DCCD lock limit to use when the ABS input configuration is active.
Display brightness input	Sets whether the headlight input is used to dim the MapDCCD display.
Display brightness	Sets the normal and dim led brightness levels.
Recalibrate Zero G	Calibrates the mounting angle to zero G (when car is level)

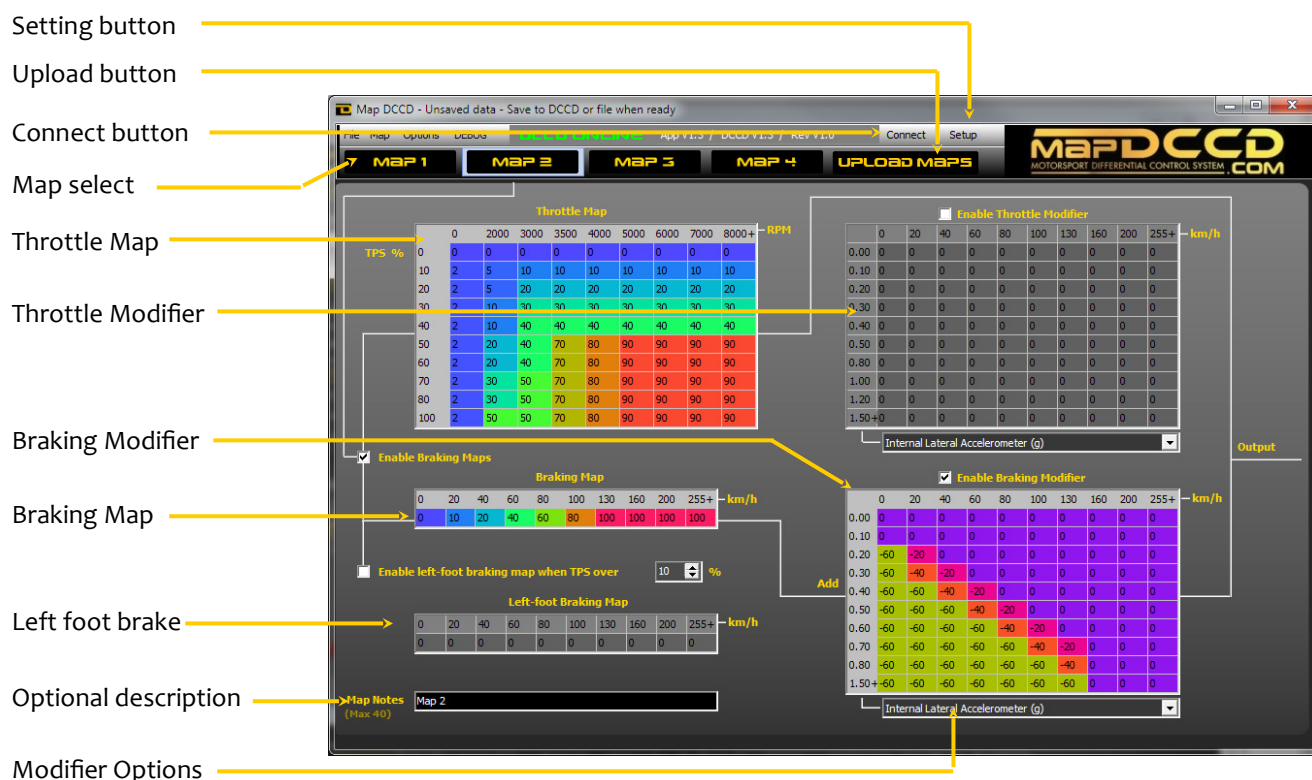
Display

The display area shows real time input and output information. This area provides you a button to reset the internal 3-axis accelerometer sensor to calibrate the controller mounting position.

Displayed analog information: Vehicle speed, Vehicle RPM, Throttle position, gain dial position, DCCD 4D input voltage, DCCD output lock, and internal X and Y G-force sensor indication.

Displayed digital information: Footbrake, handbrake, ABS and headlight states.

Software – Mapping interface



- | | |
|----------------|--|
| Setting button | - Used to switch the window to the setup page |
| Upload button | - Used to save map changes to the controller (changes made to maps will not be stored or functional until they are uploaded). |
| Connect button | - Used to connect to the MapDCCD controller once the USB cable has been connected. |
| Map select | - Used to select maps 1 to 4 to be viewed or edited. The active map is highlighted. |
| Throttle map | - Used to tune a TPS vs. RPM DCCD lock map. Values represent DCCD lock from 0 to 100% to be sent to the throttle modifier map (when the throttle modifier map is enabled) or the DCCD center differential (when the throttle modifier map is not enabled). |

Throttle modifier	- Used to tune a vehicle speed vs. Sensor input map. The sensor input can be selected from the drop down box below the map. Options include internal accelerometers and external sensors. Values in the throttle modifier map are added (when positive) or subtracted (when negative) from the value output from the Throttle map. The output of the throttle modifier map is sent to the DCCD center differential.
Braking map	- Used to tune the DCCD lock with speed when the foot brake is pressed.
Left foot braking map	- Used to the DCCD lock with speed when the foot brake is pressed and the throttle is above a threshold set in the above box.
Braking modifier	- Used to tune vehicle speed vs. Sensor input map. Values in the braking modifier map are added (when positive) or subtracted (when negative) from the value output from the braking maps. The output of the braking modifier map is sent to the DCCD center differential.
Description text field	- For notes.
Modifier options	- A drop down list of selectable sensor inputs that can be used as part of the DCCD control strategy.



Error/Fault Codes

The MapDCCD controller will display a warning when there is an error with the DCCD output. There are three possible causes of the error:

1. The DCCD output wires are shorted; or
2. The DCCD output wires have become disconnected; or
3. The DCCD is trying to draw an abnormally large amount of current.

The MapDCCD display lights will alternate flashing between all green and all orange lights and a constant beeping sound will be emitted.

If this occurs, we recommend checking the DCCD output wires between the controller and the transmission for damage, which may cause a short circuit or disconnection.

In rare cases, the DCCD coil inside the transmission may be damaged or burnt and require replacement or rewinding. The health of a DCCD coil can be measured by the inductance in Milli-Henries (mH). A healthy coil will measure about 6.5mH.

Note: The controller will constantly test the DCCD output again with an ever-increasing wait time, up to around 10 seconds. Once the wiring or over-current issue is resolved the controller will stop flashing within around 10 seconds and return to normal operation automatically.

Note: An intermittent wiring fault may result in the MapDCCD controller periodically going into this state for a second or two and then acting normally again for a while. Intermittent issues can be caused if DCCD wires are being crushed or rubbing against the gearbox or chassis as the gearbox vibrates and moves around. If the wires insulation has been worn off then intermittent shorts can occur under high engine load as the gearbox rotates and touches the bare wires.

Note: If using the MapDCCD controller to override an existing OEM controller (as described on page 10) then set the 'Internal DCCD Driver' to 'Disabled' to avoid getting this error. (Since the DCCD output wires on the MapDCCD controller are intentionally left disconnected in this situation and not a fault).

FAQ

Q: What is the size of the MapDCCD Differential Controller?

A: The metal enclosure size is - Height = 27mm, Width = 78mm, Depth = 82mm,
The front knob extends +17mm in front.
The rear connector socket extends +3mm in the rear.

Note: Extra space is required at the rear for the connector plug and for the wires to make a 90 degree turn, minimum +28mm.

Q: My MapDCCD Differential Controller does not power on. I have confirmed 12V and ground are applied.

A: Please check you have both ground wires connected. Pin 1 on the MapDCCD B24 connector needs to be connected to signal/ECU ground. The unit cannot power on without this ground connection. The other ground connection on pin 2 of B4 is only used for the high current needed by the DCCD gearbox.

Q: The MapDCCD Differential Controller has power but does not seem to be controlling the gearbox at all. The MapDCCD App is showing lock but no current.

A: Please check you have the setting “Internal DCCD Driver” set to “Enabled” in the App.

Q: I broke the metal knob off the front of the unit off. Can i get this fixed?

A: Yes, we can fix this if you send the unit back.
Alternatively if you wish to replace it yourself the manufacturer is Bourns and the part number is 3310C-001-103L



Included hardware with your purchase:

One MapDCCD Differential Controller

One MapDCCD 1.5 m loom (B24)

One MapDCCD 1.5 m loom (B4)

One Mini-B USB cable

Spare Parts and Servicing

We can supply replacement parts and servicing of units at reasonable cost.

Help

Please email info@mapdccd.com



Limitations

The MapDCCD differential control system is for off-road use only.

The MapDCCD differential control system is to be installed by a qualified automotive technician. Should an issue arise, we will help you. However, you will be responsible for the cost of any shipping and repairs if a non-qualified automotive technician installs the MapDCCD differential control system.

Installation of the MapDCCD differential control system acknowledges the above limitations.

Installation of the MapDCCD differential control system acknowledges that the user is solely responsible for their own safety and the safety of their vehicle, passengers and other vehicles.