

Gasoline Systems

Electronic module for transmission control



BOSCH

Invented for life

Electronic module EM-L



Customer benefits

- ▶ Ease of assembly at the transmission manufacturer
- ▶ Transmission with electronic module is a turnkey operating unit
- ▶ Low development and logistics effort for transmission manufacturers
- ▶ Completely tested unit
- ▶ Highest reliability by welded electrical connections
- ▶ Hybrid control unit in a hermetically sealed steel casing
- ▶ Reduction of the gross weight of the transmission control

Automatic transmissions offer high driving comfort, free the driver of the distraction of manual shifting and actively contribute to increased transportation safety. Up-to-date automatic transmissions achieve a wide ratio coverage through a high number of gears. They have the ability to hold the combustion engine at the optimal operating range and thereby help to save fuel and reduce CO₂-emissions.

In many transmissions the gearshift is carried out by a hydraulic control system which is actuated by an electronic control unit. By using intelligent control software the shift performance of a transmission is optimally adapted to the driving condition.

Task

The electronic module combines the electronic components of the transmission control into a single package. It consists of an integrated transmission control unit in a hermetically sealed steel casing, several speed-, position- and pressure sensors and the connectors for the electrically operated hydraulic valves. Lead frames, utilizing robust weld connections, are used for connecting the sub-system components.

Function

The integrated control unit controls the hydraulic valves responsible for the gear selection by taking into account the incoming torque of the transmission, the engine speed and the velocity of the vehicle. Furthermore, the control unit disposes of extensive diagnostic functions. ASIL D requirements (Automotive Safety Integrity Level) will be fulfilled.

The operating temperature range of electronic modules is between -40 and 145°C.

Electronic module EM-P



Customer benefits (in addition to EM-L)

- ▶ Minimal packaging height by integrating a hybrid control unit in a molded housing
- ▶ Integrated ELOP control
- ▶ High functional density by utilizing a high temperature conductor plate for the module wiring
- ▶ Pressure sensor with high accurateness
- ▶ Reduced time-to-market

The electronic module EM-P was developed in order to fulfill the increasing complexity of future transmissions. With the EM-P more sensors and actuators can be connected to the control unit. Additionally, the EM-P disposes of an integrated ELOP control (ELOP = electrical oil pump).

A considerably higher functional density can be reached by using a high temperature conductor plate.

Advancements in joining technology on the conductor plates allow for a more flexible and shorter sample lead time which enables a quicker time-to-market.

Robert Bosch GmbH
Gasoline Systems

Postfach 300240
70442 Stuttgart
Deutschland

www.bosch-automotivetechnology.com

Printed in Germany
292000P15Z-C/CCA-201311-En