

Document title Alternator interface function

Document number gf0710p1009mmq

- ENGINE 276.8 in MODEL 207, 212
as of model year 2014**
- ENGINE 276.8 in MODEL 218
as of model year 2015**
- ENGINE 276.9 in MODEL 207, 212 (except 212.095), 218
as of model year 2014**

Function requirements for the alternator interface, general points

- Circuit 87M ON (Engine management ON)
- Engine runs

Alternator interface, general points

Using the alternator interface, messages are exchanged via the drive LIN (LIN C1) between the alternator (G2) and the ME-SFI [ME] control unit (N3/10) and the control response of the alternator is controlled. The ME-SFI [ME] control unit reads in the following sensor and signals for this purpose:

- Crankshaft Hall sensor (B70), engine rpm
- On-board electrical system battery (G1), on-board electrical system voltage over "circuit 30"
- Alternator, status via the drive LIN

Function sequence for alternator interface

The ME-SFI [ME] control unit regulates the control response of the alternator, for example in order to reduce the charging voltage when idling if the on-board electrical system battery is sufficiently charged. This reduces the engine load, thus also reducing fuel consumption and reduces exhaust emissions.

The ME-SFI [ME] control unit controls the following functions:

- Switching on of the alternator depending on the on-board electrical system voltage and the demands from the engine.
- Regulation of the alternator according to characteristics maps stored in the ME-SFI [ME] control unit. To do this the charging voltage is determined by the ME-SFI [ME] control unit.
- Adapting the charging voltage with a delay in the event of frequent load changes at the alternator in idle to stabilize the idling speed.
- Protecting the alternator against overheating.

- Generation of a "circuit 61 signal" (alternator in operation).
- Report recognized faults via the chassis CAN 1 (CAN E1), front SAM control unit with fuse and relay module (N101) and chassis CAN 2 (CAN E2) to the IC (A1) for actuation of the respective warning lamps and display messages.
- Keeps charging voltage at a low value and increased charging of the on-board electrical system battery in the deceleration phases (fuel saving).

The alternator performs continuous self-diagnosis and transmits the results when requested to the ME-SFI [ME] control unit. The control unit compares the results with other signals (for example, engine rpm, on-board electrical system battery voltage, time since engine start) and thus detects any alternator faults.

The following faults are identified:

- Line for the alternator interface (drive train LIN) has an open circuit or the interface driver in the ME-SFI [ME] control unit is defective (the ALT regulates in this case at 14.3 V).
- Electrical and mechanical fault at the alternator:
 - Control or diodes defective
 - Stator interruption or short circuit
 - Excitation interruption
 - Charging voltage and charging current not achieved.
 - Charging voltage too high
 - A cracked or loose poly-V belt

i Diagnosis

To check the charging voltage, the on-board electrical system battery must be loaded with a battery tester since the charging voltage can be significantly reduced when the on-board electrical system battery is fully charged and under no load.

i Circuit 61 signal

Using information received by the ME-SFI [ME] control unit over the alternator interface, the "circuit 61 signal" is simulated in the ME-SFI [ME] control unit and issued over the CAN network (e.g. for the IC).

	Electrical function schematic for alternator interface	MODEL 207 MODEL 212 MODEL 218	PE07.10-P-2709-97EAK PE07.10-P-2709-97DAQ PE07.10-P-2709-97XAI
	Overview of system components for gasoline injection and ignition system with direct injection	ENGINE 276.9 in MODEL 207, 212 (except 212.095), 218 as of model year 2014 ENGINE 276.8 in MODEL 207, 212 as of model year 2014 ENGINE 276.8 in MODEL 218 as of model year 2015	GF07.70-P-9998MM GF07.70-P-9998MMP