

Abstract

In today's modern vehicles close to a hundred Electronic Control Units (ECU) are operating. Their communication is realised through standardized automotive protocols like LIN, CAN and FlexRay. The smallest data component that usually contains physical information is the so called signal.

Different vehicle types utilize several unidentical methods for data representation (offset, scale) and signal placement in the frame structure. Integrating an already available control unit into a vehicle is a common task during prototype development. In that case modifying and testing the whole software of the ECU requires great effort. An easily configurable signal converter device that can translate the communication between the incompatible control unit and the vehicle is suitable for accelerating the integration process.

The so called Gateway device is an in-house project of ThyssenKrupp Presta Hungary. It is equipped with all the required communication interfaces. The implemented software is suitable for parsing message descriptor files (like DBC and Fibex) containing detailed information about the communication. For storing the acquired data an easily editable model was created by using the services of the Eclipse modeling framework (EMF). The signal conversions can be defined in an Xtext based domain specific language. It offers an intuitively useable platform for describing operations between stored signals.

The defined conversions and the built model are processed by a code generator implemented in JAVA. The output consist of „C” files compatible with the embedded architecture of the Gateway device.