

Description of parameters, Engine control module (ECM)

Hint:

Not all the parameters that are described need to be implemented in the control module. This varies between different systems and markets.

Parameters, value

Vehicle speed (via CAN) (km/h)

Measurement range: 0 - 260 km/h.

Displays present speed.

Note: Miles/h in certain markets.

ECU power supply (V)

The normal value is 13 - 14.5 V when the alternator is charging.

Measurement range 0 - 28.8 V.

Outside temperature (°C)

The engine control module (ECM) derives the temperature from the outside temperature sensor signal.

Measurement range: -40 to +75 °C.

Engine coolant temperature (ECT) (°C)

The engine control module (ECM) calculates the temperature from the coolant temperature sensor/engine temperature sensor signal.

Measurement range: -40 to +125 °C.

Normal value: If the vehicle has been stationary for 10 hours, the coolant temperature must be between $\pm 5^{\circ}\text{C}$ around the ambient temperature.

Normal value: If the vehicle is at idle and is at operating temperature, the coolant temperature must be between 77 and 97 °C, depending on the existing climate.

Boost pressure (Pa)

The value indicates the absolute pressure in the intake manifold downstream of the turbocharger (TC). The engine control module (ECM) compares the desired and actual values. In the event of deviations the engine control module (ECM) controls the boost pressure.

Measurement range: 0 - 500 kPa.

Boost pressure desired value (Pa)

The desired value is one of the engine control module (ECM) calculated values.

Measurement range: 0 - 300 kPa.

Normal value: From idle to maximum torque 98 - 250 kPa.

Atmospheric pressure (Pa)

The signal from the internal atmospheric pressure sensor in the control module is used to calculate the atmospheric pressure.

Normal value at 0 meters above sea level is approximately 1013 hPa.

Measurement range: 0 - 3500 hPa.

Accelerator pedal position (via CAN) (%)

Indicates the position of the accelerator pedal. The signal comes via CAN communication.

Approximately 0 % = the accelerator pedal (AP) completely released.

Approximately 99% = accelerator completely depressed.

Measurement range 0-100%.

Accelerator pedal (AP) position (%)

Indicates the position of the accelerator pedal. Directly connected PWM signal.

Approximately 0 % = the accelerator pedal (AP) completely released.

Approximately 99% = accelerator completely depressed.

Measurement range 0-100%.

Air flow (kg/h)

The value indicates the mass air flow that passes through the mass air flow (MAF) sensor per hour.

The value varies, depending on factors such as exhaust gas recirculation (EGR) and air conditioning (A/C).

Normal value when idling is approximately 53 kg/h.

Measurement range: 0-650 kg/h.

Air mass set point (mg/S)

The desired value is one of the engine control module (ECM) calculated values.

Air mass/stroke (mg/S)

The value indicates the actual mass air flow that passes through the mass air flow sensor.

Measurement range: 0 - 2 000 mg/S (S = piston stroke).

Normal value when the engine is idling for over 2 minutes is approx. 450 mg/s.

Turbo regulator motor (VNT regulator) (%)

Indicates output to the turbo regulator motor.

At idle speed the value should be approximately 55 - 70 %.

With the ignition on the value should be approximately 80 - 90 %.

Measurement range 0-100%.

Air temperature MAF (°C)

The Engine Control Module (ECM) uses the temperature from the intake air temperature sensor (integrated in MAF) for calculations.

Measurement range: -40 °C to +140 °C.

Intake air temperature (IAT) (°C)

The Engine Control Module (ECM) uses the temperature from the intake manifold temperature sensor (integrated in the boost pressure sensor) for calculations.

Measurement range: -40 °C to +140 °C.

Fuel pressure (Pa)

Indicates the pressure in the fuel rail. The pressure must be approx. 350,000 hPa at idle speed.

Measurement range: 0 - 2,000,000 hPa.

Fuel temperature (°C)

Displays the fuel temperature in the return line.

Measurement range: -50 to +205 °C.

Fuel pressure, desired value (Pa)

The desired value is one of the engine control module (ECM) calculated values.

Measurement range: From idle to maximum torque, the fuel pressure desired value must be between 250 - 1600 bar.

Current through the fuel pressure control valve (A)

Displays the current through the fuel pressure control valve.

Normal value when idling is approx. 700 mA.

With the ignition on, the value must be approx. 200 mA.

Measurement range: 0-32,500 mA.

Fuel flow control valve (%)

Indicates output to the fuel flow control valve.

Normal value when idling is approximately 20 - 50 %.

Normal value when idling is approx. 1%.

Measurement range 0-100%.

Engine speed (rpm)

The engine control module (ECM) calculates the engine speed (RPM) using the engine speed (RPM) sensor.

Normal value when idling is 680 - 800 rpm.

Measurement range: 0 - 5,000 rpm.

Temperature sensor 1, catalytic converter (°C)

Shows actual exhaust temperature ahead of the catalytic converter.

Normal value when idling is between approx. 100 °C and 250 °C.

Measurement range: 0 - 1000 °C.

Note! If the sensor is faulty a plausible temperature may still be shown. This is because the signal from the sensor is replaced with a calculated substitute value when a fault is detected with the sensor.

Temperature sensor 2, catalytic converter (°C)

Shows actual exhaust temperature after the catalytic converter.

Normal value when the engine is idling is between approximately 100 °C and 200 °C.

Measurement range: 0 - 1000 °C.

Note! If the sensor is faulty a plausible temperature may still be shown. This is because the signal from the sensor is replaced with a calculated substitute value when a fault is detected with the sensor.

Pressure sensor particle filter (Pa)

Indicates the difference in pressure upstream and downstream of the particle filter.

Normal value when the engine is idling is between approximately 3 hPa and 20 hPa.

Measurement range: 0 - 5 000 hPa.

Throttle position (%)

Indicates the opening angle of the throttle in the throttle unit.

Normal value when idling for over 2 minutes is approx. 90 % (EGR closed).

Measurement range 0-100%.

Lambda value (?)

Normal value ? = approx. 1.5 - 4.

Measurement range: 0 - 32.

EGR valve, deflection (%)

Indicates air/exhaust mixture.

Normal value when idling for over 2 minutes is approx. 100 %, (EGR closed).

Normal value during throttle application is approx. 10 - 70 % (EGR open).

The EGR control test cannot be performed unless the following conditions are fulfilled:

- Intake temperature between +5 and +42 °C (as read by air temperature sensor MAF).

- Atmospheric pressure above 890 hPa.

- Diagnostic trouble codes are set.

Measurement range 0-100%.

EGR position sensor (%)

Indicates throttle position in the EGR valve.

Normal value when idling for over 2 minutes is approx. 0 - 2 % (EGR closed).

Normal value during throttle application is approx. 10-90%, (EGR open).

The EGR control test cannot be performed unless the following conditions are fulfilled:

- Intake temperature between +5 and +42 °C (as read by air temperature sensor MAF).

- Atmospheric pressure above 890 hPa.

- Diagnostic trouble codes are set.

Measurement range 0-100%.

Engine oil temperature (°C)

Indicates current engine oil temperature.

Measurement range: -25 to +160 °C.

Alternator current (A)

Indicates present charging current.

Measurement range: 20-210 A.

Normal value: At outdoor temperatures (approx. +20 °C) the generator current is between 45 - 60 A, when all temperature regulated components have been set.

Normal value: In hot climates (approx. +38 °C) the generator current is between 70 - 90 A, as A/C requires much blower operation.

Normal value: In cold climates (approx -20 °C) the generator current is up at 180 A during cold starts, and then drops to 45 - 60 A after 30 minutes of operation.

Engine cooling fan output (%)

Indicates output to the engine cooling fan.

Measurement range 0-100%.

Swirl throttle motor (%)

Indicates output to the swirl throttle motor.

Normal value when idling is approximately 1 %.

Measurement range 0-100%.

Swirl throttle motor, position (%)

Indicates the position of the swirl throttle.

Normal value is approx. 30% when engine is idling.

Measurement range 0-100%.

Air conditioning (A/C) pressure (Pa)

The engine control module (ECM) calculates the value from the signal from the air conditioning (A/C) pressure sensor.

The value indicates the pressure at the high-pressure side of the air conditioning (A/C) system.

The engine control module (ECM) calculates the pressure based on the AC pressure sensor signal.

The pressure is given as a value relative to the atmospheric pressure.

Measurement range 0 to 3 100 kPa.

Parameter, status

Glow plug relay

Indicates whether the glow plug relay is activated or not.

Activated.

-Not activated.

Air conditioning (A/C) relay

Displays if the Air conditioning (A/C) relay is activated or not.

Activated.

-Not activated.

Brake lamp switch

The engine control module (ECM) calculates the value from the brake lamp switch signal.

Activated.

-Not activated.

Clutch pedal switch

The engine control module (ECM) calculates the value from the clutch pedal signal.

Activated.

-Not activated.