

Document Number		CTN0041			
Title		Toyota Yaris Diff Control with External Current Sensor			
Revision	Date	Prepared	Checked	Approved	Change History
	17/05/2023	JG	NB		

1 Purpose

This document details how to wire and configure an external current sensor for use with Differential Rear Clutch control strategy within the Toyota Yaris GR 2020 G16E (M141/2) Firmware Package.

Note:

- This is only required for early versions of the MoTeC Yaris GR Kit with an Adaptor Box other than **Version 3**.
- **Version 3** Adaptor Boxes are fitted with an internal current sensor and therefore DO NOT require an external current sensor to be fitted.
- Adaptor Box versions are indicated as shown below.
- Full details of MoTeC's Toyota Yaris Plug-In ECU Kit can be found in Datasheet CDS11412.



2 Required Components

1. M141/2 TOYOTA YARIS GR 2020 PLUG IN ECU KIT (Part# 11412).
With Adaptor Box (Part# 61460) other than **Version 3**

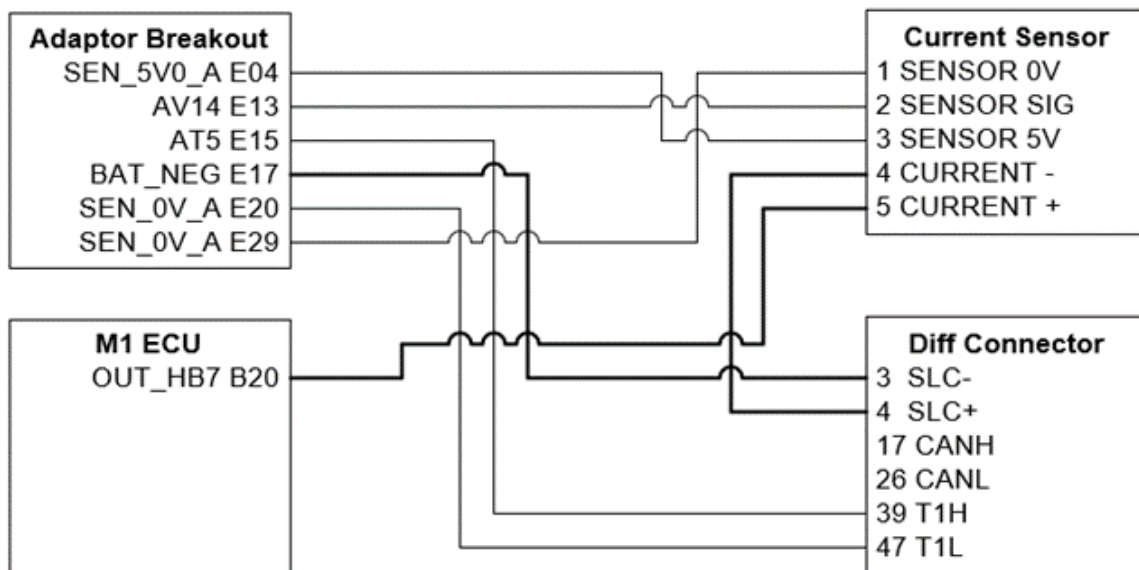
2. MoTeC TOYOTA YARIS GR 2020 DIFF LOOM (Part# 61466)

Note: Refer to Datasheet CDS61466 for details on how to wire the Differential Rear Clutch control using MoTeC Diff Loom Part #61466.

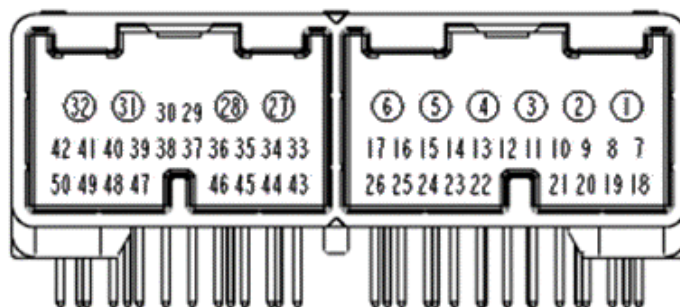
3. Race Grade Single Channel Current Sensor (Part# 59111)
4. 6 Pin DTM Connector Kit Female (Part# 68056)
5. 18 AWG wire Tefzel (Part# 62008)
6. 20 AWG wire Tefzel (Part# 62005)
7. Pins for M800 Superseal Connector - Female (Part# 65046)

3 Wiring

Via MoTeC Adaptor Box Breakout Connector



LEGEND
 — Wire 20AWG
 — Wire 18AWG



DIFF connector pin numbering
 (Looking into connector)

4 Firmware Settings

Using M1 Tune and the Toyota Yaris GR 2020 G16E (M141/2) Firmware Package.
Set the Differential Temperature Sensor settings as follows.

Note: Refer to the Differential Rear Clutch group within the M1 Package to enable and configure the control of the rear differential clutch.

Differential Temperature Sensor Translation [°C]

Differential Temperature Sensor Voltage [V]	Temperature [°C]
4.923	-37.5
4.904	-28.5
4.875	-18.8
4.831	-9.3
4.772	0.5
4.683	10.5
4.561	20.4
4.411	30.3
4.217	40.3
3.970	50.2
3.713	59.1
3.422	69.9
3.101	80.5
2.776	91.7
2.463	100.5
2.165	110.0
1.889	120.0
1.409	140.0
1.051	159.3

Set the Differential Rear Clutch Solenoid settings as follows.

Differential Rear Clutch Solenoid Settings:

- Solenoid Output Resource:** Half Bridge Output 7
- DC Resistance:** 2.70 Ω
- Drive:** High Side
- Test:** Disabled
- Duty Cycle:** 0.0 %
- Frequency:** 950.0 Hz
- Filter:** 0 ms

Set the Differential Rear Clutch Solenoid Current Sensor settings as follows.

Differential Rear Clutch Solenoid Current Sensor Translation [A]

Differential Rear Clutch Solenoid Current Sensor Voltage [V]	Current [A]
0.500	2.500
2.500	4.500
-5.00	0.00
5.00	5.00