Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumination
Mass Air Flow Sensor (DHFM)	P0102	range check low	value	see table KFMLDMN (0...156,4 kg/h)	• battery voltage • time after start • Errorflag throttle position sensor	> 11 V (UBHFM) > 0,3 s (TDMLST) not set	continuous	Two driving cycles
	P0103	range check high		see table KFMLDMX (60...1181 kg/h)				
(DEGFE)	P0101	rationality check	difference between measured and calculated airmassflow gradient of above signal	see table < GRDSDMSS + DGRDSDMSS and (0,39...0,408) > GRDSGDMSS (2...4)	• difference between both throttle signals • throttle 1/ throttle 2 • pressure intakemanifold/ in front of throttle • wot • integrator stop	< 0,6% < 0,5 < 0,95 not set not set		
Intake Manifold Pressure Sensor (GGDSS)	P0107 P0108	range check low range check high	sensor signal voltage	< 0,14V (UADPSMN) > 4,88V (UADPSMX)	• time • engine	> 0.2 s (TDDSS) running	continuous	Two Driving Cycles
Intake Air Temperatur Sensor (GGTFA)	P0113	range check low	temperature	<-42,75°C (TADMN)	• time after start • time in idle	>180s (TDNSTA) >10 s (TDTAL)	continuous	Two driving cycles
	P0112	range check high		> 139,50°C (TADMX)	• time	> 2s (TDTA)		
Coolant Temperatur Sensor (GGTFM)	P0115	signal check	temperature for closed loop control not reached after time	timer depending on airflow	• time after engine start (timer depending on airflow)	2 min - 5 min	continuous	Two Driving cycles
	P0116	plausibility check	temperature	< model temp. -12°K (DTMDMA)	• engine speed	> 20 rpm		
	P0118	range check low		< -42,75°C (TMDMN)	• no			
	P0117	range check high		> 139,50 °C (TMDMX)	• no			
Throttle Position Sensor (GGDVE)	P0121	plaus. check poti1	value	> 12,94%(DWDK130)	• battery voltage • time •	> 7 V > 140 ms	continuous	5 s
	P0122	range check low	voltage					

Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumi-nation
	P0123 poti 1 range check high poti 1			< 0,195 V (UDKP1U) > 4,609 V (UDKP1O)				
	P0221 plaus. check poti 2	value		>12,94%(DWDK230)				
	P0222 range check low poti 2	voltage		< 0,1563V (UDKP2U)				
	P0223 range check high poti 2			> 4,8047V (UDKP2O)				
O2 Sensors								
Front Bank 1 Front Bank 2 (DLSU)	P0130 P0150	circuit continuity	sensor signal voltage for time **or** sensor signal value for time	> 4,7V (SULSUMX) > 2s (TVCJLSU) 0,995 (LSUNAMN) <. .<1,005 (LSUNAMX) >2...16 s (TVPLMSA)	• none • either one errorflag: front sensorheater, rear sensor, rear sensor aging • indicator self adjust • rear sensor voltage	not present not present > 0,85 V (USHKFT) or < 0,103 V (USHKMR)	continuous	Two driving cycles
			or sensor signal value for time **or** sensor signal value for time	> 1,2 (LAMMX) >2...16 s (TVPLMSA) < 0,8 (LAMMN) >2...16 s (TVPLMSA)	• rear sensor voltage • errorflags: rear sensor, rear sensor aging • rear sensor voltage • erroflags: rear sensor, rear sensor aging	> 0,85 V not present < 0,103 V not present		
Front Bank 1 Front Bank 2 (DLSU)	P0131 P0151	range check low	standardized dynamic value from sensor	< 0,60 (DYNLSUMX)	• load • engine speed • lambdavalue	23,25 <.... < 45 % (RLDYNU <..< RLDYNO) 1400<.... <2520 rpm (NMOTDYNU < ...< NMOTDYNO) 0,96 <... <1,04 (LAMDYNU<.....< LAMDYNO)	continuous	Two driving cycles

Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumi-nation
					• either one errorflag: misfire, evapsystem, purge valve, fueltrim • evapsystem • close loop control maximum • close loop control minimun	not present no high loading indicated not reached or exceeded not reached or exceeded		
Front Bank 1 Front Bank 2 (DLSU)	P0132 P0152	range check high	lambda offset	> 0,03 (SDLAOF)	• time • engine • either one errorflag: rear sensor, rear sensor aging • rear sensor aging diagnosis	< 2 s (TVLSUOF) running not present Q finished	continuous	Two driving cycles
Front Bank 1 Front Bank 2 (DLSU)	P0134 P0154	no activity detected	lambda value	> 0,1 (SDLAMX)	• eventcounter • timer • exhaust model temperatur • time after start • flag lambda amplitude • flag low loadchange • flag O2-sensor maxi-mum value exceeded	> 30 (ZEHK) > 0,5 s TVHKLSU) >460 °C (TALAMX) >25 s (TVLSUHK) present present not present	continuous	Two driving cycles
Rear Bank 1 Rear Bank 2 (DLSH)	P0136 P0156	circuit continuity	sensor signal voltage	< 0,04 V (USMIN)	• rear close loop either one errorflag: evapsystem, purge valve• • timer • timer • flag tank empty • engine • catalytic converter temperature • battery voltage • lambda target • time after dewpoint	established not present > 60 or 80 s > 600 s not present running < 940 °C (TABGMCSD) >11,03 V (UBDLS) =1 > 90 s (TTBMH)	continuous	Two driving cycles
Rear Bank 1 Rear Bank 2 (DLSH)	P0138 P0158	range check high	sensor signal voltage for time	> 1,5 V (USMAX) 5,1 s (TUSKS + TUSMAX)	• engine • catalytic converter temperature • battery voltage	running < 940 °C (TABGMCSD) > 11,03 V (UBDLS)	continuous	Two driving cycles

Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumi-nation
					• lambda target value • time after dewpoint	=1 > 90 s (TTBMH)		
Rear Bank 1 Rear Bank 2 (DLSAHK- sensor aging)	P0139 P0159	oscillation check high / low	sensor voltage	Stack below Reference value (KFUSRHK) or >0,200 V(USSCHUB) or stack above reference value	• rear closed loop • fuel cut off • rear closed loop	active active active	continuous	Two driving cycles
Rear Bank 1 Rear Bank 2 (DLSH)	P0140 P0160	no activity detected	sensor signal voltage for time	0,421 <... < 0,479 V (USREMH<.....<USREFH) 60 s (TRSAFA) or 1150 s (TRSAH)	• engine • catalytic converter temperature • battery voltage • lambda target value • time after dewpoint	running < 940 °C (TABGMCSD) > 11,03 V (UBDLS) =1 > 90 s (TTBMH)	continuous	Two driving cycles
Heater Rear B. 1 Heater Rear B. 2 (DLSHK)	P0141 P0161	heater resistance	actuall heater resistance	> Map KFRINH * 5...12	• catalytic converter temperture • battery voltage • error flag heater output stage • dewpoint behind catalytic converter • timer	400 <... < 580°C (TADHMN<..<TADHMX) 11,03 <... < 14,98 V (UBDLS<..<UBDLSMX) not present reached > 15 s	continuous	Two driving cycles
Heater Rear Power Stage Check (DLSHKE) Bank 1 Bank 2 Bank 1 Bank 2 Bank 1 Bank 2	 P0036 P0056 P0037 P0057 P0038 P0058	 open circuit range check low range check high	 Voltage	 IC internal	 • engine speed • battery voltage • battery voltage • time • stage had to be	 > 40 rpm > 7,5V < 15 V 300ms .. 500 ms active	 continuos	 Two driving cycles
Heater Front B. 1 Heater Front B. 2	P0030 P0050	signal check	heater voltage	>2,34V (UHEMN) and	• delaytime • battery voltage	>0,04 s (TDFHS) 11,03 <... < 14,98 V	continuous	Two driving

Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumi-nation
(DHLSU) Heater Front B.1 Heater Front B.2 Heater Front B.1 Heater Front B.2 Heater Front B.1 Heater Front B.2	 P0031 P0051 P0032 P0052 P0135 P0155	 range check low range check high plausibility check	 heater voltage heater votage time after heater on	< 3,6V (UHEMX) < 2,43V (UHEMN) > 3,6V (UHEMX) >20 s (TVLSUBM) and Sensor not active	• heater outputstage • engine • delaytime • battery voltage • heater outputstage • engine • batterie voltage • heater outputstage • engine	(UBDLS <..< UBDLSMX) not active running >0,04 s (TDFHS) 11,03 <... < 14,98 V (UBDLS<..<UBDLSMX) active running 11,03 <... < 14,98 V (UBDLS <..< UBDLSMX) active running		cycles
Fuel System (DKVS) Bank 1 Bank 1 Bank 2 Bank 2	 P0171 P0172 P0174 P0175	 fuel trim limits exceeded	 additional or multiplicational	>7,7 % or > 21 % (>RKATDX or >FRAODX,FRAUDX) < -7,7 % or < -24% (>RKATDN or >FRAODN,FRAUDN) >7,7 % or > 21 % (>RKATDX or >FRAODX,FRAUDX) < -7,7 % or < -24 % (>RKATDN or >FRAODN,FRAUDN)	• fuel system status • fuel trim adaption	closed loop activ	continuous	Two driving cycles
Injection Valves 1..6 (Power Stage Check - DEVE)	P0201 P0202 P0203 P0204 P0205 P0206 P0261 P0264 P0267 P0270 P0273	open circuit range check low	voltage	IC Internal	• engine speed • battery voltage • battery voltage • time • stage had to be	> 40 rpm > 7,5 V < 15 V 300 ms ... 500 ms active	continuous	Two driving cycles

Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumi-nation
	P0276 P0262 P0265 P0268 P0271 P0274 P0277	 range check high						
Fuel Pump Primary Circuit (DEKPE)	P0230 P0231 P0232	open circuit range check low range check high	voltage	IC Internal	• engine speed • battery voltage • battery voltage • time • stage had to be	> 40 rpm > 7,5 V < 15 V 300 ms ... 500 ms active	continuous	No
Misfire (DMD)	P0301 to P0306 P0300	crankshaft speed fluctuation cylinder 1 to cylinder 6 Multiple misfire	FTP emission threshold catalyst damage	> 1,0 % Misfire weighted with map rpm/load KFKSWF (40...183) > 3200 (AHEKS)	• engine speed • load • engine speed change • load change • intake air temp • time after start • rough road • traction control • evap-system check • either one errorflag: throttle position, crankshaft sensor, reference mark sensor	520 ... 6520 rpm > RLSALUN (13,5 ... 33 %) < 2500...5500 rpm/s < 120...750%/segment >-8,25°C > 5s not detected off off not set	1000 revs continuous 200 revs	Two driving cycles Im-mediate
Misfire With Low Fuel (DTANKL)	P0313	Fuel Level	Liter	< 11 l (FSTTAL)	• time or • Misfire detected	30 s	continuous	No

Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumi-nation
					or • fuel trim limits exceeded	 yes		
Knock Sensor 1 (DKRS) Knock Sensor 2	P0327 P0328 P0332 P0333	range check low range check high range check low range check high	voltage	table UDKSNU table UDKSNO	• coolant temp. • engine speed	> 39,75°C > 2000 rpm	continuous	No
Crankshaft Position Sensor (DDG)	P0335	malfunction	counter schedule of phase signal and no signal from crankshaft position sensor	> 8	• camshaft signal	Active	continuous	Two driving cycles
Camshaft Position Sensor (DPH)	P0342 P0343 P0341	check low check high rationality	bit pattern at crankshaft marker high or low marker not plausible	>= 5 times	• engine speed	> 20 rpm	continuous	Two driving cycles
EGR (DAGRFC)	 P0401 P0402	flow-check: comparison betw. Modelled and measured intake pressure after charging EGR-rate flow-check low flow-check high	 Insufficient EGR-flow Excessive EGR-flow	 < -0,70 (RFEAGRMN) >0,70 (RFEAGRMX)	• engine speed • engine load • engine load gradient • EGR partial pressure • air mass since start • altitude	1600<...>2200 rpm (NDAGRFMN<...> NDAGRFMX) 35<...>60 % (RLDAGRFN<...> RLDAGRFX) < 0,35% (DRLDAGMX) >= 25 hPa (PSAGRMN) >0,5 kg (IMLATDAG) < 2750m	<= 15s once per driving cycle	Two driving cycles
EGR Power Stage (DAGRE)	P0403 P0405 P0406	open circuit range check low range check high	voltage	IC Internal	• engine speed • battery voltage • battery voltage • time • stage had to be	> 40 rpm > 7,5 V < 15 V 300 ms ... 500 ms active	Continuous	Two driving cycles
EGR Position Sensor (DAGRLS)	P0404 P1404	Open valve pintle error Closed valve pintle error	Position sensor voltage	> 4,8242 V (UAGRPMX) for time > =1s (TWUAGERR) < 0,1367 V (UAGRPMN) for time >= 1s (TWUAGERR)	• errorflag: battery voltage • engine	not present running	Continuous	Two Driving Cycles

Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumi-nation
	P1406	stocking valve	difference between set and actual position of EGR-valve	>20% (AGRDMX) for time >= 10s (TWAGRDI)	• EGR-System	Active		
Catalyst, Bank 1 Catalyst, Bank 2 (DKATLRS)	P0421 P0431	determining the oxygen storage capability by comparing the amlitude obtained from the downstream O2-sensor to a modelled sensor-signal amplitude	catalyst qualtity factor	> 0,65 (AHKATMX)	• engine speed • load • fuel system status • modelled catalyst temp. • modelled signal amplitude • catalyst load value • canister purge value • either one errorflag: O2-sensor upstream and downstream, misfire, air flow sensor, throttle pos. sensor, purge system, fuel system	>1000rpm; < 2000rpm > 20 .. 24 %; < 30 .. 45 % closed loop > 350 °C > 0.36 < 10 .. 30 /s < 6 not present	50 s, once per driving cycle, in case of a fault detection one repeated test possible	Two driving cycles
					•			
Evaporative Emission Control System (DTESK)	P0440	pressure control or or or	tank pressure while compesation gradient measurement tank pressure after large leak detection tank pressure while opening purge solenoid tank pressure for time period	< - 1,61 hPa (DDPTEKU) < - 14,99 hPa (DDPTETV) < - 6 hPa (DDPTEAV) - 14,95 hPa (DPTEDUD) 15 s (TTEDWU)	• vehicle speed • engine status • fuel system status • canister load factor • tank pressure • engine load • intake low pressure • engine temperature at start • intake air temperature • tank pressure while compen-sation gradient measurement • battery voltage • time after start • altitude • tank pressure while driving cycle • fuel level • • either one errorflag:	= 0 mph idle closed loop < 7 (SFTEDA) -15<...< 15 hPa (DPTEBU, DPTEBO) < 35 % (RLTEDMX) > 400 hPa (DPUSTED) - 8,25 °C < ... < 75 °C - 8,25 °C<...< 50,25 °C < 0,40 hPa (DDPTEKO) > 11,05 V (UBTEDU) > 1005 s or fuel mixture adaption OK (b_gae =1) < 3000 m < 15 hPa 5 l < ... < 48 l (FSTDMN, FSTDMX) not present	max.40 s if OK once per driving cycle max. 2 times per driving cycle	Two driving cycles

Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumi-nation
					load-, electr. Throttle potentiometer-, coolanttemp.-, vehicle speed-, tank pressure-, oxygensensor, idle control, purge valve -, vent control output stage, battery voltage, misfire, egr output stage, egr flow			
					•			
Evaporative Emission Control System Leak Detected (small leak) (DTESK)	P0442	pressure control	leak air flow volume	table VLTEDFH (...0,080) and time for vacuum decay < 10,5 s (TTEDF)	• vehicle speed • engine status • fuel system status • canister load factor • tank pressure • engine load • intake low pressure • engine temperature at start • intake air temperature • tank pressure while compensation gradient measurement • battery voltage • time after start • altitude • tank pressure while driving cycle • fuel level • either one errorflag: load-, electr. Throttle potentiometer-, coolanttemp.-, vehicle speed-, tank pressure-, oxygensensor, idle control, purge valve -, vent control output stage, battery voltage, misfire, egr output	= 0 mph idle closed loop < 7 (SFTEDA) -15<...< 15 hPa (DPTEBU, DPTEBO) < 35 % (RLTEDMX) > 400 hPa (DPUSTED) - 8,25 °C < ... < 75 °C - 8,25 °C < ... < 50,25 °C < 0,40 hPa (DDPTEKO) > 11,05 V (UBTEDU) > 1005s or fuel mixture adaption OK (b_gae =1) < 3000 m < 15 hPa 5 l < ... < 48 l (FSTDMN, FSTDMX) • not present	max.40 s if OK once per driving cycle max. 2 times per driving cycle	Two driving cycles

Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumi-nation
					stage, egr flow			
Evaporative Emission Control System Purge Control Valve Circuit	P0445 P0443 P0444	range check high range check low open circuit	voltage	IC Internal	• engine speed • battery voltage • battery voltage • time • stage had to be	> 40 rpm > 7,5 V < 15 V 300 ms ... 500 ms • active	Continuous	Two driving cycles
Evaporative Emission Control System Vent Control Malfunction (DAAVE)	P0448 P0446 P0449	range check high range check low open circuit	voltage	IC Internal	• engine speed • battery voltage • battery voltage • time • stage had to be	> 40 rpm > 7,5 V < 15 V 300 ms ... 500 ms active	continuous	Two driving cycles
Evaporative Emission Control System Pressure Sensor (DDST)	P0452 P0453 P0451	range check low range check high rationality	sensor signal value sensor signal value or sensor signal value	< - 28,125 hPa (DPTEMN) > 29,375 hPa (DPTEMX) >= 25 hPa (DPDSTO)	• time • time • time • engine status • engine temperature at start time after start	> 3 s (TDDSTO) > 3 s (TDDSTO) > 3 s (TDDST) idle <= 33 °C (TMDDST) 1 s < ... < 10 s (TTDSTP, TTDSST)	max. 10 s	Two driving cycles
Evaporative Control System Leak Detected (large leak) (DTESK)	P0455	pressure control or	evacuation time for large leak during evacuation no pressure change detected for a time	> 15 s (TDTEGR) > 4 s (TTEDST)	• vehicle speed • engine status • fuel system status • canister load factor • tank pressure • engine load • intake low pressure • engine temperature at start • intake air temperature • tank pressure while compen-sation gradient measurement • battery voltage • time after start	= 0 mph idle closed loop < 7 (SFTEDA) -15<...< 15 hPa (DPTEBU, DPTEBO) < 35 % (RLTEDMX) > 400 hPa (DPUSTED) - 8,25 °C < ... < 75 °C - 8,25 °C < ... < 50,25 °C < 0,40 hPa (DDPTEKO) > 11,05 V (UBTEDU) > 1005 s or fuel mixture adaption OK (b_gae =1)	max.40 s if OK once per driving cycle max. 2 times per driving cycle	Two driving cycles

Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumi-nation
					• altitude • tank pressure while driving cycle • fuel level • either one errorflag: load-, electr. Throttle potentiometer-, coolanttemp.-, vehicle speed-, tank pressure-, oxygensensor, idle control, purge valve -, vent control output stage, battery voltage, misfire, egr output stage, egr flow	< 3000 m < 15 hPa 5 l < ... < 48 l (FSTDMN, FSTDMX) • not present		
					•			
Fuel Level Sensor Circuit (DFSTT)	P0463 P0462 P0461	range check high range check low rationality	Voltage Liter Voltage	> 4,49 V (UFSTMX) < 0,35 V (UFSTMN) more than +/- 15l (DFSKVO/DFSKVU) difference between calculated and measured Fuel Level after calculating a fuel consume of 20l	• time	1 s	continuous	No
Cooling Fan Control Circuit (DMLSE)	P0480 (Fan A) P0481 (Fan B)	range check high range check low open circuit range check high range check low open circuit	voltage	IC Internal	• engine speed • battery voltage • battery voltage • time • stage had to be	> 40 rpm > 7,5 V < 15 V 300 ms ... 500 ms active	continuous	No
Vehicle Speed Sensor (DVFZ)	P0500	rationality	speed	< 20 km/h (VDMN)	• engaged gear • CAN:VALID_ACTUAL_GEAR_TCM • engine coolant temperatur • engine speed • time	= 4 = 0 > 64,5 °C (TMDV) (NDV) (NDVO) 1800 <...< 10200 rpm > 1 s (TDV)	continuous	Two driving cycles

Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumi-nation
Idle Control (DLLR)	P0506 P0507	functional check	actual desired rpm or fuel cuts off during this idle	> 100 rpm (DNDLLRO) < -200 rpm (DNDLLRU) > 3 (DASA) only for: < -200 rpm	• coolant temp. • intake air temp • vehicle speed • evap (high canister load) • evap diagnostic • secondary air diagnostic • either one errorflag: throttle position, vehicle speed, coolant temp. sensor, intake air sen., evap system, evap valve • load	> 80,25°C (TMDLLR) > 34,5°C (TADLLR) = 0 km/h off off off not set < 50,25 % (RLDLLR)	continuous	Two driving cycles
A/C Refrigerant Pressure Sensor (GGDSAC)	P0532 P0533	range check low range check high	sensor signal voltage	< 0,1953 V (UADPACMN) > 4,8828 V (UADPACMX)	• engine	Running	continuous	No
System Voltage (GGUB)	P0563 P0562 P0560	range check high range check low rationality	voltage	> 16 V (UBDMX) < 9 V (UBDMN1) < 2,5 V (UBDMN2)	• time • vehicle speed • time after start	200ms (TDUB) > 0 km/h 180 s (TDNSUB)	continuous	No
Brake Switches (GGEGAS)	P0571	plausibility of brake light switch (BLS) and brake test switch (BTS)	several times BLS and BTS unplausible for a certain period	> 1 s (TVERBR) > 10 times (ZERBR)	• no	-	continuous	No
Calculator Monitoring (DUR, URROM)	P0601	ROM Check	check sum ROM error		• no		continuous	5 s
ECM	P0602	Programming Error	Security Access not armed		• no		at enginestart	No
Calculator Monitoring (DUR)	P0603	Calculator check	Calculator Check		• no		continuous	5 s
Calculator Monitoring (DUR, URRAM)	P0604	RAM check	Read- and write-Test		• no		continuous	5 s
Function Monitoring (DUF)	P0606	monitoring torque safety fuel cut off	torque out of range calculator error in function		• engine speed	> 1120 rpm (NMN_DUF)	continuous	5s
Generator L Terminal Control Circuit	P0621 P1637	open circuit range check low	voltage	Generator Terminal Status	• engine speed • engine • ignition	> 40 rpm running active	continuous	No

Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumi-nation
Intake Plenum Switchover Valve	P1245	range check high range check low open circuit	voltage	IC Internal	• engine speed • battery voltage • battery voltage • time • stage had to be	> 40 rpm > 7,5 V < 15 V 300 ms ... 500 ms active	continuous	No
Accelerator Pedal Position Sensor 1 (GGPED) (Pedal Moving Detection)	P1278 P1277 P1271	range check high range check low plausibility to poti 2 or comparison of poti 1 and poti 2 when leavung idle range	voltage volt. Part. throttle range volt. Full throttle range	> 4,8242 V (UPWG1O) < 0,2930 V (UPWG1U) > 0,2734 V (DUPW12TG) > 0,9961 V (DUPW12VG) > 0,5273 V (UPW1LLMX) <0,6836 V (UPWGU)	• battery voltage • no substitute operation of accelerator pedal position sensor	> 7 V	continuous	5 s
Accelerator Pedal Position Sensor 2 (GGPED)	P1283 P1282	range check high range check low	voltage	> 4,8242 V (UPWG2O) < 0,0977 V (UPWG2U)	• battery voltage	> 7 V	continuous	5 s
DV-E Limp-Home Air Position (BGDVE)	P1511	check of limp-home air position	throttle position	< 3,734 % (WDKNLPMI) > 9,8405 % (WDKNLPMA)	• vehicle speed • engine speed • coolant temp. • intake air temp. • battery voltage • pedal position	= 0 km/h < 250 rpm (UANNMAX) 5°C <... < 100°C (UAN_U_MT, UAN_O_MT) > 5°C (UANUATS) > 10 V (UB_UANL) < 15 % (UANPEDMAX)	continuous	5 s
DV-E Position Throttle Blade (ADVE)	P1516	difference between set and actual position of throttle blade	difference value	> DWDKSBAMX for time > 0,5 s (DKLAGERT)	• status DVE-E adaption	not set	continuous	5 s
DV-E Spring Check (BGDVE)	P1523	check of DV-E return spring	active opening throttle blade, switch off power stage and monitoring the throttle blade return	> (angle limp-home + 3%) for time > 0,56 s (FPRTIM2_T)	• vehicle speed • engine speed • coolant temp. • intake air temp.	= 0 km/h < 250 rpm (FPRNMAX) 5°C <...< 100°C (FPRMT) > 5°C (FPRAT)	once per DV-E adap.	5 s
DV-E Lower Mechanical Stop	P1526	range check lower mechanical stop	range check high	< 0,24 V (UDKP1AMIN)	• vehicle speed • engine speed	= 0 km/h < 250 rpm (UANNMAX)	once per DV-E adap.	5 s

Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumi-nation
Throttle Blade (BGDVE)		throttle blade	range check low	> 0,820 V (UDKP1AMAX) < 4,20V (UDKP2AMIN) > 4,77V (UDKP2AMAX)	• coolant temp. • intake air temp. • battery voltage • pedal position	5°C <...< 100°C (UAN_U_MT UAN_O_MT) > 5°C (UANUATS) > 10 V (UB_UANL) < 15 % (UANPEDMAX)		
DV-E Power Stage Switch Off (ADVE)	P1519	output	state	not set for time > 5 s (DLRPID2T)	• status DVE-E adaption • duty cycle range check	not set > 80 % PWM	continuous	5 s
DV-E Amplifier Adjustment (BGDVE)	P1530	range check of amlified actual throttle blade position signal	amplification value offset value	< 4,00 V (UDKP1VVMI) > 4,32 V (UDKP1VVMA) < -0,1503 V (UDKP1VOMI) > 0,1503 V (UDKP1VOMA)	• vehicle speed • engine speed • coolant temp. • intake air temp. • battery voltage • pedal positionvehicle speed • engine speed • coolant temp. • intake air temp. • battery voltage • pedal position	= 0 km/h < 250 rpm (UANNMAX) 5°C <...< 100°C (UAN_U_MT UAN_O_MT) > 5°C (UANUATS) > 10 V (UB_UANL) < 15 % (UANPEDMAX)= 0 km/h < 250 rpm 5°C <...< 100°C > 5°C > 10 V < 15 %	once per DV-E adap.	5 s
A/C Clutch Relay Circuit (DKOSE)	P0647 P0646 P0645	range check high range check low open circuit	voltage	IC Internal	• engine speed • battery voltage • battery voltage • time • stage had to be	> 40 rpm > 7,5 V < 15 V 300 ms ... 500 ms active	continuous	No
Knock Control Module (DKRNT, DKRTP)	P1602	rationality	IC output voltage	>44,983 V/s (DKRISNT) > 0,2148 V (UDKRGOFS) < 3,6914 V (UDKRTP)	• coolant temp. (knock control active)	> 39,75°C (TMKR)	Continuous	No
Immobilizer (WFS)	P1630 P1631 P1632	rationality	not or wrong initialized wrong frequencycode received no frequencycode received		• at cranking			No
PWM Vehicles incooperating an	P1669	rationality	Monitoring of PWM signal from MMR period duration	not within	• engine speed • delay time • variant coding	> 160 rpm 2 s car incooperates an ABS	Continuous	No

Component / System	Fault	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Required	MIL Illumi-nation
ABS unit			or pulse duty factor	f = 100Hz +/- 5Hz < 8% (PCMDMN) for time > 0,1s (TPWMF)		unit (eeprom byte FZVAR, bit 6)		
DV-E Control Range (ADVE)	P1510	range check high range check low	PWM /- PWM / time	> 80 % PWM (DLRPIDMAX) > 80 % PWM (DLRPIDMIN) for time > 0,6 s first threshold (DLRPID1T) or > 5 s (second threshold (DLRPID2T)	• battery voltage • status DVE-E adaption	> 7 V not set	Continuous	5 s
Transmission MIL Request (DMFB)	P1780	TCM	OBD2 failure				continuous	Two Driving Cycles
Torque Limiter	P1845	range check high	indexed torque	> maximum autorized idexed torque	• engine speed	> 40 rpm	continuous	Two driving cycles
CAN-BUS Communication Malfunction (DCAN)	U2100	CAN-BUS circuit	Common not identified bus error		• engine speed • time	> 25 U/min (B_nmot=t rue) > 25 sec	continuous	5 s
CAN-BUS Fewer Controller On Bus Than Controlled (DCAN)	U2103	CAN-BUS circuit	Fewer systems on bus than programmed in the maximum configuration list	< 3	• engine speed • time	>25 U/min (B_nmot= true) > 25 sec	continuous	Two driving cycles
CAN-BUS Reset Counter Overrun (DCAN)	U2104	CAN-BUS circuit	Reset Counter	> 40	• engine speed • time	>25 U/min (B_nmot= true) > 25 sec	continuous	5 s
CAN-BUS Lost Communication With TCM (DCAN)	U2106	CAN-BUS circuit	No communication with TCM		• engine speed • time	> 25 U/min (B_nmot=t rue) > 25 sec	continuous	5 s
CAN-BUS Lost Communication With BCM (DCAN)ABS	U2107	CAN-BUS circuit	No communication with BCMABS		• engine speed • time	> 25 U/min (B_nmot= true) > 25 sec	continuous	No