

ProECU Nissan GT-R & Juke



Live Data Guide 2008-onward Model Year

Live Data Display

ProECU Nissan GTR can offer real time exceptionally high speed data display and the ability to log this displayed data (*note: there is no real time editing as the maps are stored in **Read Only Memory***).

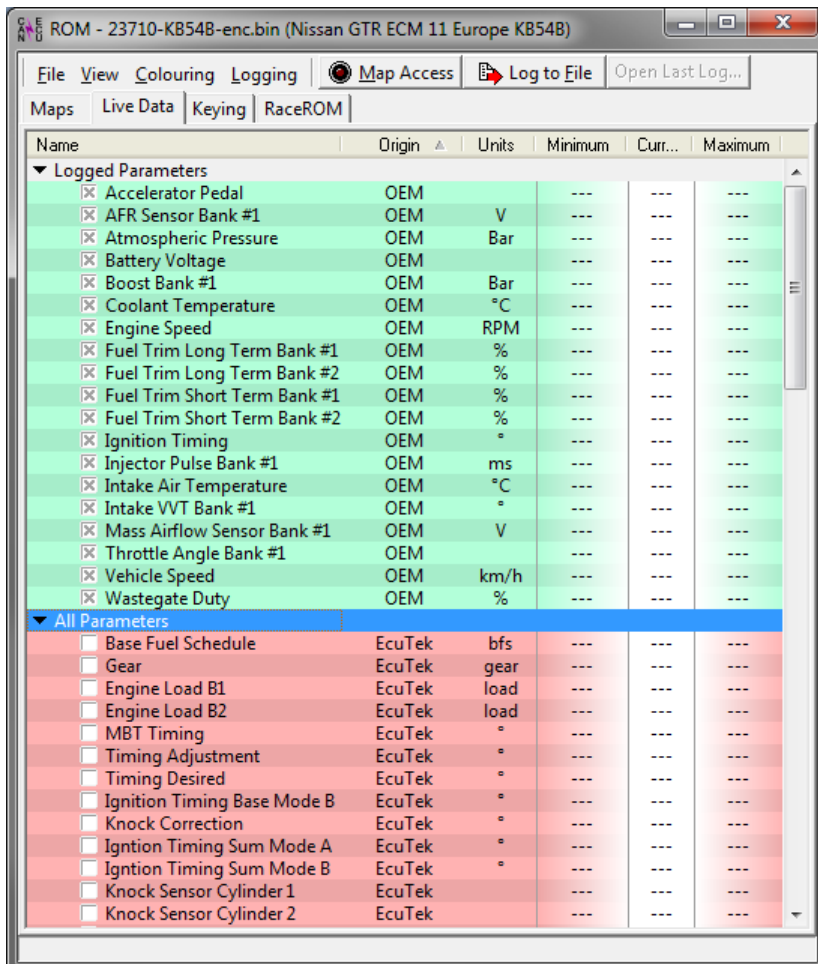
The factory diagnostic parameters are very limited and completely inadequate for competent tuning or even basic diagnostics. Important parameters like Knock Correction and AFR are simply not available!

EcuTek has added many additional custom parameters that are needed for accurate analysis and accurate tuning calibration. Be sure to include these additional parameters in your data logging.

These custom parameters are shown under the ORIGIN column as EcuTek (rather than the factory parameters shown as OEM) and the custom parameters can only be seen and logged with a ROM that has a RaceROM Feature File applied.

Note: It is also possible to change the columns by right-clicking on a column and then selecting or deselecting a column name. We have enabled the Minimum and Maximum, as shown below.

To start Live Map Access, connect to the car first and then click on the **Map Access** button. Ensure that the ROM you are viewing is the same as that within the ECU with the correct RaceROM Feature File applied.



Name	Origin	Units	Minimum	Curr...	Maximum
Logged Parameters					
<input checked="" type="checkbox"/> Accelerator Pedal	OEM		---	---	---
<input checked="" type="checkbox"/> AFR Sensor Bank #1	OEM	V	---	---	---
<input checked="" type="checkbox"/> Atmospheric Pressure	OEM	Bar	---	---	---
<input checked="" type="checkbox"/> Battery Voltage	OEM		---	---	---
<input checked="" type="checkbox"/> Boost Bank #1	OEM	Bar	---	---	---
<input checked="" type="checkbox"/> Coolant Temperature	OEM	°C	---	---	---
<input checked="" type="checkbox"/> Engine Speed	OEM	RPM	---	---	---
<input checked="" type="checkbox"/> Fuel Trim Long Term Bank #1	OEM	%	---	---	---
<input checked="" type="checkbox"/> Fuel Trim Long Term Bank #2	OEM	%	---	---	---
<input checked="" type="checkbox"/> Fuel Trim Short Term Bank #1	OEM	%	---	---	---
<input checked="" type="checkbox"/> Fuel Trim Short Term Bank #2	OEM	%	---	---	---
<input checked="" type="checkbox"/> Ignition Timing	OEM	°	---	---	---
<input checked="" type="checkbox"/> Injector Pulse Bank #1	OEM	ms	---	---	---
<input checked="" type="checkbox"/> Intake Air Temperature	OEM	°C	---	---	---
<input checked="" type="checkbox"/> Intake VVT Bank #1	OEM	°	---	---	---
<input checked="" type="checkbox"/> Mass Airflow Sensor Bank #1	OEM	V	---	---	---
<input checked="" type="checkbox"/> Throttle Angle Bank #1	OEM		---	---	---
<input checked="" type="checkbox"/> Vehicle Speed	OEM	km/h	---	---	---
<input checked="" type="checkbox"/> Wastegate Duty	OEM	%	---	---	---
All Parameters					
<input type="checkbox"/> Base Fuel Schedule	EcuTek	bfs	---	---	---
<input type="checkbox"/> Gear	EcuTek	gear	---	---	---
<input type="checkbox"/> Engine Load B1	EcuTek	load	---	---	---
<input type="checkbox"/> Engine Load B2	EcuTek	load	---	---	---
<input type="checkbox"/> MBT Timing	EcuTek	°	---	---	---
<input type="checkbox"/> Timing Adjustment	EcuTek	°	---	---	---
<input type="checkbox"/> Timing Desired	EcuTek	°	---	---	---
<input type="checkbox"/> Ignition Timing Base Mode B	EcuTek	°	---	---	---
<input type="checkbox"/> Knock Correction	EcuTek	°	---	---	---
<input type="checkbox"/> Ignition Timing Sum Mode A	EcuTek	°	---	---	---
<input type="checkbox"/> Ignition Timing Sum Mode B	EcuTek	°	---	---	---
<input type="checkbox"/> Knock Sensor Cylinder 1	EcuTek		---	---	---
<input type="checkbox"/> Knock Sensor Cylinder 2	EcuTek		---	---	---

Live Data Parameter Descriptions

Ignition Control

Ignition Timing (°) – Nissan OEM Parameter

The actual Ignition timing angle the ECU used after Knock Correction was applied.

Ignition Timing MBT (°) – Custom EcuTek Parameter

The optimum Ignition timing angle calculated by Nissan theoretical computation.

Ignition Timing Adjustment Warm/Cold (°) – Custom EcuTek Parameter

The ignition timing adjustment map which should be used for tuning/calibration. This map is used by Nissan to calibrate for fuel quality, compression ratio etc.

Ignition Timing Desired (°) – Custom EcuTek Parameter

The Ignition timing the ECU wants to run before Knock Correction is applied.

Ignition Timing Sum Mode A (Gen 2) – Custom EcuTek Parameter

Base Ignition Timing value from Mode A (Deg).

Ignition Timing Base Mode B (Gen 2) (°) – Custom EcuTek Parameter

Output of the Ignition Timing Mode B map before Knock adjustments (Deg).

Ignition Timing Sum Mode B (Gen 2) – Custom EcuTek Parameter

Ignition Timing value from Mode B after knock correction has been applied (Deg).

Knock Correction (°) – Custom EcuTek Parameter

The amount of ignition retard in degrees removed due to engine knock.

Knock Sensor Cylinders 1 – 6 – Custom EcuTek Parameter

Knock signal per cylinder, this can show noise on certain cylinders, though the logging rate cannot show all knock events, so use with caution and understanding.

Knock Threshold Cylinders 1 - 6 – Custom EcuTek Parameter

Per cylinder knock threshold for knock control to become active, the centre two cylinders are noisier due to cylinders either side (1-3 or 4-6) so the noise threshold is higher. The logging rate cannot capture all knock events, so use with caution and understanding

Fuelling

Fuel Injector Pulse B1/B2 (ms) – Nissan OEM Parameter

Fuel injector open time in milliseconds.

Injector Duty Cycle – Nissan OEM Parameter

Percentage of time that the injector is open vs. closed. The time available changes as Engine speed increases (becomes less).

Values approaching 100% are generally not good. Note that it is possible to see injector duty cycles of in excess of 100%. This means that the ECU is unable to make the injectors supply the desired amount of fuel. I.e. a value of 110% means that the injectors are only able to supply 90% of the fuel intended.

AFR Sensor B1 (V) – Nissan OEM Parameter

Shows the actual Voltage from the factory AF Sensors before the Catalytic convertor (this is not a very useful parameter).

AFR Bank 1 (AFR) – Custom EcuTek Parameter

Shows the actual AFR calculated from the AFR Sensor B1 (V) from the factory AF Sensors before the Catalytic convertor. AFR readings should always be calibrated with your own trusted wideband sensor as normal. In our experience the factory wideband sensor reads a leaner AFR on full load than the actual AFR.

Short Term and Long Term Fuel Trim B1 and B2 (%) – Nissan OEM Parameter

This is the percentage of fuel trim that the ECU adds or subtracts to reach the Target AFR shown in the Fuel Map. There is Short Term and Long Term Fuel Trim for each bank. You should aim for the Fuel Trim to be around 100% (+/-10%) for good tuning.

Boost Control

Boost B1/B2 (Bar) – Custom EcuTek Parameter

This is the current boost pressure as measured by the MAP sensor fitted in the cross pipes before the throttle housings (one for each bank).

Because these two MAP sensors are fitted before the throttle housing they will never see negative manifold pressure (vacuum).

Pressure is shown as relative pressure in Bar. The standard map sensors can read to 2.80 bar Absolute

Manifold Relative Pressure (Bar) – Custom EcuTek Parameter

This is the current boost pressure as measured by MAP sensor fitted in the Inlet manifold after the Throttle butterfly. This sensor will show negative pressure due to its location after the throttle housing. This sensor is used for Speed Density calculations and Boost Gauge shown on the Driver Information Gauges. MRP normally reads slightly less than Boost B1 due to a pressure drop across the throttle housing and air speed in the inlet manifold. The MRP sensor can read a maximum of 2.80bar Absolute.

Boost Target (Bar) – Custom EcuTek Parameter

This is the current Boost Target set from the desired boost map including any boost compensations for Air Temp or Coolant temp. The Boost Target value can be reduced by any Max Allowed Boost limiters or RaceROM Boost Controller settings. Just because your Desired Boost maps is filled with 1.4 bar doesn't mean the ECU will try to achieve 1.4bar, so watch this parameter closely.

Boost Error (Bar) – Custom EcuTek Parameter

This shows the difference between the actual boost pressure (Boost B1/B2) and the Target Boost Pressure. This parameter is very good to fine tune your boost control.

Wastegate Duty % – Custom EcuTek Parameter

The Wastegate Duty is shown as percentage (%). Setting the wastegate duty too high will cause over boost and unstable boost control.

Wastegate Angle (°) – Custom EcuTek Parameter

This shows the actual Wastegate poppet valve angle by theoretical calculation. The higher the value the more open the wastegate valve will be, the less wastegate duty you will have and the less boost pressure will be created.

Desired Turbine Wheel Air Flow (g/s) – Custom EcuTek Parameter

This parameter shows the lookup airflow of the Desired Turbine Wheel Air Flow map which is the primary map used for wastegate duty control. If the values are too large then the wastegate duty will be too high and the turbo will over speed (over boost).

The output value is subtracted from the *Calculated Airflow* value to create a Surplus Airflow parameter.

The Turbo Dynamics Sum value is added to the Surplus Airflow parameter to work out the final wastegate duty that is needed.

Calculated Airflow (g/s) – Custom EcuTek Parameter

The amount of calculated airflow assuming the AFR is 14.7 or Lambda 1. This important parameter is used as the input on the Desired Turbine Wheel Air Flow map.

Turbo Dynamics Integral (g/s) – Custom EcuTek Parameter

This shows the Integral component value added to output of the Surplus Airflow value in proportion to the size of the current boost error. See ECU Map descriptions for further information.

Turbo Dynamics Proportional (g/s) – Custom EcuTek Parameter

This shows the Proportional component value added to output of the Surplus Airflow value in proportion to the size of the current boost error. See ECU Map descriptions for further information.

Note: The factory map does very little to correct a boost error at lower airflow! (midrange boost error). Only at higher airflow will the factory Proportional values make a reasonable adjustment to wastegate duty correction. The Proportional value is a fixed value correction that is added to the Surplus Airflow and this will not increment like the Integral value.

Turbo Dynamics Sum (g/s) – Custom EcuTek Parameter

This is the combination of the Integral and Proportional values. The sum can be used to see the total correction factor applied to the Surplus Airflow to correct for any current boost error.

Atmospheric Pressure (Bar) – Nissan OEM Parameter

Shows the current Atmospheric Pressure in Bar.

Airflow and Engine Load

Base Fuel Schedule (g/cyl) – Custom EcuTek Parameter

Base fuel schedule is relative to engine load but has been converted into grams per cylinder from Bank 1.

Engine Load B1 / B2 – Custom EcuTek Parameter

Used for many maps, the axis is Engine Speed (RPM) against Engine Load (Calculated from Mass Air Flow and Base Fuel Schedule).

On many older ECUs and aftermarket ECUs this would be manifold pressure. However, the Nissan ECUs meters mass air flow to determine load (V.E.) by calculation against RPM.

This method of metering load is very useful, since it is highly resilient to changes to other components in the system, such as exhausts, turbos and intercoolers, as well as changes in air density.

However, its weakness is shown when induction kits are fitted, if airflow through the sensor element is changed (for example: lead length of tubing before sensor or open filter element), then the MAF calibration is typically no longer accurate. This will cause the ECU to apply inappropriate fuel and timing changes that are based off a (now) incorrect airflow measurement. (The uncalibrated sensor can either read high or low or both across the entire voltage range).

Mass Airflow Sensor B1 / B2 (V) – Nissan OEM Parameter

The actual voltage reading from the MAF Sensors.

If Speed Density (SD) mode is enabled this MAF voltage will still be shown (but the actual Mass Airflow value that's used is coming from the SD map)

MAF Sensor B1 / B2 (g/s) – Custom EcuTek Parameter

This shows the current Mass Air Flow in g/s that is read direct from the MAF sensor itself.

The MAF sensor airflow output is used for Engine Load and Calculated Airflow values (assuming SD is OFF).

This MAF supplied Mass Airflow value is not used by the ECU when SD mode is ON, but can still be logged and used for reference when tuning in SD mode.

Enabling SD mode and comparing MAF Mass Airflow against SD Mass Airflow is great for calibrating replacement and larger Intakes. The 2D MAF scales can be accurately calibrated against the SD Mass Air Flow reading to produce a very accurate MAF scale when SD mode is turned off again.

Mass Airflow B1/B2 (g/s) – Custom EcuTek Parameter

This shows the Mass Air Flow in Grams per Second (g/s) that the ECU is currently using for all calculations.

The two MAF sensor scaling are scaled differently due to different design factory airbox/Intake housing designs. This can be seen when comparing Bank 1 and Bank 2 Mass Airflow in a log file.

NOTE: If RaceROM Speed Density (SD) is enabled then the Mass Air Flow B1 and B2 in g/s will actually come from the SD Mass Airflow B1 and SD Mass Airflow B2 tables, and NOT the MAF sensors as described above.

Torque Control

Torque Demand (Nm) – Custom EcuTek Parameter

This is the driver Demand Torque with the Accel pedal. The corresponding Trustful check map must be adjusted by the same amount.

Torque Actual (Nm) – Custom EcuTek Parameter

This is current engine torque that is calculated from Engine Speed (RPM) and Engine Load (%). This Torque Actual value (Nm) is given to other control modules like Transmission ECU and ABS.

It's critical that the output of this map is accurate or the gearbox control will be affected. Fitting Intakes and adjusting 100% Engine Load (bfs) values WILL affect the reading from the map and the Torque Actual values will need to be increased accordingly.

Digitals: ON / OFF

Dig: Speed Density – Custom EcuTek Parameter

Shows when Speed Density Mode is enabled (MAF not used for Engine Load input).

Dig: Economy Mode – Custom EcuTek Parameter

Shows when Economy Mode is selected (Gen 2 only).

Dig: Safe Mode – Custom EcuTek Parameter

Shows when Safe Mode is active and Safe maps are used (like after excessive knocking).

Other

Gear – Custom EcuTek Parameter

The current selected gear.

Fan Duty – Nissan OEM Parameter

Shows the current radiator fan duty.

Fuel Pump Duty – Nissan OEM Parameter

The current fuel pump duty %.

APP (%) – Nissan OEM Parameter

Shows the current Accelerator pedal position, a maximum of 92-95% is normal.

Throttle Angle B1 (°) – Nissan OEM Parameter

Throttle butterfly opening angle in degrees, a maximum value of 72-74 deg is normally seen with a few degrees reserved for Idle Speed Control.

Engine Speed (RPM) – Nissan OEM Parameter

Engine speed (Revolutions per Minute).

Coolant Temperature – Nissan OEM Parameter

Current coolant temperature, value is shown in °C.

Air Intake Temperature – Nissan OEM Parameter

This value is the current Air Intake temperature as measured after the Air filter in the Mass Airflow Sensor assembly.

Intake VVT Angle – Nissan OEM Parameter

This shows the Inlet Variable Valve Timing angle in degrees.

Vehicle Speed (km/h) – Nissan OEM Parameter

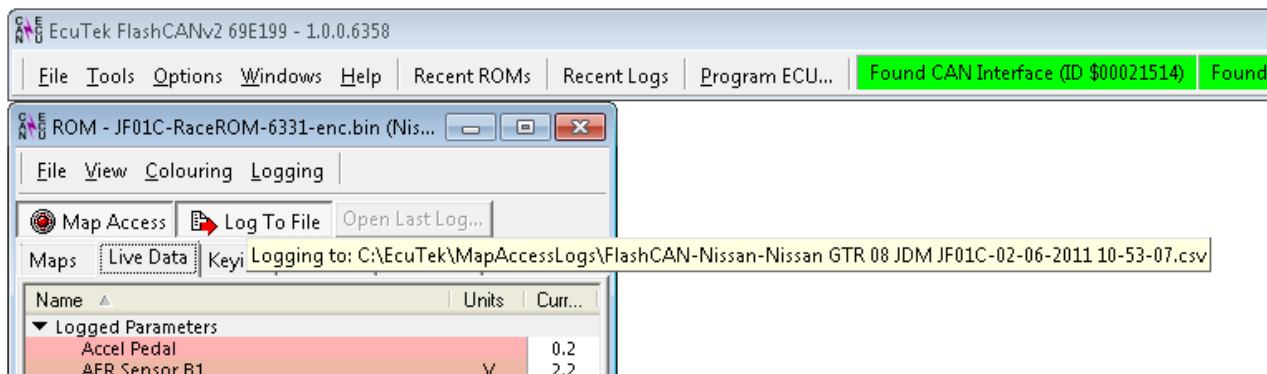
Shows the current Vehicle Speed in Kilometres per hour (divide by 1.6 for MPH conversion).

Battery Voltage (V) – Nissan OEM Parameter

Shows the current Battery Voltage at the engine ECU.

Live Data Logging

It is possible to log the data shown in the Live Data window simply click the **'Log To File'** button. Once 'Log To File' is enabled (button is pressed down), press the button again to stop logging. The log file will be saved in the default logging folder **C:\EcuTek\MapAccessLogs**. The full path and filename will be shown when you hover the mouse over the 'Log To File' button.



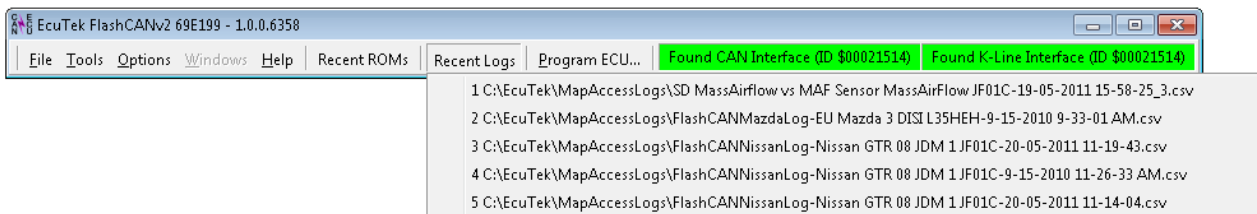
You can specify the location the log files will be saved by choosing the 'Logging' menu and 'Choose Logging Directory'.

NOTE: The logging location will reset to the default **C:\EcuTek\MapAccessLogs** location once the ROM file is closed.

Open a log file

Click on the 'Open Last Log...' button to open the last log that was created.

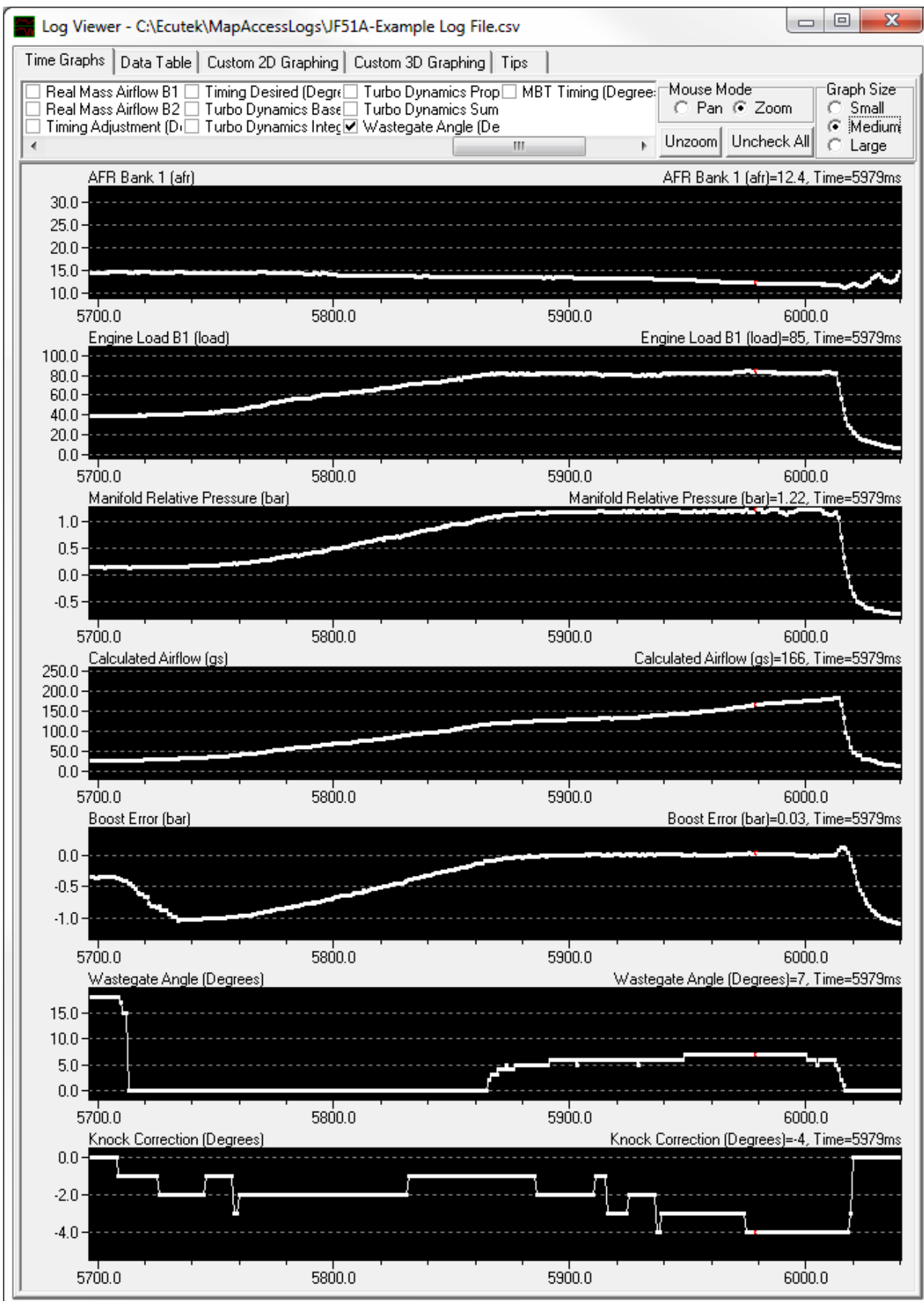
You can drag and drop the log file onto the ProECU window or click on the **Recent Logs** button (or choose **Open Log File** from the **File** menu).



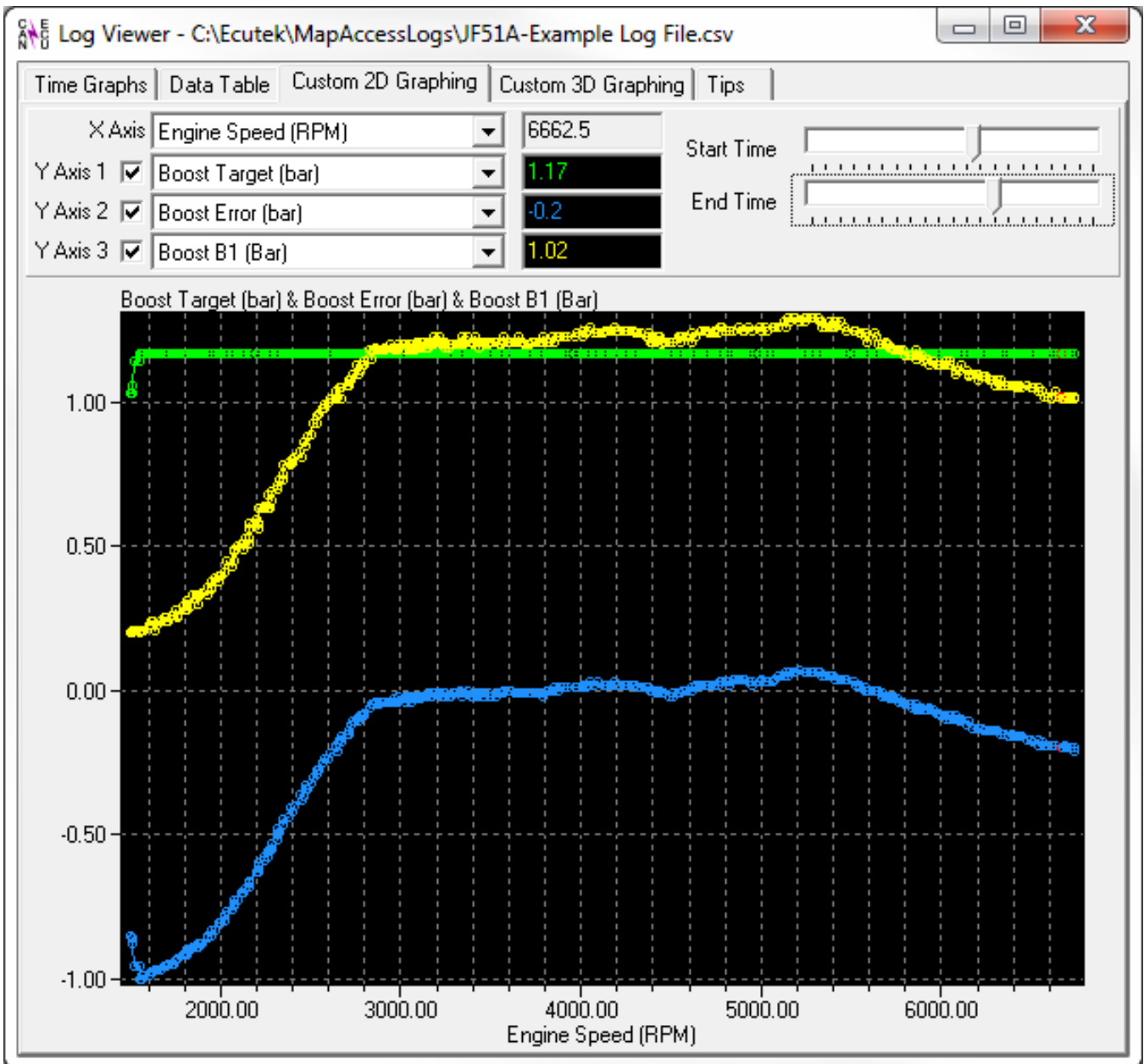
You can also use EcuTek DeltaDash to open and view the log file.

It is possible to customise the way the logged data are displayed using the Time Graphs, Data Table, Custom 2D Graphing, and Custom 3D Graphing tabs in the DeltaDash's Log Viewer.

As shown on the next page you can highlight a specific point on the graph (shown as a red dot) to view the data values for all graphs at that point.



The Custom 2D Graphing tab allows for specific values to be displayed against a specific X Axis, as shown below:



So as shown above at 6660rpm the current Boost Pressure is 1.02 Bar.
 The Target Boost is 1.17 Bar and the Boost Error is -0.2 Bar (so we are under our Target Boost).

Data Logging Tips

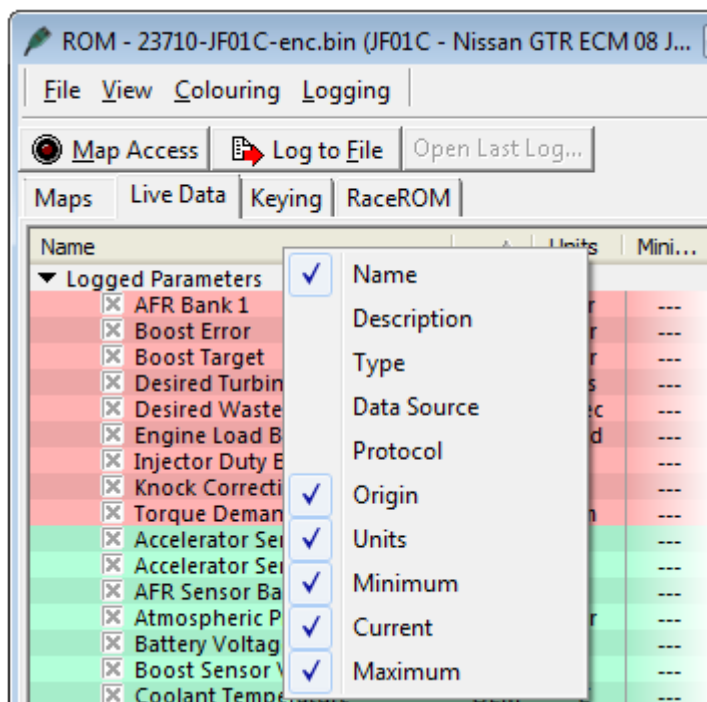
Below are the typical parameters to log for Gen 1 and Gen 2.

It is important to log the custom EcuTek parameters as the default Nissan parameters are not very useful from a tuning perspective.

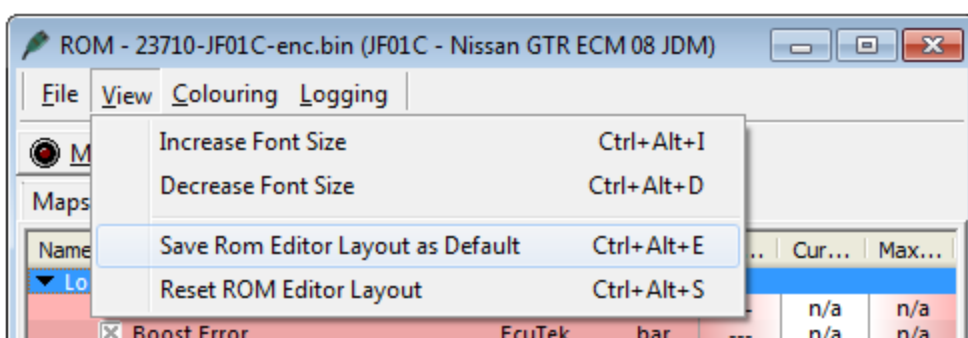
Name	Origin	Units	Minimum	Current	Maximum
✕ AFR Bank 1	EcuTek	afr	---	---	---
✕ AFR Bank 2	EcuTek	afr	---	---	---
✕ Boost Bank 1	EcuTek	bar	---	---	---
✕ Boost Bank 2	EcuTek	bar	---	---	---
✕ Boost Error	EcuTek	bar	---	---	---
✕ Boost Target	EcuTek	bar	---	---	---
✕ Calculated Airflow	EcuTek	g/s	---	---	---
✕ Desired Turbine Wheel Airflow	EcuTek	g/s	---	---	---
✕ Engine Load B1	EcuTek	load	---	---	---
✕ Ignition Timing Base Mode B	EcuTek	°	---	---	---
✕ Ignition Timing Sum Mode A	EcuTek	°	---	---	---
✕ Ignition Timing Sum Mode B	EcuTek	°	---	---	---
✕ Injector Duty B1	EcuTek	%	---	---	---
✕ Knock Correction	EcuTek	°	---	---	---
✕ Manifold Relative Pressure	EcuTek	bar	---	---	---
✕ Torque Actual	EcuTek	Nm	---	---	---
✕ Torque Demand	EcuTek	Nm	---	---	---
✕ Turbo Dynamics Sum	EcuTek	g/s	---	---	---
✕ Accelerator Pedal	OEM		---	---	---
✕ AFR Sensor Bank #1	OEM	V	---	---	---
✕ Atmospheric Pressure	OEM	Bar	---	---	---
✕ Battery Voltage	OEM		---	---	---
✕ Boost Bank #1	OEM	Bar	---	---	---
✕ Coolant Temperature	OEM	°C	---	---	---
✕ Engine Speed	OEM	RPM	---	---	---
✕ Fuel Trim Long Term Bank #1	OEM	%	---	---	---
✕ Fuel Trim Long Term Bank #2	OEM	%	---	---	---
✕ Fuel Trim Short Term Bank #1	OEM	%	---	---	---
✕ Fuel Trim Short Term Bank #2	OEM	%	---	---	---
✕ Ignition Timing	OEM	°	---	---	---
✕ Injector Pulse Bank #1	OEM	ms	---	---	---
✕ Intake Air Temperature	OEM	°C	---	---	---
✕ Intake VVT Bank #1	OEM	°	---	---	---
✕ Mass Airflow Sensor Bank #1	OEM	V	---	---	---
✕ Throttle Angle Bank #1	OEM		---	---	---
✕ Vehicle Speed	OEM	km/h	---	---	---
✕ Wastegate Duty	OEM	%	---	---	---

- ▶ All Parameters
- ▶ Params by Source
- ▶ Params by Protocol
- ▶ Params by Units

We recommend enabling the following columns by right-clicking on a column header, such as the 'Name' column header:



It is possible to save this layout as the default view from the **View** menu:



Please note that it is not possible to save the selected parameters at this time.

Select the **Clear Min/Max Value** option from the **Logging** menu to reset the Max and Min values:

