



# MoTeC Dash to M1 Communications

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## ▶ OVERVIEW

This document explains the process of transmitting channels from a MoTeC Dash to the M1 series of ECU's

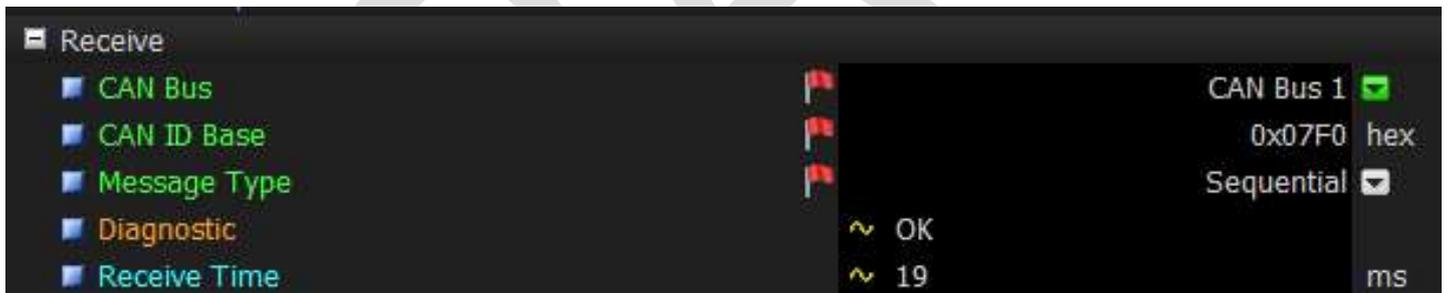
## ▶ WHAT IS NEEDED?

A MoTeC Dash/Display or standalone logger attached via CAN to a MoTeC M1 ECU. These notes can also be used as a guide for configuring other non MoTeC devices to communicate with a MoTeC M1 ECU.

## ▶ WORKED EXAMPLE 1 – SWITCHES

In this example, the steering wheel paddles for the gear box are wired into the Dash, and are being transmitted into the M1 over CAN. The configuring of the Paddles into the Dash is not covered in this document.

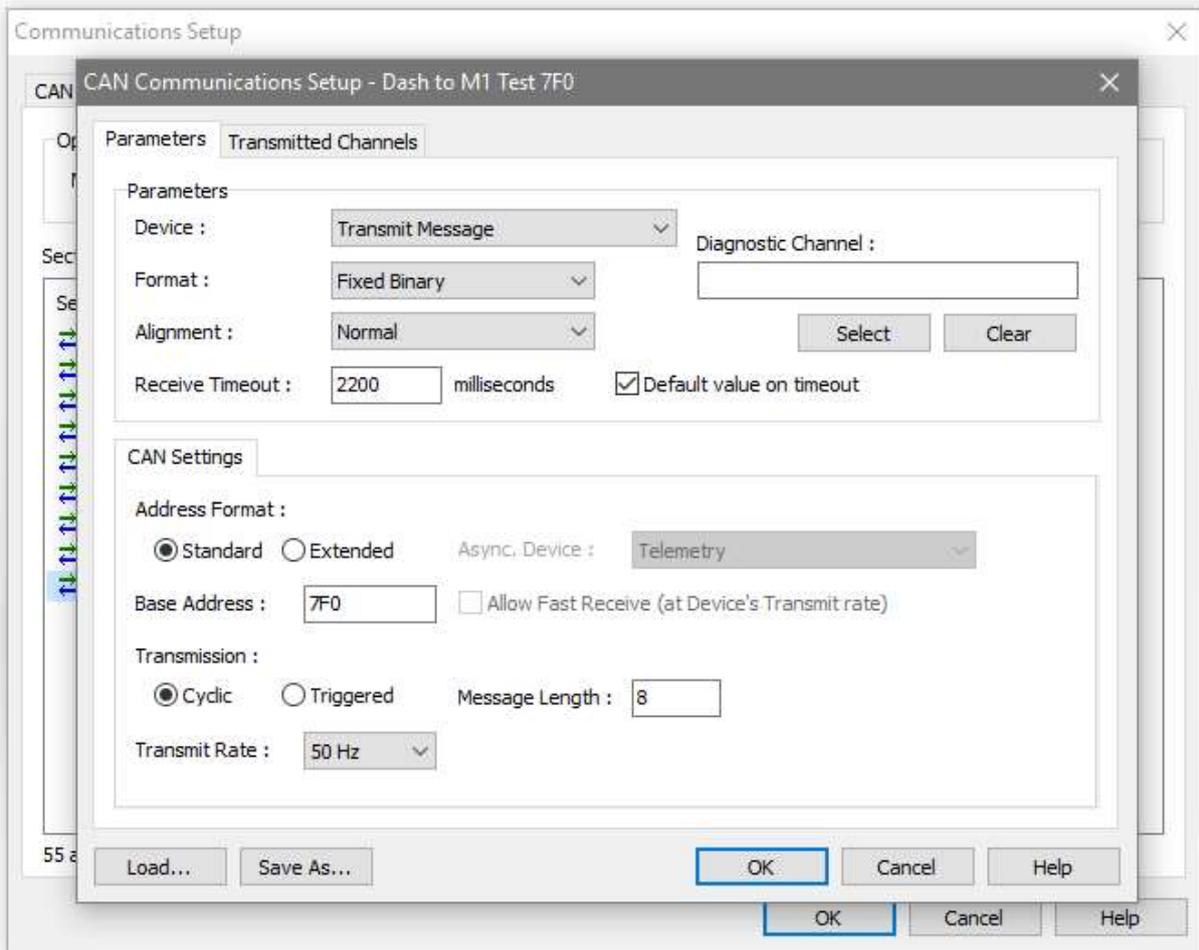
The first step in setting up the M1 to receive the messages from an external CAN device is to configure the Receive ID. This is the starting point for the CAN Receive ID's, the CAN Message and Offset will increment up from this point, to a maximum of 32 messages.



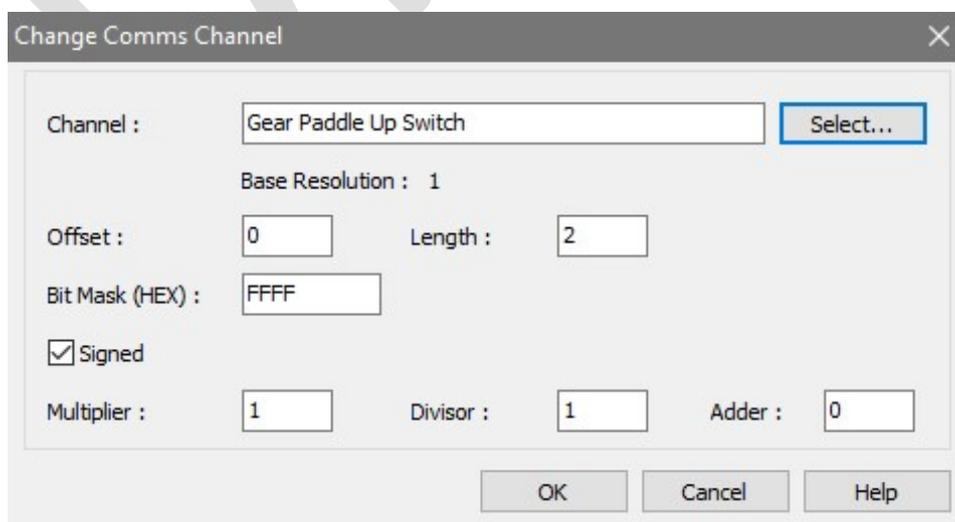
The **Receive CAN ID Base** address must match the **Base Address** of the first CAN Template in the Dash, doing so will ensure that a channel using the **Offset** of 0 in the template using the **Base Address** that matches the **CAN ID Base** in the will use the **Resource** of **CAN 0 Offset 0** in the M1. Subsequent CAN Transmit templates in the Dash use a sequentially increasing **Base Address**, i.e. 7F1, 7F2...

See the **M1 to Dash CAN Message Address and Offsets** section at the end of this document for a list illustrating the relationship between the M1 Receive CAN message ID and the Dash Transmit message ID.

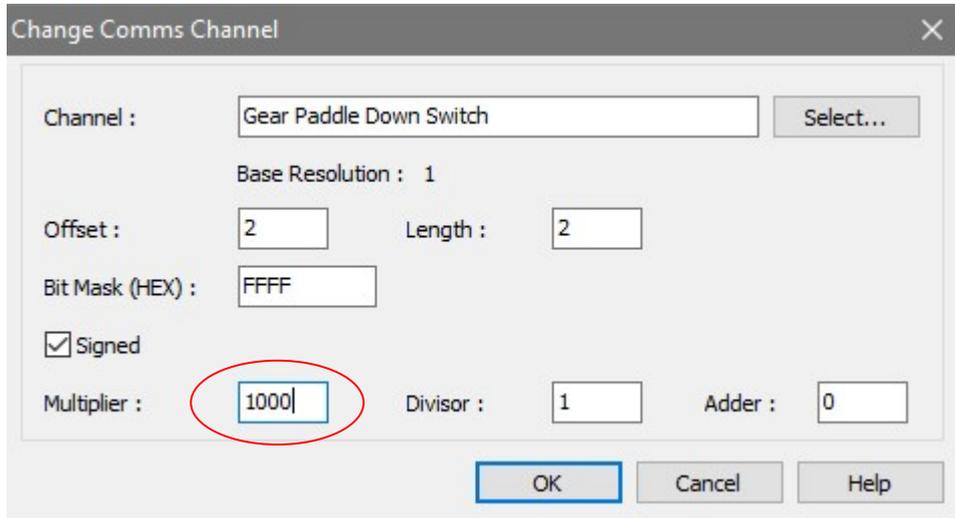
In the Dash Manager go to **Connections | Communications** and select the CAN Bus that the M1 is attached to. Click on the **New...** button and create a template with the following settings.



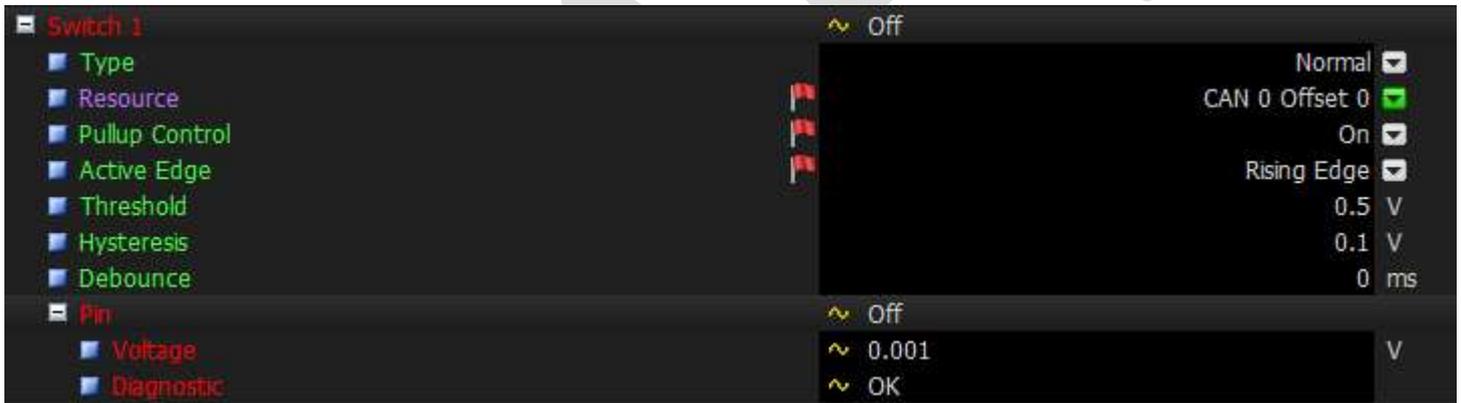
We then want to add the required channels in to the CAN template. This is done by selecting the **Add...** button and selecting the required channel.



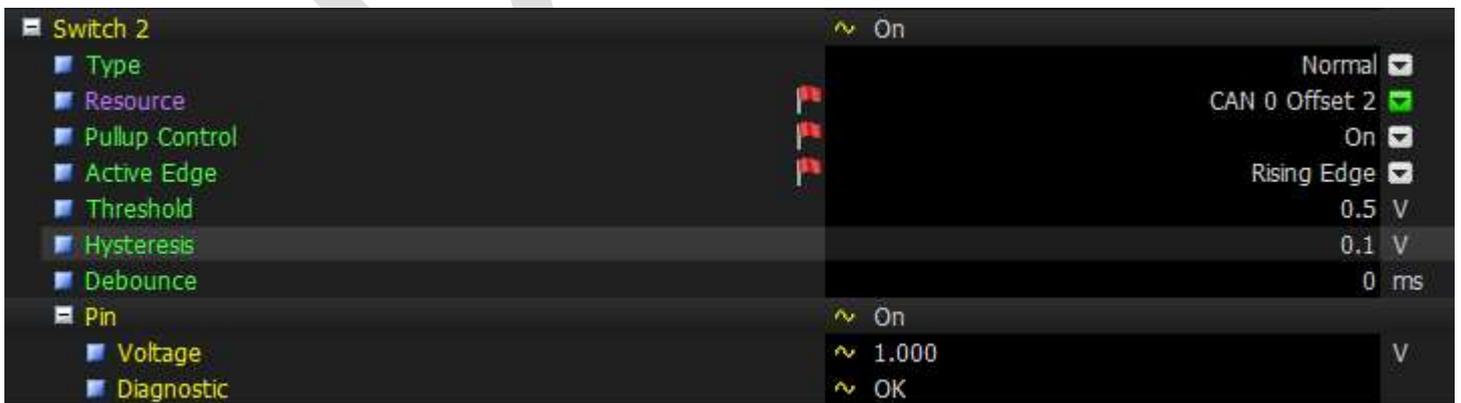
As the Base Resolution on these channels is 1, the transmitted value to the M1 when it is read as a Driver Switch will be 0.001V. As the resolution of the Threshold and Hysteresis parameters in the M1 is coarser than this, we need to multiply the signal sent from the Dash to increase its value. This is done using the **Multiplier** function.



Multiplier of 1, **Pin Voltage** read as 0.001V

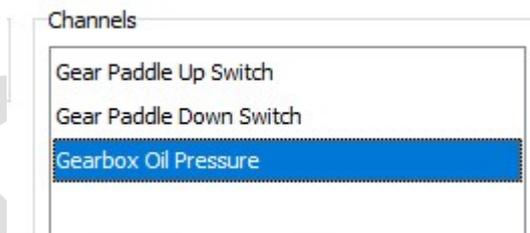
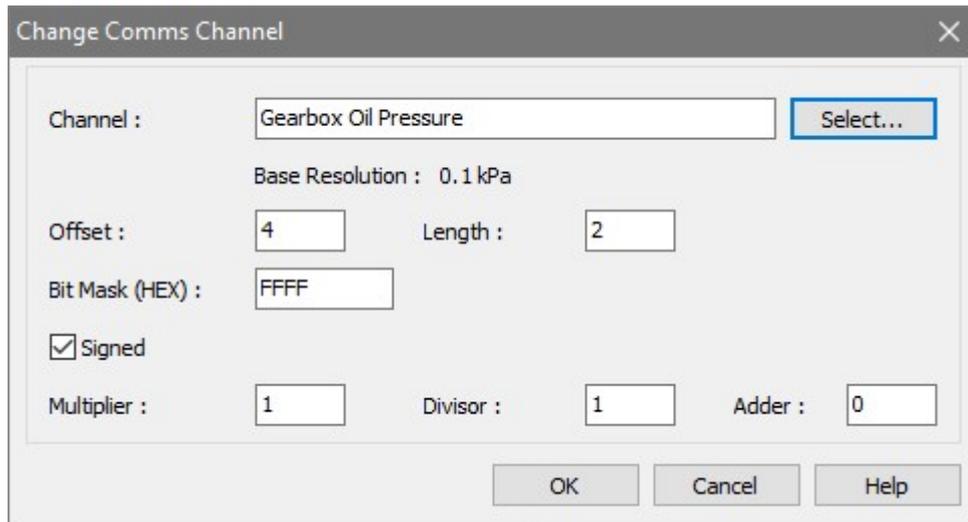


Multiplier of 1000, **Pin Voltage** read as 1.000V, this also exceeds the **Threshold** and **Hysteresis** values, so the switch state changes. The **Switch x Type** should remain as **Normal** for momentary operation.



### ▶ WORKED EXAMPLE 2 – GEARBOX PRESSURE

In this example we will be transmitting gearbox pressure from the Dash into the M1. Using the same base template as used in Worked Example 1, add the Gearbox Pressure channel into the template and send the changed configuration into the Dash.



As the Base Resolution in the Dash Comms Channel is 0.1kPa or 1 decimal place and a Gauge measurement, in the M1 the sensor calibration needed is **CAN Gauge 1DP**



Value in the Dash.

→ Gearbox Oil Pressure	Pressure & Stress	520.0 kPa
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### ► M1 TO DASH CAN MESSAGE ADDRESS AND OFFSETS

Setting the Base Address in the M1 to 0x7F0 will automatically extend the receive address range out to 0x7F7, allowing for 32 16bit messages to be received by the M1.

Base Address	M1 Resource Name	Dash Template Base	Comms Channel Offset
0x7F0	CAN 0 Offset 0	0x7F0	0
	CAN 0 Offset 2		2
	CAN 0 Offset 4		4
	CAN 0 Offset 6		6
	CAN 1 Offset 0	0x7F1	0
	CAN 1 Offset 2		2
	CAN 1 Offset 4		4
	CAN 1 Offset 6		6
	CAN 2 Offset 0	0x7F2	0
	CAN 2 Offset 2		2
	CAN 2 Offset 4		4
	CAN 2 Offset 6		6
	CAN 3 Offset 0	0x7F3	0
	CAN 3 Offset 2		2
	CAN 3 Offset 4		4
	CAN 3 Offset 6		6
Extends to	CAN 7 Offset 6	0x7F7	6