M1 CAN Inputs User Guide

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SCOPE

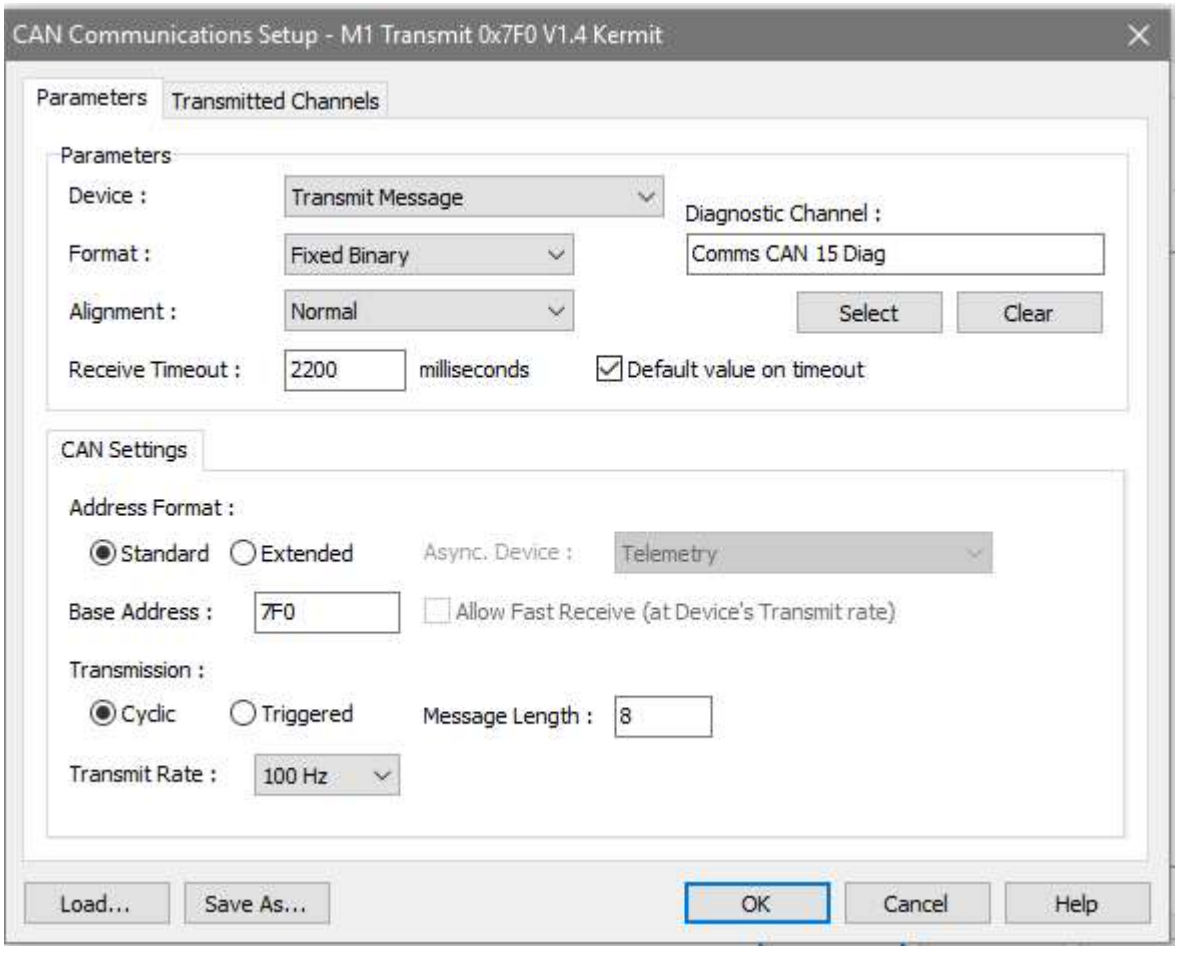
This document is designed to allow for the MoTeC M1 User to setup the CAN Inputs from a MoTeC Dash in the M1 GP Packages.

CONFIGURATION

Dash Template setup

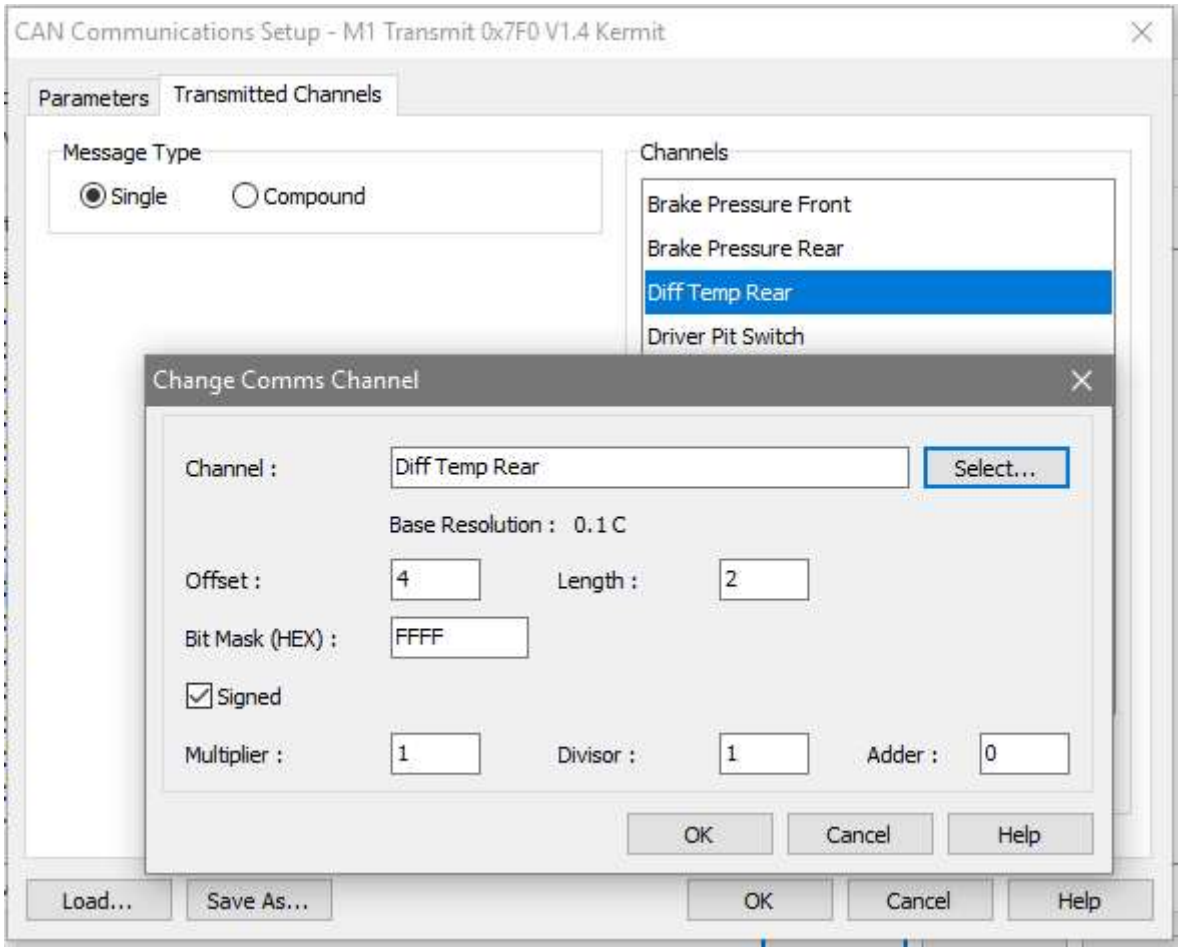
After setting up the channel that you want to transmit to the M1 in the Dash, you then need to setup the CAN Transmit template. This is done through **Connections | Communications**. On the same CAN Bus that the M1 is connected to, select **New**. This will bring up a window as below. Setup the Parameters for **Device**, **Format**, **Alignment** and **Receive Timeout** as shown. The Diagnostic Channel is optional.

Set the transmit **Base Address** to a value that is not being used on the CAN Bus and that gives enough of an address range for all the channels that need to be transmitted. The **Transmit Rate** should be set at a rate that matches the fastest channel that you send.



On the **Transmitted Channels** tab, click on the **Add** button and select the channel that you want to send to the M1. In this example we are sending the Rear Differential Temperature across to the M1. If you add the channels in order, then the Dash Manager will fill out the **Offset** and **Length** values for you but if you are adding them into a specific location in the CAN message, then the **Offset** starts at zero, and increments to seven. A **Length** of 1 is an 8bit message, and 2 signifies a 16bit message. When transmitting into the M1 the **Bit Mask** will in most cases remain as FFFF.

Signed is used if the number will go into a negative value and is normally ticked on. The **Multiplier, Divisor** and **Adder** can be left as shown for most channels.



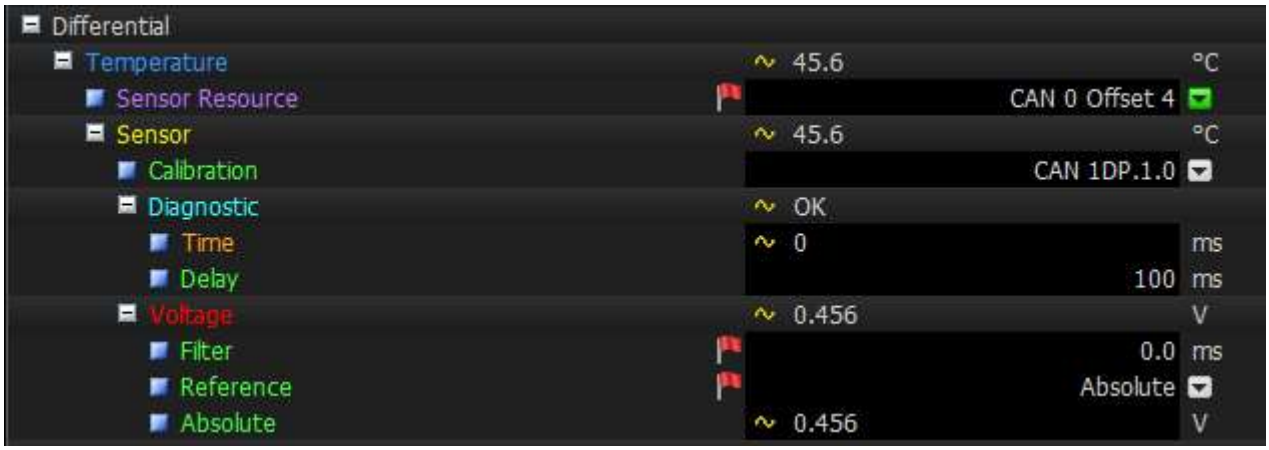
M1 CAN Setup

In the M1, under the **ECU Receive** Parameters, Enable the CAN Bus that you are using by changing the **ECU Receive CAN Bus** to the Bus that you are going to use. Then change the **CAN ID Base** to match the CAN ID that you set in the transmit template in the Dash. This is the starting point for the message addresses used for all receive templates, this is a total of 32 separate messages that can be received into the M1. Leave the **ECU Receive Message Type** as Sequential.

This is how the Dash **Base Address** relates to the M1 **CAN ID**, it is not possible to use a different CAN address range for some messages to the M1 to that specified as the **ECU Receive CAN ID Base**. The offset in the Dash matches that of the M1.

Dash Base Address	M1 CAN ID
0x7F0	CAN 0
0x7F1	CAN 1
0x7F2	CAN 2
0x7F3	CAN 3
0x7F4	CAN 4
0x7F5	CAN 5
0x7F6	CAN 6
0x7F7	CAN 7

To configure the received channel, you allocate the **Sensor Resource** to the specific CAN message. In this example, as the **Base Address** in the Dash is **0x7F0** and the **Offset** is 4, then the matching **Sensor Resource** is **CAN 0 Offset 4**



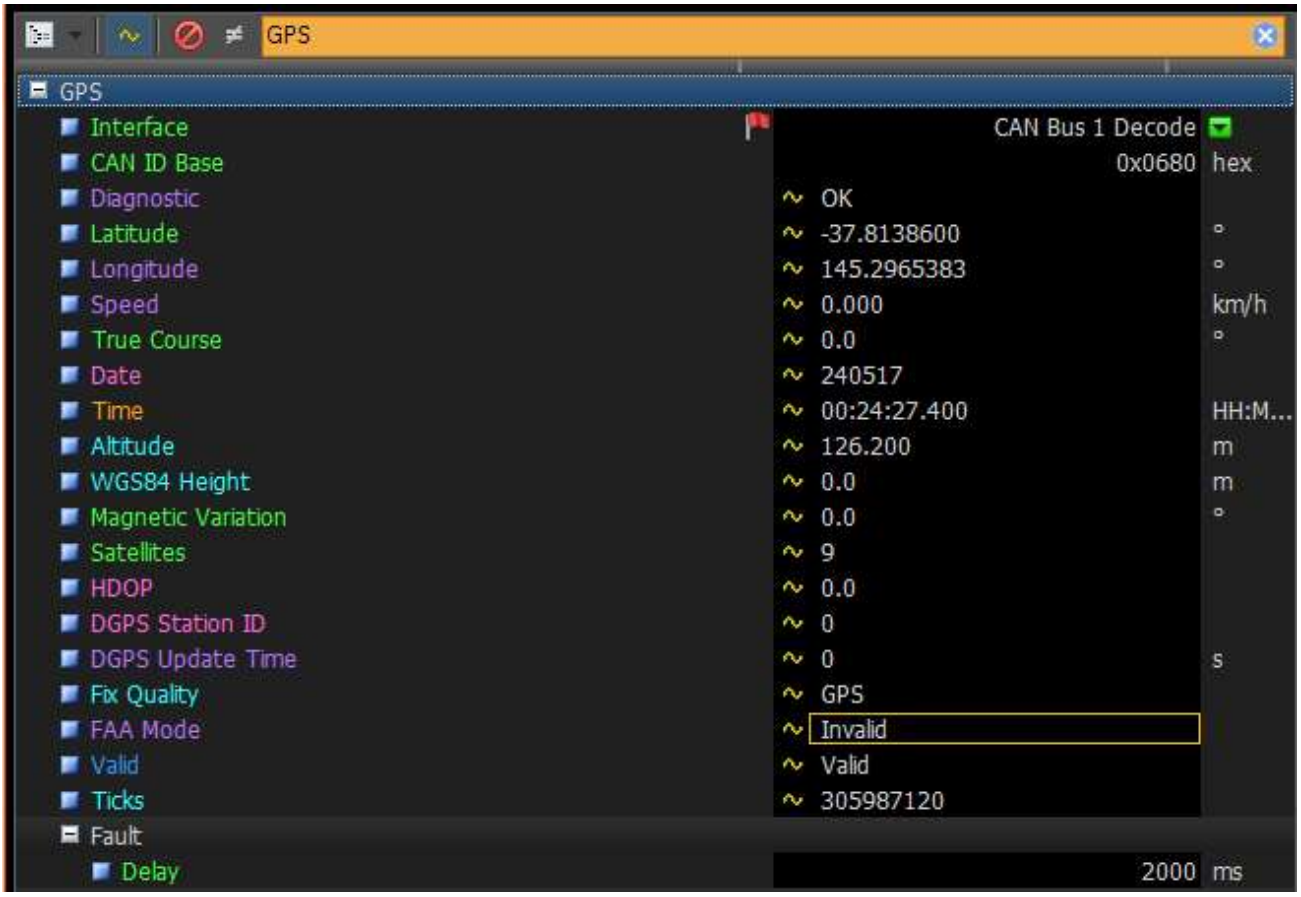
From the **Sensor Calibration** dropdown list, select the **CAN xDP** calibration option, dependent on the number of decimal places being transmitted. As the value being transmitted from the Dash is a whole number, without a decimal place, it is important to select the correct option here.

GPS CAN RECEIVE

The M1 can receive GPS Data from a MoTeC Dash or GPS Receiver connected to a STC Device on CAN, or from a GPS Sensor wired directly in to the M1.

GPS from a Dash

To receive GPS data over CAN from a MoTeC Dash, you select the **GPS Interface** of **CAN Bus *X* Decode**, where the CAN Bus is the one that the Dash is also on. The **CAN ID Base** default value is **0x0680**.



The **FAA Mode** will display as **Invalid** as this message is not supported in the M1 system.

In the Display Manager, you need to add the following templates into the Communications Setup, using the same CAN Bus that the M1 is communicating on.

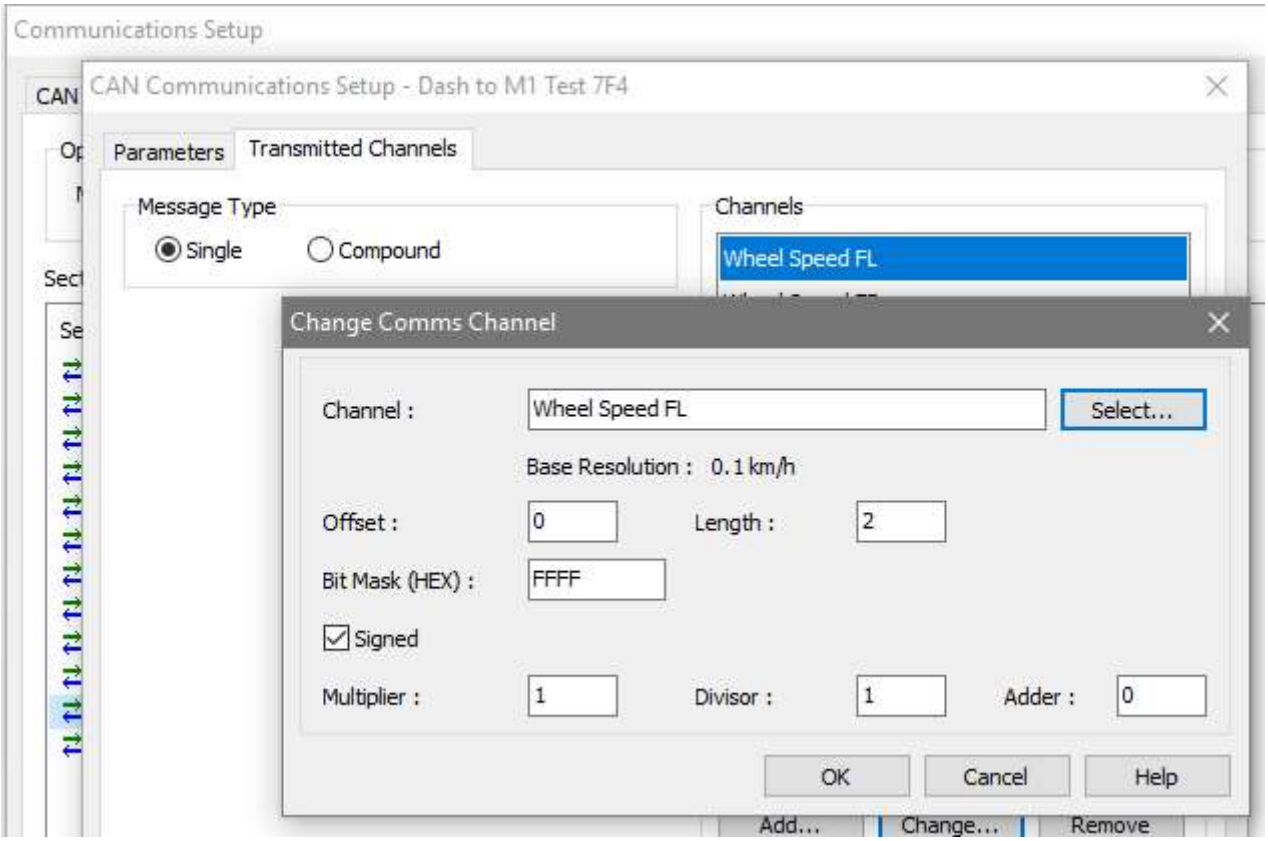
12 GPS_to_M1_0x680_Version 1
13 GPS_to_M1_0x681_Version 1
14 GPS_to_M1_0x682_Version 1
15 GPS_to_M1_0x683_Version 1

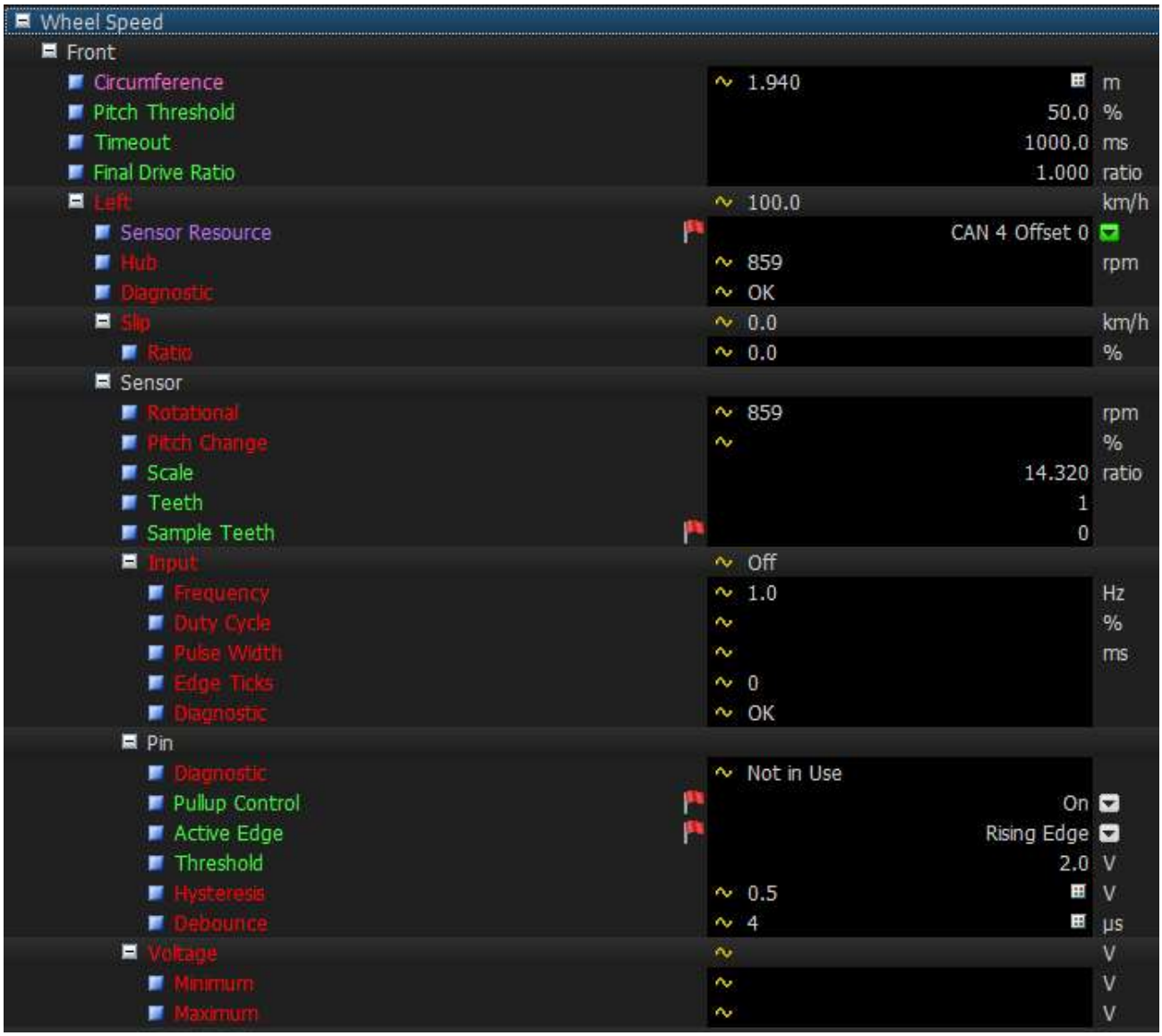
This will report in the **Vehicle Speed State** channel as **GPS** if no other Speed inputs are configured and Valid.

WHEEL SPEEDS OVER CAN

To import wheel speeds into the M1 from an external device over CAN, such as ABS controllers or a Dash, specific setups need to be created.

To import wheel speeds in from a MoTeC Dash, the following settings are used. This is similar to the setup shown earlier in this document, using wheel speeds instead.





The Parameters that need to be setup are;

Wheel Speed Front/Rear Circumference – This must exactly match the setting in the Dash.

Wheel Speed *x x* Sensor Resource.

Wheel Speed *x x* Sensor Scale

Wheel Speed *x x* Sensor Teeth

The ratio between **Wheel Speed *x x* Sensor Scale** and **Wheel Speed *x x* Sensor Teeth** should be 14.32 for the correct display of the transmitted wheels speeds.

The **Pin** settings should be as shown in the image above, with a **Hysteresis** of **0.5V** and a **Debounce** of **4**.

Using the **Simulate** function in the Dash, transmit various speeds from the Dash to the M1 to validate that the settings are correct and working.