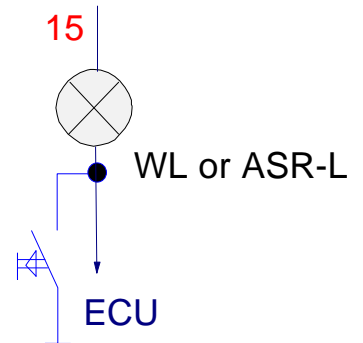


For blinkcode activation warning lamp respectively the ASR-L has to be grounded for a given time by a push button switch. Which signal lamp has to be used depends on ECU type respectively its parametersetting. The duration defines the mode. After release of the switch the signal light will be on for further 0.5 sec. to confirm that the grounding was detected and accepted by the Electronic Control Unit, ECU.

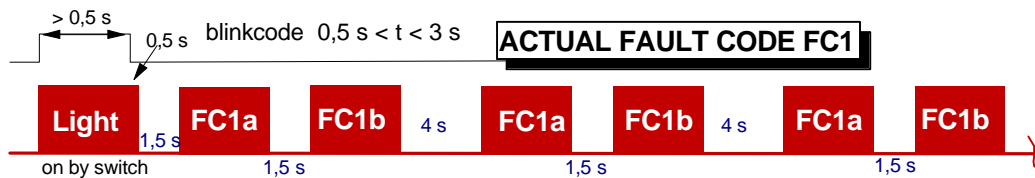
If a fault occurs or signal lamp is grounded for longer than 6.3 sec. blinkcode will be terminated. If grounding is detected for more than 15 sec., fault detection of warning lamp open circuit can be detected and stored in ECU EEPROM (non-volatile memory). Blinkcode activation on ASR-lamp do not cause fault memorizing because open circuit is not detected.



Dashboard signal lamp check devices which grounds the lamp in the described way activates the related mode.

DIAGNOSTIC MODE:

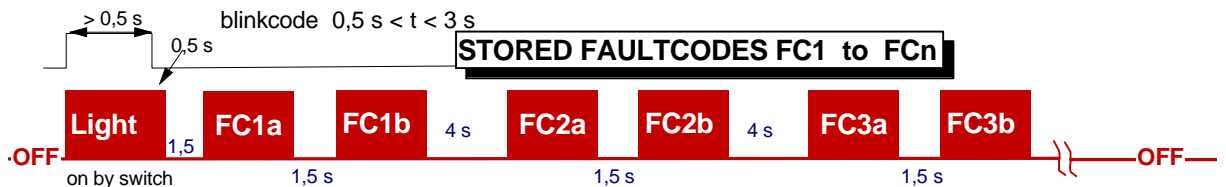
For diagnostic mode activation signal lamp has to be grounded for 0.5 sec. to 3.0 sec.



FC: Faultcode // 1 to 8 // a: first part ; b: second part see Blinkcode List
FC1 repeated because fault is actual

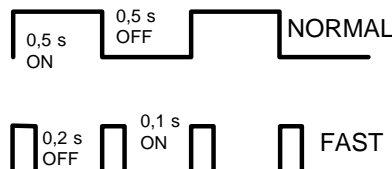
If one fault was detected during current „IGNITION ON“ (actual fault) the ECU blinks out that fault. If more faults were detected during that period blinkcode shows just the latest detected fault. For termination ignition must be switched off / on or vehicle has to move (measured speed of more than one axle).

If there is no actual fault, the last fault will be blinked out first. Further fault numbers may not represent the sequence of occurrence. The stored fault blink mode is self terminating.



FC: Faultcode // 1 to 8 // a: first part ; b: second part see Blinkcode List

Blinkcode timing:



SYSTEM MODE, CLEAR ALL MEMORIZED FAULTS:

System mode is activated if the signal lamp is grounded for a time of 3 to 6.3 sec. All stored faults are erased, if no fault is actual.

For termination ignition has to be switched off / on or vehicle has to move (measured speed of more than one axle).

System code (one number) represents the expected system and should be used to check correct ECU Type.

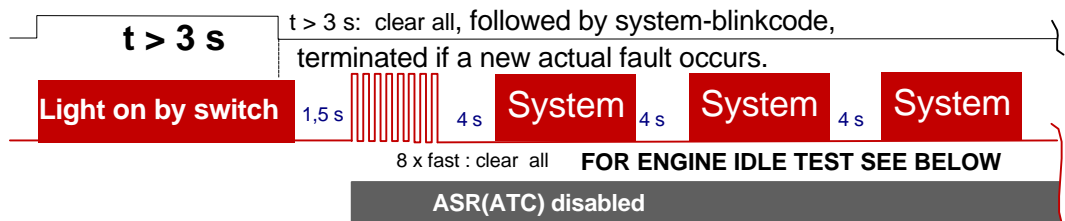
After activating system mode ASR (ATC) is disabled for dyno tests. With WL blinkcode ECU's ASR (ATC) lamp is permanently on indicating ASR(ATC) disabling.

Two seconds after Systemmode activation further functions are available:

1. ASR (ATC) engine control function can be tested by two times extra grounding of a time of > 0.5 sec [ASR (ATC) commands idle torque for 10 sec.].
2. ASR (ATC) respectively Retardercontrol system can be reconfigured by three times extra grounding of a time of > 0.5 sec (missing components can be confirmed). Reconfiguration is confirmed by four short flashes.

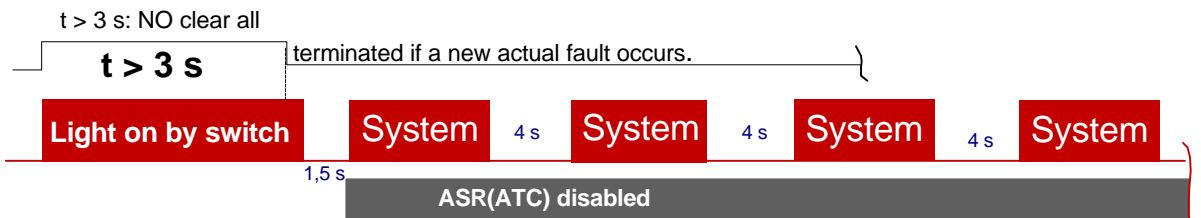
Without actual fault: CLEAR ALL MEMORIZED FAULTS

CLEAR ALL is accepted and confirmed by 8 short flashes followed by the system code.



With actual fault:

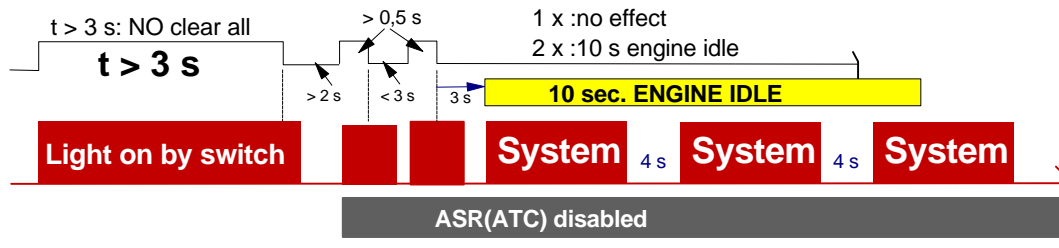
identical to no actual fault condition but CLEAR ALL is not accepted.



Systems:	1x 6S/6M (6x2 ASR)	6x 4S/3M (VAR rear)
	2x 4S/4M	7x 4S/2M (VAR both)
	3x 4S/3M (MAR/VAR front)	
	4x 6S/4M	
	5x 6S/6M (6x4 ASR)	

Engine control function test:

For testing engine control function a 10 sec idle torque can be commanded if the signal lamp is additionally two times grounded. The duration of grounding has to be longer than 0.5 sec. and time between the two grounding has to be less than 3 sec. The 10 sec. time starts 3 sec. after last grounding. Parallel to the engine control function test the system blinkout continues.



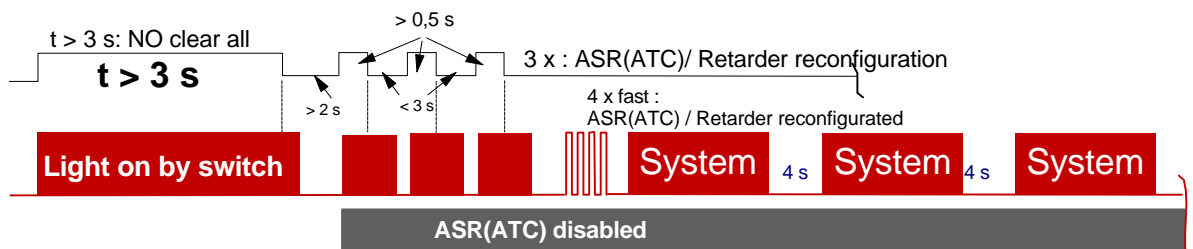
Reconfiguration:

- The ECU modifies its default system (without ASR/ATC) to ASR/ATC if a differential brake valve and one of the engine control interfaces are connected.
- Connected SAE J1939 (SAE J 1922) without a differential brake valve cause an extension of the supervised ABS components.
- Connected endurance brake relay (DBR output) or received retarder messages on data link (SAE J1922 resp. SAE J1939) stores and extends the ABS components too.

Without reconfiguration such ECU's could not be used in vehicles without those components. Additional to diagnostic tools this reconfiguration can be done by the means of blinkcode.

To avoid unintentional reconfiguration this function has to be confirmed by three times grounding of the signal lamp in the way described above for engine control function test. Before system code continues 4 short flashes confirm the modification of parameters.

The ASR/ATC Lamp Bulbtest duration shows whether ASR/ATC is configured or not. Without ASR/ATC: 1,5 sec. ; with ASR/ATC 3 sec. (as Warning Lamp).



DYNOTESTER FUNCTION:

For certain dynotester it is necessary to disable ASR/ATC to allow higher speed difference between driven and steering axle. By activating system mode ASR/ATC can be disabled. With WL Blinkcode ECU's ASR (ATC) lamp is permanently on indicating ASR(ATC) diabling.

To prevent dangerous situations caused by brakeforce in case of ignition off/on or powersupply interrupts, ASR/ATC is disabled as long as there are speed differences after ECU reset. For indication the ASR/ATC lamp is permanently on until ignition is switched off/on.

BLINKCODE LIST

first faultcodepart (FC. a)	second faultcodepart (FC. b)
1 NO FAULTS	1 NO FAULTS
2 ABS MODULATOR	1 RIGHT FRONT
3 SENSOR AIR GAP	2 LEFT FRONT
4 SENSOR SHORT/OPEN	3 RIGHT REAR
5 SENSOR ERRATIC / TIRE SIZE	4 LEFT REAR
6 SENSOR TONE RING	5 RIGHT THIRD
	6 LEFT THIRD
7 SYSTEM FUNCTION	1 DATA LINK
	2 ASR (ATC) VALVE
	3 ENDURANCE BRAKE (THIRD BRAKE) RELAY
	4 WARNING LAMP
	5 ASR (ATC) CONFIGURATION
	6 ASR (ATC) PROP/DIF LOCK/STOP VALVE
8 ECU	1 POWER SUPPLY LOW
	2 POWER SUPPLY HIGH
	3 INTERNAL FAULT
	4 CONFIGURATION ERROR
	5 GROUND

Faultcodes / Repairinstructions	
2 . n	Check modulator wires. Inlet (EV) or outlet (AV) or common wire is permanently or temporarily broken or shorted to plus respectively ground.
3 . n	Amplitude of Sensorsignal is to low. Check bearing play, polewheel run out, push sensor to polewheel. Check sensor wiring and connectors for intermittent contact. Other possible reason: gear engaged at slippery conditions. 16 sec. slip duration.
4 . n	Check Sensor wiring. Open circuit, short circuit to plus respectively ground or between sensorwires IG/IGM is detected
5 . n	Check sensor wiring and connectors for intermittent contact. Check toothed wheel for damages. Check for mismatch-fault of another sensor Pneus or number of polewheel teeth are different
6 - n	Check polewheel for damages / missing teeth / run out. Use WABCO sensor probe. Replace polewheel if not checked o.k. If additional airgap faults are stored, adjust airgap.
7 -1	ECU with PROP: Check wire and speedometer signal. C3/B7 signal calibration, check tyre sizes. Gear switch signals neutral or is manipulated. Electronic engine control: Check wiring respectively other ECU's. Excessive slip / dynotester ? One axle was much faster than other ?
7 -2	Check wire. Output wire is interrupted or grounded or shorted to battery supply.
7 -3	Check wire. Output wire is interrupted or grounded or shorted to battery supply ECU with SAE J1922 resp. SAE J1939: Check other ECU's. No access to the link
7 -4	Check wire and bulb. Was blinkcode switch activated longer than 16 s ?
7 -5	Check wires resp. parametersetting. Diff-brake valve without engine control is detected or CAN, PWM, PROP are detected while selfparameterizing is disabled.
7 -6	Check wire. Output wire is interrupted or shorted to ground or battery supply.
8 -1	Check supply wire and fuse. Supply voltage is temporarily too low.
8 -2	Check alternator and battery. Supply voltage too high for more than 5 sec.
8 -3	Replace ABS (ASR) electronic if fault detection repeats.
8 -4	No modulators connected or wrong ECU or wrong parameterized.
8 -5	Check ECU ground wires and common modulator wires.