

# Electronics

## Heating Control

### Hella as Development Partner

Today, fuel-fired and electric-heating systems are essential components that ensure proper heat supply to both the vehicle's interior and the engine.

Hella has been developing and manufacturing electronic control units for such heating systems for more than 30 years now. Over the course of time, the requirements placed on the control units have significantly increased with regard to functionality, temperature control, reliability, safety concepts and diagnostic capabilities.

The development of such electronic systems requires extensive know-how of heating systems and their integration into vehicles. This particularly applies to the current situation, in which a growing number of heating systems are being installed by the automotive manufacturers themselves. Therefore, customer-specific concepts are developed through close cooperation between Hella, heating system suppliers and automotive manufacturers.

Since fuel-fired heating systems draw fuel from the tank and convert it to heat by means of combustion, these systems are safety-relevant applications that require a clearly defined safety concept, which necessitates the deployment of state-of-the-art software and hardware.

### Production Program



- Control units for electric auxiliary heaters in the coolant circuit
- Control units for fuel-fired auxiliary heaters in the coolant circuit
- Control units for fuel-fired parking heaters in the coolant circuit
- Control units for fuel-fired parking heaters for direct air heating
- Digital timers
- Sensors

Usually, the control units are installed in the heating system, which frequently is located in the engine compartment. The electronics are subjected to extreme demands with regard to temperature, humidity and mechanical stress.

Right from the start, Hella was a key developer of electronic control units, resulting in comprehensive expertise related to the extensive electronic functions that enable safe heating system operation:

- Control units for 12 V and 24 V vehicle electric systems
- Continuous diagnostics of all actuators and sensors
- Overload and short-circuit protection
- Redundant safety circuits
- System parameters and function-sequence variants by means of end-of-line programming (EOL) at the customer's premises
- K-Line diagnostic interfaces with various protocols used by automotive manufacturers
- Communication bus to state-of-the-art control panels as well as for control unit flashing and diagnostics
- CAN/LIN bus link
- Monitoring of the battery condition

# Heating Control

## Auxiliary Heaters

In general, auxiliary heaters are deployed with consumption-optimized engines. These heaters are needed to compensate for the heat deficit in cold weather conditions. They heat up the coolant, thus supporting rapid passenger compartment heating under such conditions. The customer-specific design of the control units facilitates optimal integration into the heating system.



Control unit for fuel-fired auxiliary heater



Control unit for electric auxiliary heater

## Parking Heaters

Parking heaters can heat the passenger compartment and engine while the engine is stopped. The driver enters a pre-heated vehicle interior and starts a warm engine with a shorter warm-up phase and reduced exhaust emissions.

## Air Heating Systems

These heating systems are particularly useful in those cases where only the interior needs to be heated, not the engine. Frequently, this applies to truck driver cabins which can then be supplied with heat all night long.

## Digital Timers

In most cases, parking heaters are operated in conjunction with timers that allow the starting time to be programmed. The Hella digital timer enables programming of up to 3 switching times, up to 7 days in advance.

## Sensors

Hella develops and produces various temperature sensors required for the operation of heaters.

## Outlook

Integration into modern vehicles requires an optimal linking of heating systems/control electronics to the vehicle- and manufacturer-specific network topologies. In close cooperation with customers, the existing Hella know-how related to, for example, LIN, CAN or K-Line, is quickly integrated into new control units.



Control unit for fuel-fired parking heater



Various control units for fuel-fired air heaters



Digital timers

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