



T1 ID BPC100 Wiring and Configuration for R35 Motec M1 ECU

Revision 001.2

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Revision Update Notes:

The following table indicates the changes we have made to the process or configuration of this product.

If you have any questions email us at support@t1racedevelopment.com

Revision	Date	Description
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Rev 001	March 5, 2024	- Document creation
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Design Change Overview

The OE Fuel Pump Control Module requires a 0-4v signal to vary pump speed. It gets this via a high side PWM signal.

The Motec adapter box has a resistor built into it which allows the Half Bridge Output to mimic that 0-4v signal.

This PWM signal works with the ID BPC100 when battery voltage is normal. However, if the battery voltage is weak and falls to near 10v when cranking, the PWM signal will no longer be high enough voltage to trigger the ID BPC100 to turn on, until voltage rises again (when the cranking stops).

The OE FPCM has a diagnostic feedback wire which goes to a digital input on the ecu. This is no longer needed, so we are repurposing that wire for PWM control, as it does not go through the resistor in the adapter box.

We are revising the wiring looms and configuration to be able to work around this. This requires moving 1 wire at the Motec ECU header and some configuration changes, outlined below.

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Instructions

Step 1

Remove the Motec ECU and adapter box from the vehicle, if it's already installed.

Step 2

Remove the B jumper that goes between the M1 ecu and the Motec adapter box. This will be the second connector over from the left, it's a 26-pin connector.



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Step 3

You're going to be removing the jumper between B20 at the ECU and B20 at the adapter completely. You'll then remove pin B3 from the ECU side and move it to pin B20 at the ecu. This will leave pin B3 at the ECU open, and pin B20 at the adapter open.



In order to remove the pins from the connector, you'll need to depress the lock from the side with the long white bar in the middle. Press this with a small tool or your finger nail. It will move a few millimeters and stop, this is 'unlocked'. When each side is unlocked, you simply pull the pins you want to remove out by pulling straight back on the wire. Once you've removed what's needed and reinserted the old B3 to the B20 location at the ECU, you're ready to lock the connector back. It's important that you ensure none of the other pins accidentally got pulled out while the connector was unlocked.

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Look closely at all of the pins from the hardware side and ensure they all go all the way to the end of the connector. Once confirmed, push the white lock from the opposite side until it sits flush again.



When complete, you'll have 1 wire left over and will no longer be used.



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Motec M1 ECU Configuration

You'll configure the Fuel Pump Main as shown below.

The screenshot shows the Motec M1 ECU configuration interface. On the left, a tree view shows the 'Fuel' section expanded, with 'Pump' > 'Main' selected. The 'Main' section shows 'Output Resource' set to 'Half Bridge Output 7' and 'Input Resource' set to 'Not in Use'. The 'Threshold' section shows 'Medium' and 'High' both set to '0.0 m/min', 'Test' set to 'Driver Switch', and 'Frequency' set to '700.0 Hz'. The 'Output' section shows 'Duty Cycle' set to '%'. On the right, the 'Fuel Pump Main Output Duty Cycle [%]' table is displayed, showing the relationship between 'Fuel Flow [l/h]' and 'Duty Cycle [%]' for various states.

	100.0	250.0	500.0	750.0	1000.0
Test	12.0	12.0	12.0	12.0	12.0
High	12.0	25.0	46.7	68.3	90.0
Medium	12.0	25.0	46.7	68.3	90.0
Low	12.0	25.0	46.7	68.3	90.0
Prime	12.0	12.0	12.0	12.0	12.0
Off	0.0	0.0	0.0	0.0	0.0

Note, if you're using very old firmware you can not enable the Fuel Flow axis on this table and you'll be limited to 3 steps of flow, which is not recommended. Motec added this axis many years back at this point, but some cars are still on very old firmware. We highly recommend updating as there have been many improvements since then, but if you don't want to, reach out to us and we will help you get it setup on the older firmware.

You can adjust the pump flow rate as needed by adjusting the PWM duty cycle in the table of Fuel Pump Main Output Duty Cycle. Do not go below 10% or over 90%.

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ID BPC100 Motec CAN Configuration

Enable the Fuel Pump ID CAN Bus by selecting CAN Bus 2



By doing this you'll get all these channels of data coming into your Motec logs. Don't forget to add them to your log set! They are coming in at 100hz, but many don't need to be logged that fast. We recommend 50hz log rate for these channels. (Note, don't mind CAN Bus 1 in the pic below, this is from another application where it's on that bus).



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