On-Board Diagnostic Tester: Sending and Receiving Diagnostic Messages

Case Study MICROSAR Diagnostic Module vDrm

The Diagnostic Request Manager, vDrm, is part of Vector’s AUTOSAR Classic solution - MICROSAR.

The Challenge
In modern E/E architectures, a central ECU often takes over the role of the diagnostic tester. Such an ECU has to cope with many new requirements.

Internal diagnostic testers communicate from a central ECU via the UDS diagnostic protocol with other control units. They are used for cyclic data and error reading as well as for over-the-air (OTA) applications. These applications require an abstraction level that deals with the classic transmission of diagnostic messages and the time behavior until the response messages are received. Response-pending messages have to be analyzed and the diagnostic session with tester-present messages automatically kept active. An internal tester has the function of communicating simultaneously with several ECUs as well as with the diagnostic module on its own ECU.

If internal and external testers send test messages at the same time, a strategy is required to avoid conflicts in the target ECU. In addition, the ECU needs protection against unauthorized diagnostic access.

The Solution
Vector’s MICROSAR Diagnostic Module - vDrm

The Diagnostic Request Manager vDrm integrates itself into the AUTOSAR basic software as a Complex Device Driver (CDD). It offers the application a comprehensive interface for sending and receiving UDS diagnostic messages and abstracts the time response on the bus for the application.

An integrated firewall allows certain diagnostic messages to be blocked. In addition, an optional callout into the application allows the definition of firewall rules.

The Advantages
Easy Integration of vDrm using the AUTOSAR Interfaces
> Easy integration into existing AUTOSAR systems
> Connection to all vehicle networks by using the AUTOSAR PDU Router (PduR)
> Usage of AUTOSAR PDUs for sending and receiving diagnostic messages
> Automatic sending of Tester Present to maintain the diagnostic session
> Internal management of received response-pending messages
> Integrated firewall
> Parallel communication with several ECUs
> Detection of all ECUs installed in the vehicle

More information: www.vector.com/microsar