

MODEL 221.0 /1, 216.3
as of Model Year 09 /modification year 08
with CODE (443) Steering wheel heater

Function requirements, general

- C. 15R On
- Interior temperature $T < 30\text{ }^{\circ}\text{C}$

i The circuit status is transmitted by the EIS [EZS] control unit (N73) to the front SAM control unit with fuse and relay module (N10/1) via the interior CAN.

Manual on/off function sequence

The steering wheel heater is switched on or off by turning the steering wheel heater switch (S59/1s2) upwards or downwards. The request from the steering wheel heater is read in by the steering column tube module (N80) and transmitted to the central gateway control unit (N93) via the chassis CAN. This routes the signal on the interior CAN where it is recorded by the front SAM control unit. Thereupon the electronics of the steering wheel heater (A74) are actuated by the front SAM control unit via a direct line.

At the same time a signal for the function indicator of the steering wheel heater (S59/1e1) in the steering wheel heater switch is transmitted via the interior CAN to the central gateway control unit and from the latter further on to the steering column tube module via the chassis CAN.

Time-controlled switch off

The steering wheel heater is automatically switched off by the front SAM control unit.

i The timer control of the steering wheel heater is parameterizable via STAR DIAGNOSIS in the front SAM control unit.

Switch off in the event of a hardware defect

If the actuation of the steering wheel heater is detected without a current request or function requirements, the steering wheel heater is switched off and a fault message stored in the fault memory.

i The threshold value of overvoltage is parameterizable via STAR DIAGNOSIS in the front SAM control unit.

It is only possible to switch on the steering wheel heater again, if the permissible voltage in the on-board electrical system applies again for more than $t = 15\text{ s}$.

Steering wheel heater (LRH) general

The steering wheel rim can be heated with the steering wheel heater (LRH).

The steering wheel heater function is comprised of the following partial functions:

- **Manual on/off function sequence**
- **Automatic switch off function sequence**

The electronics of the steering wheel heater controls the function of the steering wheel heater (R22/4) and energizes the heater coil (R22/4r1).

The heater coil temperature sensor (R22/4b1) measures the surface temperature of the steering wheel rim and passes on this information to the electronics of the steering wheel heater.

The electronics of the steering wheel heater regulates the surface temperature of the steering wheel rim to $T = 35\text{ }^{\circ}\text{C}$.

Automatic switch off function sequence

The automatic switch off function is comprised of the following partial functions:

- **Time-controlled switch off**
- **Switching off in the event of a hardware defect**
- **Switch off in the event of undervoltage or overvoltage in the on-board electrical system**

Switch off in the event of undervoltage or overvoltage in the on-board electrical system

If the voltage in the on-board electrical system drops to a value of $U < 10\text{ V}$ the electronics of the steering wheel heater is switched off. If the undervoltage is applied for longer than $t = 3\text{ min}$, the indicator lamp of the steering wheel heater switch is also switched off.

If the steering wheel heater function is requested again during the undervoltage phase, the indicator lamp lights up for $t = 1.5\text{ s}$ and then goes out.

If the voltage in the on-board electrical system rises to a value of $U > 15.5\text{ V}$ the front SAM control unit switches off the steering wheel heater electronics. The timer control continues running, the steering wheel heater indicator lamp flashes with 50 % brightness.

i The voltage in the on-board electrical system is monitored by the front SAM control unit via the battery sensor (B95).

The steering wheel heater function is switched off during the starting process. The timer control does not have an open circuit.

	Steering wheel heater (LRH), location of components		GF46.11-P-0001-03LE
PE	Function schematic of electrical system for steering wheel heater	Model 216	PE46.11-P-2050-97CAB
		Model 221	PE46.11-P-2050-97SAB
	Steering wheel heater (LRH), block diagram		GF46.11-P-0001-02LE
	Front SAM control unit with fuse and relay module, component description	N10/1	GF54.21-P-6070LE
	Automatic air conditioning control unit component description	N22/1	GF83.40-P-3012LE
	Component description for the EZS control unit	N73	GF80.57-P-6003LE
	Steering column module, component description	N80	GF54.21-P-6050LE
	Central gateway control unit, component description	N93	GF54.21-P-4170LE