

Technical Information

Electronics – Heating Control



*Ideas today for
the cars of tomorrow*

Hella as Development Partner

Today, fuel-fired and electric heaters are important systems to ensure that the vehicle passenger compartment as well as the engine are properly heated during cold weather.

At Hella, electronic control units for such heating systems have been developed and produced for over 30 years. In the course of time, the requirements placed on these control modules have increased significantly, particularly in terms of the functions offered, temperature regulation, reliability, safety concepts and diagnostic capabilities.

The development of such electronic control units requires comprehensive knowledge of heating systems and their installation in motor vehicles. This applies particularly in the current situation, in which the heaters are being installed increasingly by the vehicle manufacturers themselves. Specific customer concepts therefore result from close cooperation between Hella, the heating system supplier and the vehicle manufacturer.

Since fuel-fired heaters take fuel directly from the fuel tank and convert it to heat by means of combustion, such systems are safety-critical applications which require a clearly defined safety concept. This necessitates the use of state-of-the-art hardware and software.

Production Programs

- Electronic control units for electric supplemental heaters in the cooling water circuit
- Electronic control units for fuel-fired supplemental heaters in the cooling water circuit
- Electronic control units for fuel-fired parking heaters in the cooling water circuit
- Electronic control units for fuel-fired heaters for direct air heating
- Digital timers
- Sensors

The electronic control units are generally installed in the heating system which is frequently located in the engine compartment. The control unit is adapted to extreme external conditions regarding temperature, humidity and mechanical stress.

From the very beginning, Hella was a major developer of electronic control units, so that comprehensive know-how is available on the wide ranging electronic functions which ensure safe and reliable operation of the heating systems:

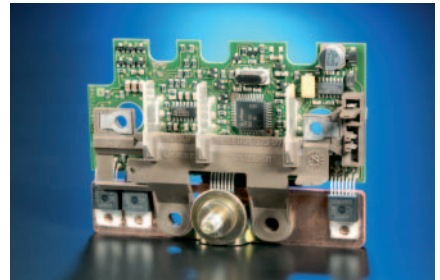
- Control units for 12 V and 24 V electrical systems
- Continuous diagnosis of all actuators and sensors
- Protection against overload and short circuits
- Redundant safety circuits
- Variation of system parameters and function sequence using end-of-line programming (EOL) at the customer
- K-bus diagnostic interface with various diagnostic protocols for different vehicle manufacturers
- Communication bus to modern control panels as well as for flashing and diagnosis of control units
- CAN/LIN bus link
- Monitoring of battery state

Supplemental Heaters

Supplemental heaters are used primarily on engines designed for optimized fuel consumption. They are required to compensate the heat deficit that occurs with such engines during cold weather and are used to pre-heat the cooling water. In such situations, the supplemental heaters allow the vehicle passenger compartment to be heated quickly. The control units are designed to meet specific customer requirements, allowing them to be optimally integrated into the heater.



Control unit for fuel-fired supplemental heater



Control unit for electric supplemental heater

Parking Heaters

A parking heater is capable of heating up the passenger compartment and engine without operating the engine. The driver enters a pre-heated passenger compartment and starts a warm engine with a shortened warm-up phase and lower emissions.

Air Heaters

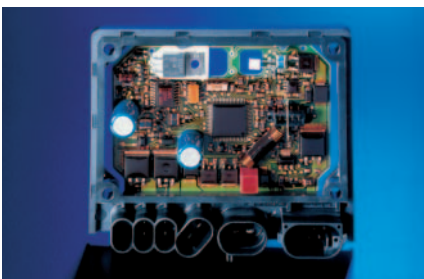
These heating systems are particularly useful in cases where only heating of the passenger compartment is required, without warming up the engine. Common applications are for truck cabins, which are heated the entire night.

Digital Timers

Operation of a parking heater is usually controlled by a timer on which the starting time can be programmed. With the Hella digital timers it is possible to program a maximum of 3 switching times up to 7 days in advance.

Sensors

Furthermore, Hella develops and produces various temperature sensors which are required for the operation of heaters.



Control unit for fuel-fired parking heater



Various control units for fuel-fired air heaters



Digital timers

Prospects

Integration into modern vehicles requires an optimum linkage between the heating systems/electronic control units and the vehicle- and manufacturer-specific network topologies. In close cooperation with the customers, the comprehensive Hella know-how in LIN, CAN or K-line buses is quickly integrated into new control units.

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