MapDCCD advanced WSS processor
Installation and user guide

Features:

- Four wheel speed signal (WSS) inputs
- Highly accurate VSS signal output
- Optional VSS speed cut feature (limits speed signal output to avoid ECU speed cut)
- Slip output based on front and rear wheel speed difference
- Optional slip output response filter
- Integrate with existing ABS sensors without affecting ABS operation
- Digitally adjustable VSS output to calibrate for various tire sizes
- Advanced hardware design provides extreme immunity to noise and highly accurate readings even from worn or dirty sensors
- Lightweight and small size
- Supports both Gen1 and Gen2 MapDCCD controllers

MapDCCD
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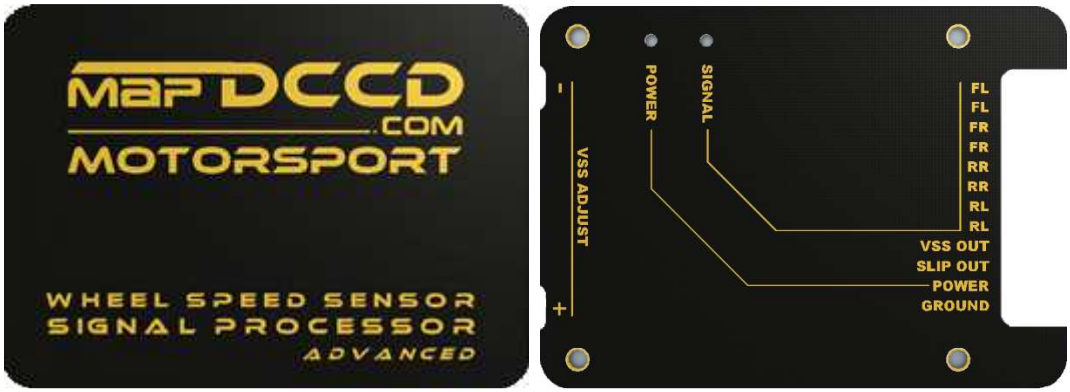
Hardware guide



Pin	Label	Specification
1	FL	Front left WSS +
2	FL	Front left WSS -
3	FR	Front right WSS +
4	FR	Front right WSS -
5	RR	Rear right WSS +
6	RR	Rear right WSS -
7	RL	Rear left WSS +
8	RL	Rear left WSS -
9	VSS out	Pulsed signal
10	Slip out	0 – 5V output
11	Power	10 – 16V input
12	Ground	Sensor ground

- Power LED (green)
- WSS signal LED (orange) – flashes when a valid WSS pulse is received
- WSS+ and WSS- wire polarity does not matter
- All wheel inputs are required for operation

Included hardware with your purchase:

One MapDCCD Advanced wheel speed signal processor module

One loom that includes:
- 0.5m wire for power, ground, slip and VSS signals
- 4x 1.5m twisted/shielded WSS signal wires

Connection and setup guide

Power
The power connection should be connected to a switched 12-16V source. We recommend a power source at or near your ECU.

Ground
The ground connection should be connected to any ground connection. We recommend a ground at or near your ECU.

Slip output
The slip output is a voltage, it is based on a speed difference between the front and rear wheels. The slip output wire can be connected to your MapDCCD controller, ECU and/or datalogger.

The slip output is scaled linearly from:
- 0V for 0% slip, to
- 5V for 25% or greater slip difference.

Slip = 0% always if all wheels are under 0.5KPH / 0.3MPH

Front two wheels weighted 80% to slowest wheel = A
Rear two wheels weighted 80% to slowest = B
Slip output is the percentage difference between A and B.

VSS output
The VSS signal output should be connected to a VSS input signal at your ECU, your MapDCCD differential controller and any other devices in your car requiring a normal vehicle speed input signal.

The VSS output hardware is amplified and can supply the VSS signal to many devices simultaneously without being overloaded.

Speed calibration can be changed at any time by pressing and holding the VSS + and VSS - buttons. The orange LED flashes fast to indicate the setting is changing.

There is an optional speed cut feature to limit the VSS output to 170KPH/105MPH.
See the optional features setup.

Wheel speed sensor inputs
Each WSS input has two connections for connection two each of the two wires on a wheel speed sensor. The order of the wires does not matter.

The wire extending from the module to the sensor (or to where you connect to the OEM wiring) should be:
- a twisted pair – two wires twisted together, or
- shielded wire – a pair of wires

All four WSS inputs are required for correct operation.

Connecting to a Generation 2 MapDCCD controller:

To use the slip signal with a Gen 2 MapDCCD controller connect the MapDCCD **'4D input'** to the signal processor **'Slip Out'** and set the 4D modifier table to **'4D Input - MapDCCD Slip 0-25%'**.

Connecting to an Generation 1 MapDCCD controller:

To use the slip signal with a Gen 1 MapDCCD controller connect the MapDCCD **'4D input'** to the signal processor **'Slip Out'** and set the 4D modifier table to **'4D Input - General 0-5V'**.

Refer to table for modifier axis conversions

Slip Percentage	Value for General 0-5V Axis
0%	0.0V
2%	0.4V
4%	0.8V
8%	1.6V
6%	1.2V
10%	2.0V
15%	3.0V
20%	4.0V
25%	5.0V

The optional 'Slip Decay Filter' should be enabled for MapDCCD Gen 1 units.
(See optional feature section)

Optional features:

To activate the ***Speed cut*** feature, the ***Slip response output filter*** or the ***Slip Decay Filter***, perform the following steps:

1. Depower unit
2. Hold both VSS+ and VSS- buttons down
3. Power unit with both buttons pressed
4. Release buttons

   This will enter configuration mode indicated by the green LED flashing

   The Yellow LED indicates if the feature is enabled or disabled, Yellow on = enabled.
   The Green LED flashing indicates which setting is to be changed

   One green flash • • • **= Speed cut - Enable/Disable**

   Two green flashes •• •• •• **= Slip response output filter - Enable/Disable**

   Three green flashes ••• ••• ••• **= Slip decay filter - Enable/Disable (For Gen 1 Only)**

5. Press the 'VSS +' button to cycle to the feature you want to edit
6. Press the 'VSS –' button to toggle the setting you are editing between enabled and disabled
7. Depower the unit to exit and save your feature configuration.
   (Unit will also automatically exit after 60 seconds)

Notes for users

Control decisions based on slip at low speeds

At very slow vehicle speed the pulses from all wheel sensors are also slow. The delay between signals from each wheel can generate a large slip signal even when the wheels are not slipping due to very slow update rates. We recommend mapping out control decisions based on slip when vehicle speed is very slow.

The speed at which the slip signal becomes reliable depends on the number of teeth on the tone ring of a vehicle and the wheel circumference. For example, on a Subaru with 45 tone ring teeth and a 2m tire circumference, a vehicle speed of 5KPH/3MPH is usually fast enough to produce a stable and reliable slip signal.

For drag racing, you may desire to implement control decisions (e.g. traction control, DCCD control) even at speeds under 5KPH/3MPH to optimise off the line performance.

Slip Decay Filter

For MapDCCD Generation 1 controller owners, we recommend enabling the 'slip decay filter'. This filter is provided to allow the DCCD to respond correctly to fast changes in slip.

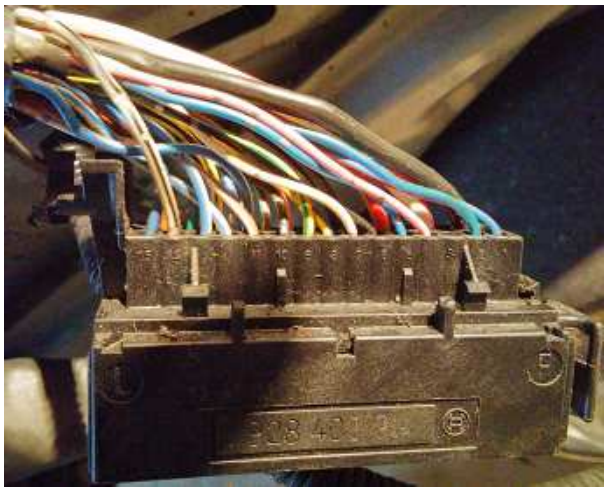
MapDCCD Generation 2 controllers also benefit from a slip decay filter. However, this filter is implemented by the MapDCCD Gen2 software making the Signal Processor 'slip decay filter' unnecessary for use with Gen2 units.

Slip response output filter

If using the slip signal for slow speed datalogging, or any non-standard application where a smoother slip signal is desirable the 'Slip response output filter' can be enabled to reduce slip noise.

Wheel speed sensor signal connections

Our recommended position for connecting to the wheel speed signals in an OEM configuration is at the ABS computer located on the side of the ABS pump unit in the engine bay. All of OEM wheel speed sensors connect here.



ABS connector (MY03/04 shown)

The wheel speed sensor signal wires can be identified by each being a tightly twisted pair of wires. Further, each of the sensor signal wires typically emerge from shielded wires approx 3" from where they termiate to the connector plug.

Pins are as follows **as labelled by the embossment on the OEM connector as shown**. (Note the FSM labels these pins in a different order).

Pin 1 – Blue/red stripe – Right rear wheel +

Pin 2 – Blue/green stripe – Right rear wheel -

Pin 3 – blank

Pin 4 – Pink – Front right wheel +

Pin 5 – Blue – Front right wheel -

Pin 6 – White – Front left wheel +

Pin 7 – Black – Front left wheel -

Pin 8 – Yellow/red stripe – Left rear wheel +

Pin 9 – Yellow/green stripe – Left rear wheel -

Verifying your connections

The module has two indication LEDs:

- Green – power LED
- Orange – WSS signal LED

The Green power LED will light when the module has good power.

The Orange WSS signal LED will flash when a WSS pulse is successfully received.

Calibrating the VSS signal

The MapDCCD wheel speed signal processor module has two buttons for adjusting the VSS speed higher or lower.

We recommend having a passenger monitor GPS speed and adjust the VSS speed using the buttons until your dash speedometer matches the GPS speed.

The default calibration is for a tire perimeter of 2 metres (approximately a 225/45 R17 tire diameter).

Help

Please email info@mapdccd.com