

E-OBD, Fault codes

The following are described in greater detail below:

- Fault memory
- Readiness code
- P-code

Fault memory

Within the E-OBD, diagnostics of all emission-related components and functions must be performed while the vehicle is being driven. Any faults which occur must be stored and displayed where applicable. For this purpose, the fault code memory of the engine management has been expanded by adding one area.

The "P-codes" are stored in this expanded area (= standardised code, see below). This area of the fault code memory is read out with the BMW diagnosis system (e. g. DISplus or GT1) or with a universal scan-tool.

Scan tools recommended by BMW



Key	Explanation	Key	Explanation
1	VETRONIX Mastertech-1	2	Bosch KTS 100
3	SUN PDL 1000		

Readiness code

The readiness code is a display of the readiness of a system to be tested (= self-diagnosis).

The readiness code indicates that the self-diagnosis of a system has been completed successfully.

The readiness code indicates whether a diagnosis result is available for all system functions since the last clearing of the fault code memory or replacement of the DDE control module.

This means that: The self-diagnosis has delivered clear results.

For diesel engines, there are readiness codes for the following systems:

- Exhaust gas recirculation
- Fuel system
- Overall system including oxygen sensor

The oxygen sensor is a part of the overall system. The oxygen sensor is exclusively for restricting the tolerances

in the exhaust gas recirculation system.

P-code

The P-code is a 5-digit code.

The Society of Automotive Engineers (SAE) uses the letter "P" for the emission-related P-Codes. "P" stands for "Powertrain". This is where the designation "P-code" comes from.

The SAE originally defined the P-codes for the US version of OBD 2.

The P-codes were carried over for use in the E-OBD after being standardised internationally.

The P-codes can be identified by their alphanumeric structure.

Example:P0401 (Exhaust gas recirculation, air mass too high)	
First digit	P = Powertrain B = Body C = Chassis U = Communication
Second digit	0 = Standardised code (SAE/ISO) 1 = Manufacturer-specific code 2 = Standardised code (SAE/ISO) 3 = Separate area for standardised codes (SAE/ISO) and for manufacturer-specific codes
Third digit	0 = Metering of fuel and air intake and additional emission-reducing devices 1 = Metering of fuel and air intake 2 = Ignition system 3 = Additional emission-reducing devices 4 = Car road speed, idle speed setting and other inputs 5 = On-board computer and other outputs 6 = Transmission 7 = Transmission 8 = Transmission 9 = Hybrid-electric powertrain A =
Fourth and fifth digits	Consecutive numbering of the individual components or systems

Manufacturer-specific codes: BMW fault codes

If no suitable diagnostic code is available in the SAE/ISO standard, the manufacturer can define a manufacturer-specific code.

The BMW fault code is the code (internal consecutive numbering) defined by BMW for diagnostics. The BMW fault code (hexadecimal) is displayed exclusively on the BMW diagnosis system

Listing of the P-codes valid for DDE5

(sorted in ascending order by P-code)

P-code	BMW fault code	E46 M47TU	E46 M57TU	E60, E61 M57TU	Fault location	Fault type
P0001	4302	⊗	⊗	⊗	Flow regulating valve	Activation: Open circuit
P0004	4310	⊗	⊗	⊗	Flow regulating valve	Activation: Short circuit to positive
P0030	4207	⊗	⊗	⊗		

					Heating element of the oxygen sensor	Activation: Open circuit
P0031	4206	⊗	⊗	⊗	Heating element of the oxygen sensor	Activation: Short circuit to earth
P0032	4205	⊗	⊗	⊗	Heating element of the oxygen sensor	Activation: Short circuit to positive
P0091	4351	⊗	⊗	⊗	Rail-pressure regulating valve	Activation: Short circuit to earth
P0101	4BC2	⊗	⊗	⊗	Mass air flow sensor	Signal: Open circuit or short circuit to positive or earth
P0102	4BC0	⊗	⊗	⊗	Mass air flow sensor	Air mass too low (signal frequency too low)
P0103	4BC1	⊗	⊗	⊗	Mass air flow sensor	Air mass too high (signal frequency too high)
P0112	4BA1	⊗	⊗	⊗	Intake air temperature sensor	Temperature too low:
P0113	4BA0	⊗	⊗	⊗	Intake air temperature sensor	Temperature too high or signal: Open circuit or short circuit to positive or earth
P0115	3EF3			⊗	Coolant temperature sensor	Plausibility: no increase in temperature
P0117	3EE0	⊗	⊗	⊗	Coolant temperature sensor	Signal: Open circuit or short circuit to positive
P0118	3EE1	⊗	⊗	⊗	Coolant temperature sensor	Signal: Short circuit to earth
P0131	4226	⊗	⊗	⊗	Oxygen sensor	Signal voltage too low
P0132	4225	⊗	⊗	⊗	Oxygen sensor	Signal voltage
P0192	3F31	⊗	⊗	⊗	Rail pressure sensor	Signal: Short circuit to earth
P0193	3F30	⊗	⊗	⊗	Rail pressure sensor	Signal: Open circuit or short circuit to positive
P0201	441c	⊗	⊗	⊗	Injector, cylinder 1	Earth-side activation: Open circuit
P0202	442c	⊗	⊗	⊗	Injector, cylinder 2	Earth-side activation: Open circuit
P0203	443c	⊗	⊗	⊗	Injector, cylinder 3	Earth-side activation: Open circuit
P0204	444c	⊗	⊗	⊗	Injector, cylinder 4	Earth-side activation: Open circuit
P0205	445c		⊗	⊗	Injector, cylinder 5	Earth-side activation: Open circuit
P0206	446c		⊗	⊗	Injector, cylinder 6	Earth-side activation: Open circuit
P0236	3F03	⊗	⊗	⊗	Charge-air-pressure sensor	Plausibility:

						Ambient pressure sensor at idle speed
P0237	3F01	⊗	⊗	⊗	Charge-air-pressure sensor	Signal: Open circuit or short circuit to earth
P0238	3F00	⊗	⊗	⊗	Charge-air-pressure sensor	Signal: Short circuit to positive
P0401	4501	⊗	⊗	⊗	Exhaust gas recirculation adjustment	Negative deviation or air mass too high
P0402	4507	⊗	⊗	⊗	Exhaust gas recirculation adjustment	Positive deviation or air mass too low
P0500	3F62	⊗	⊗	⊗	Signal for car road speed (via CAN)	Signal faulty
P0545*	4030*			⊗	Exhaust gas temperature sensor before catalytic converter*	Signal: Open circuit or short circuit to positive
P0546*	4031*			⊗	Exhaust gas temperature sensor before catalytic converter*	Signal: Short circuit to earth
P0638*	43E3*			⊗	Throttle-valve actuator*	Plausibility: Overtemperature of the output stage
P0642	4671	⊗	⊗	⊗	Power supply 1	Short circuit to earth
P0643	4670	⊗	⊗	⊗	Power supply 1	Short circuit to positive
P0652	4681	⊗	⊗	⊗	Power supply 2	Short circuit to earth
P0653	4680	⊗	⊗	⊗	Power supply 2	Short circuit to positive
P0701	3F05		⊗	⊗	Emission warning lamp OFF	Requirement of the transmission control
P1212	41B0	⊗	⊗	⊗	Exhaust gas recirculation actuator	Activation: Short circuit to positive
P1213	41D1	⊗	⊗	⊗	Exhaust gas recirculation actuator	Activation: Short circuit to earth
P1245	4391	⊗	⊗	⊗	Charge-air temperature sensor	Signal: Short circuit to earth
P1246	4390	⊗	⊗	⊗	Charge-air temperature sensor	Signal: Open circuit or short circuit to positive
P1251	4180	⊗	⊗	⊗	Charge-air pressure actuator	Activation: Short circuit to positive
P1252	4191	⊗	⊗	⊗	Charge-air pressure actuator	Activation: Short circuit to earth
P1253	41A2	⊗	⊗	⊗	Charge-air pressure actuator	Activation: Open circuit
P1254	41A3	⊗	⊗	⊗	Charge-air pressure actuator	Plausibility: Overtemperature of the output stage

P1269	41E3	⊗	⊗	⊗	Exhaust gas recirculation actuator	Plausibility: Overtemperature of the output stage
P1278	4B10	⊗	⊗	⊗	Vibration controller	Correction value too high:
P1279	4B11	⊗	⊗	⊗	Vibration controller	Correction value too low:
P1286	41E2	⊗	⊗	⊗	Exhaust gas recirculation valve	Activation: Open circuit
P1291	4303	⊗	⊗	⊗	Flow regulating valve	Plausibility: Overtemperature of the output stage
P1425	4130	⊗	⊗	⊗	Swirl valves	Activation: Short circuit to positive
P1426	4141	⊗	⊗	⊗	Swirl valves	Activation: Short circuit to earth
P1427	4152	⊗	⊗	⊗	Swirl valves	Activation: Open circuit
P1428	4153	⊗	⊗	⊗	Swirl valves	Plausibility: Overtemperature of the output stage
P14A0*	4011*			⊗	Exhaust gas back pressure sensor*	Signal: Open circuit or short circuit to earth
P14A1*	4010*			⊗	Exhaust gas back pressure sensor*	Signal: Short circuit to positive
P14A2*	4CF3*			⊗	Diesel particulate filter system*	Plausibility: Signal of exhaust gas back pressure sensor dynamically implausible
P14A3*	4618*			⊗	Diesel particulate filter system*	Plausibility: Pressure of diesel particulate filter implausible to atmospheric pressure or boost pressure
P14A4*	4020*			⊗	Exhaust gas temperature sensor*	Signal: Open circuit or short circuit to positive
P14A5*	4021*			⊗	Exhaust gas temperature sensor*	Signal: Short circuit to earth
P14A6*	4166*			⊗	Diesel particulate filter system*	Flow resistance too low
P14A7*	4165*			⊗	Diesel particulate filter system*	Flow resistance too high
P2227	4063	⊗	⊗	⊗	Ambient pressure sensor (in DDE control module)	Plausibility: with boost pressure sensor at idle speed
P2228	4061	⊗	⊗	⊗	Ambient pressure sensor (in DDE control module)	Signal: Open circuit or short circuit to earth
P2229	4060	⊗	⊗	⊗		

					Ambient pressure sensor (in DDE control module)	Signal: Short circuit to positive
P2237	41E7	⊗	⊗	⊗	Oxygen sensor, pump current	Signal: Open circuit
P2238	41E6	⊗	⊗	⊗	Oxygen sensor, pump current	Signal: Short circuit to earth
P2239	41E5	⊗	⊗	⊗	Oxygen sensor, pump current	Signal: Short circuit to positive
P2243	41D7	⊗	⊗	⊗	Oxygen sensor, bias	Signal: Open circuit
P2245	41D6	⊗	⊗	⊗	Oxygen sensor, bias	Signal: Short circuit to earth
P2246	41D5	⊗	⊗	⊗	Oxygen sensor, bias	Signal: Short circuit to positive
P2251	41F7	⊗	⊗	⊗	Oxygen sensor, virtual earth	Signal: Open circuit
P2252	41F6	⊗	⊗	⊗	Oxygen sensor, virtual earth	Signal: Short circuit to earth
P2253	41F5	⊗	⊗	⊗	Oxygen sensor, virtual earth	Short circuit to positive
P2620*	43E2*			⊗	Throttle-valve actuator	Activation: Open circuit
P2621*	43D1*			⊗	Throttle-valve actuator	Activation: Short circuit to earth
P2622*	43C0*			⊗	Throttle-valve actuator	Activation: Short circuit to positive
P3000*	3F40*			⊗	Rail pressure sensor	Exceeds maximum for compensation
P3001	3F41			⊗	Rail pressure sensor	Falls short of minimum for compensation
P3002	4560	⊗	⊗	⊗	Plausibility for rail pressure	Positive deviation or rail pressure too low
P3003	4580	⊗	⊗	⊗	Plausibility for rail pressure	Rail pressure too high at maximum activation of the flow regulating valve
P3004	45A0	⊗	⊗	⊗	Plausibility for rail pressure	Exceeds maximum rail pressure
P3005	4600	⊗	⊗	⊗	Plausibility for rail pressure	Positive deviation or rail pressure too low
P3006	4620	⊗	⊗	⊗	Plausibility for rail pressure	Negative deviation or rail pressure too high at minimum activation of the pressure-regulating valve
P3200	4912	⊗	⊗	⊗	CAN bus	Hardware defect in operation
P3201	4913	⊗	⊗	⊗	CAN bus	Hardware fault in initialisation
P3202	CD8B	⊗	⊗	⊗	CAN bus	Control module has switched itself off from bus

P3273	4BB5	⊗	⊗	⊗	Mass air flow sensor	Air mass too low (corrected signal frequency too low)
P3274	4BB6	⊗	⊗	⊗	Mass air flow sensor	Air mass too high (corrected signal frequency too high)
* Also on vehicles with diesel particulate filter						