

CANoe.FlexRay 7.1

The Reliable Development Tool for FlexRay

FlexRay is a scalable, flexible high-speed communication system, which meets the increasing technical demands of the automotive industry. For this area of safety-related applications, powerful analysis tools are needed.

With CANoe.FlexRay Vector provides the universal tool for developing distributed real time control systems.

Features and Advantages

CANoe.FlexRay is a convenient tool for simulating, analyzing and testing a FlexRay bus. CANoe's multibus concept permits simultaneous operation of CAN, LIN, MOST, and FlexRay bus systems.

Functions

Functions are provided for:

- > Simulation, testing, and analysis of FlexRay systems
- > Functional and integration testing of ECUs
- > Network integration testing

Application Areas

CANoe.FlexRay is the right solution for developing the following applications:

- > FlexRay-based 'data backbone' to which other buses (CAN, LIN, FlexRay) are connected via gateways
- > Distributed controls requiring calculations that extend ECU boundaries (e.g. power train and chassis)
- > Safety critical applications (x-by-wire)

Special Functions

- > PDU Support: With an OEM-specific database PDUs are displayed in the trace window, too. Further signal-oriented simulations can easily be created with the definition of PDUs
- > Support of Cycle Multiplexing, In-Cycle Multiplexing, Signal Groups, and Sub-Frames: Clearly arranged display in analysis windows, easy usage in simulation models

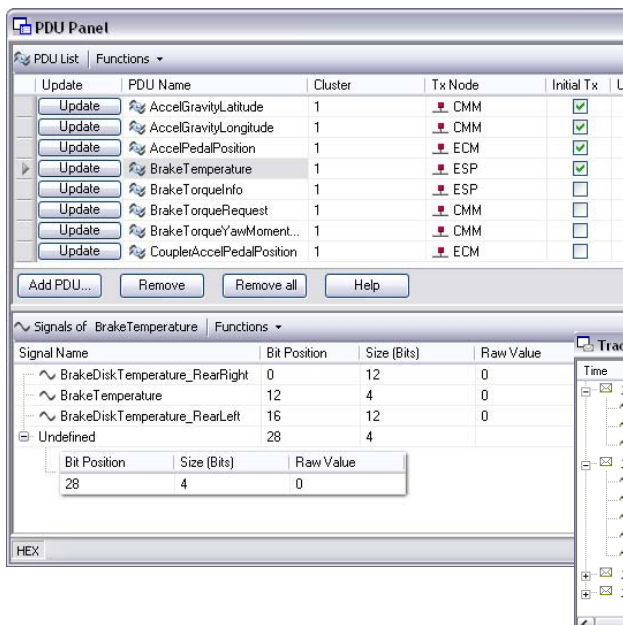
Database Support

CANoe.FlexRay supports system descriptions in the FIBEX format (Version 1.1.5, 1.2, 2.0 and 3.0). Databases may be associated to a network directly in the Simulation Setup. This enables flexible access to frame and signal information and an easy configuration of the interface hardware.

FlexRay databases can be visualized, edited and modified in a comfortable way with the in CANoe.Flexray included tool FIBEX Explorer pro. For this the FIBEX Explorer pro provides user oriented views and easy to use edit features for the most important use cases, e.g. creation and schedule of a new frame, modification of a parameter for a dedicated system test.

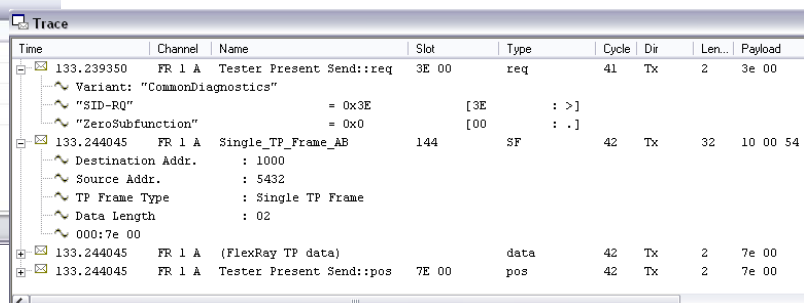
Bus Analysis

In addition to the general network statistics windows the FlexRay Cluster Monitor Window analyzes the bus communication and compares it for each node to the expected behavior that is described in the FIBEX database. Node and frame views indicate



New FlexRay PDU Panel in CANoe.FlexRay

New FlexRay TP Observer in CANoe.FlexRay



Stress Module for FlexRay

FRstress is a special tool for the simulation of errors and the manipulation of FlexRay frames on protocol and bit level. It is able to disturb the bus also on the physical level. Additionally data and protocol information can be manipulated, delayed, or can completely be deleted.

You find more information in the product data sheet for FRstress.

quickly and clearly the deviations. Filters allow the specific analysis for dedicated frame types (e.g. network management).

Stimulation

With the 'FlexRay Frame Panel' FlexRay frames can be sent very comfortable in order to stimulate the network. FlexRay specific parameters, e.g. header flags and the cycle multiplexing can easily be defined together with the payload data.

CAPL Interface

Simulation programs specially adapted to FlexRay can be created in CAPL. The programming language provides event handlers that are specific to the FlexRay network; these event handlers can react quite easily to bus-related events. As event procedures for creating test programs there are for example the beginning of a communication cycle, the end of a static slot and the receipt of frames and PDUs available.

Special CAPL objects for TX frames, PDUs, signals, and the network configuration allow the easy specification of simulation models.

Functions specific to communication controllers such as resetting the communication controller and sending the Wakeup Pattern complete the standard functions.

Hardware Interfaces

Vector offers the PCI interface VN3300, the USB interfaces VN3600 and VN7600 as well as the proven FlexCard for connection to FlexRay networks. The innovative PCI interface is the best choice

Training

As part of our training program we offer professional FlexRay training at our classrooms as well as on-site at our customers.

For more information on Vector's FlexRay solutions go to:

www.flexray-solutions.com

for challenging simulations with short response times and high data throughputs. The unique USB interface can be used for in-depth analyzes and simple simulations. The FlexCard can be used together with CANoe.FlexRay if short access times and high data throughputs are required. All these interfaces provide an additional asynchronous mode to analyze the network start up.

Hardware Time Synchronization

Together with the bus interfaces of the XL-Interface Family the FlexRay hardware interfaces may be used for time-synchronous multibus analysis and simulation in CANoe.FlexRay.

Hardware Configuration

To access a FlexRay network it is necessary to configure the interface hardware with suitable network parameters. CANoe.FlexRay offers several configuration variants:

- > Automatic configuration by the FIBEX database
- > Import of a CHI file
- > Manual input of network data

The configured data are displayed in an easy-to-read form on both the controller and protocol levels.

New Functions of Version 7.1

- > **FIBEX Explorer pro:** In addition to the possibility to visualize the FIBEX data for FlexRay networks, the FIBEX Explorer pro offers customized edit functions. An existing FIBEX database can be comfortably extended and modified. An additional frame with its signals is easily designed in a clear dialog; cluster and controller parameter can be modified without any XML knowledge.
- > **FlexRay PDU Panel:** It enables the transmission of PDUs on the FlexRay network in a comfortable way. The panel provides various configuration possibilities for the send control (update bit, send counter) and the update of the payload section (symbolic, raw).
- > **FlexRay Replay Block:** With this block is it possible to insert a logged sequence of a FlexRay communication (e.g. Stimuli) in a reproducible way. FlexRay frames and PDUs will be transmitted according to the recorded communication cycle and Slot Id.
- > **FlexRay Transport Protocol & Diagnostic Observer:** The observer interprets the FlexRay frames/PDUs according to the configured transport protocol (Autosar, ISO, OEM specific) and shows the result in the Trace Window. With a diagnostic description the diagnostic commands will be interpreted, too.
- > **FlexRay ISO 10681-2 Transport Protocol:** The module allows the usage of the transport protocol in simulations. The transmission of TP frame and the reception of TP frames/events is easily possible.
- > **Configuration of the Trigger Output for VN3x00 & VN7600 Interfaces:** The interfaces provide three independent trigger outputs for controlling external devices (e.g. oscilloscopes). Several events can be configured to activate trigger output (Slot Id, error, start of cycle, ...).
- > **FlexRay options:** Configuration of global simulation parameters like payload initialisation.