



ProECU Mazda DISI



Live Data Guide

2005-onward Model Year

v1.4

Live Data

The following Mazda DISI live data parameters are available:

Fuel Trim Short Term and Long Term

This is the percentage of fuel trim that the ECU adds or subtracts to obtain stoichiometric AFR. This is useful to determine when the ECU is running in open/closed loop mode i.e. when the value is zero the ECU is running in open loop mode. High values of AFC (especially at idle) in closed loop operation indicate poor mapping. They can also be indicative of faulty air flow meters or dubious induction kits that alter measured air flow.

Injector (mg/cyl)

Shows the current amount of calculated fuel quantity injected in milligrams per cylinder.

Fuel Pressure (MPa)

Shows the current Fuel Rail Pressure, this is very high as the Mazda 3MPS uses the DISI (Direct Injection Spark Ignition) engine.

Fuel is injected direct into the combustion chamber not the intake manifold or Intake port. Fuel pressure can be as high as 13 MPa, this is 130 bar.

Most petrol fuel injection rail pressures are only around 3 bar so take care if working on the Fuel Injection system.

Ignition Timing

This displays the actual ignition timing that the ECU is currently using. It is measured in degrees before "Top Dead Centre".

Knock Correction/Retard

Knock retard is the amount of Ignition timing removed by the ECU because of knock. It is not unusual to see this parameter active.

Turbo Boost Pressure

This is the current boost pressure as measured by the 3 BAR MAP sensor. Pressure is shown as relative pressure in Bar.

Wastegate Duty Cycle %

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

Charge Air Temperature

Located in the Inlet Manifold and shows the TRUE air temperature entering the engine after leaving the Intercooler.

Engine Load

For many maps, the axis is Engine Speed (RPM) against Engine Load (Calculated Load / Volumetric Efficiency).

On many older ECUs and aftermarket ECUs this would be manifold pressure. However, the Mazda 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 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 of a (now) incorrect airflow measurement (The uncalibrated sensor can either read high or low or both across the entire voltage range). This issue can be fixed by modifying the MAF sensor scaling map.

Air Intake Temperature

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

Intake VVT Angle

This shows the Inlet Variable Valve Timing angle in degrees.

Coolant Temperature

Current coolant temperature, value is shown in °C.

Air Flow (g/s)

This shows the calculation from millivolt to airflow in Grams per Second (g/s).

The maximum Mass Air Flow reading in grams can be used to calculate the theoretical engine power output (assuming a standard air Intake Tube is still fitted).

Example a maximum Mass Air Flow reading of 200 grams (at say 7000rpm) can be calculated as 250BHP at 7000rpm by applying the simple formula of Airflow g/s * 1.25

Throttle Angle

Throttle plate opening angle (Deg). A maximum value of 75 - 78deg is normally seen with 12 Deg reserved for Idle Speed Control.

APP (%)

Shows the current Accelerator pedal position, 100% is maximum