

FRstress

High-Performance Stress Module for Reproducible Disturbances on the FlexRay Bus

What is FRstress?

FRstress is an easy-to-use hardware module that generates reproducible disturbances in FlexRay systems. The system integration differs depending on the desired disturbance. It can generate protocol errors as well as disturbances in bus physics that are activated by trigger conditions.

For asynchronous disturbances and physical modifications of the bus line FRstress is connected as an additional network node. For bit-precise disturbances, on the other hand, FRstress is introduced directly into the bus line. A third mode just activates the trigger logic with high-impedance termination to drive external devices.

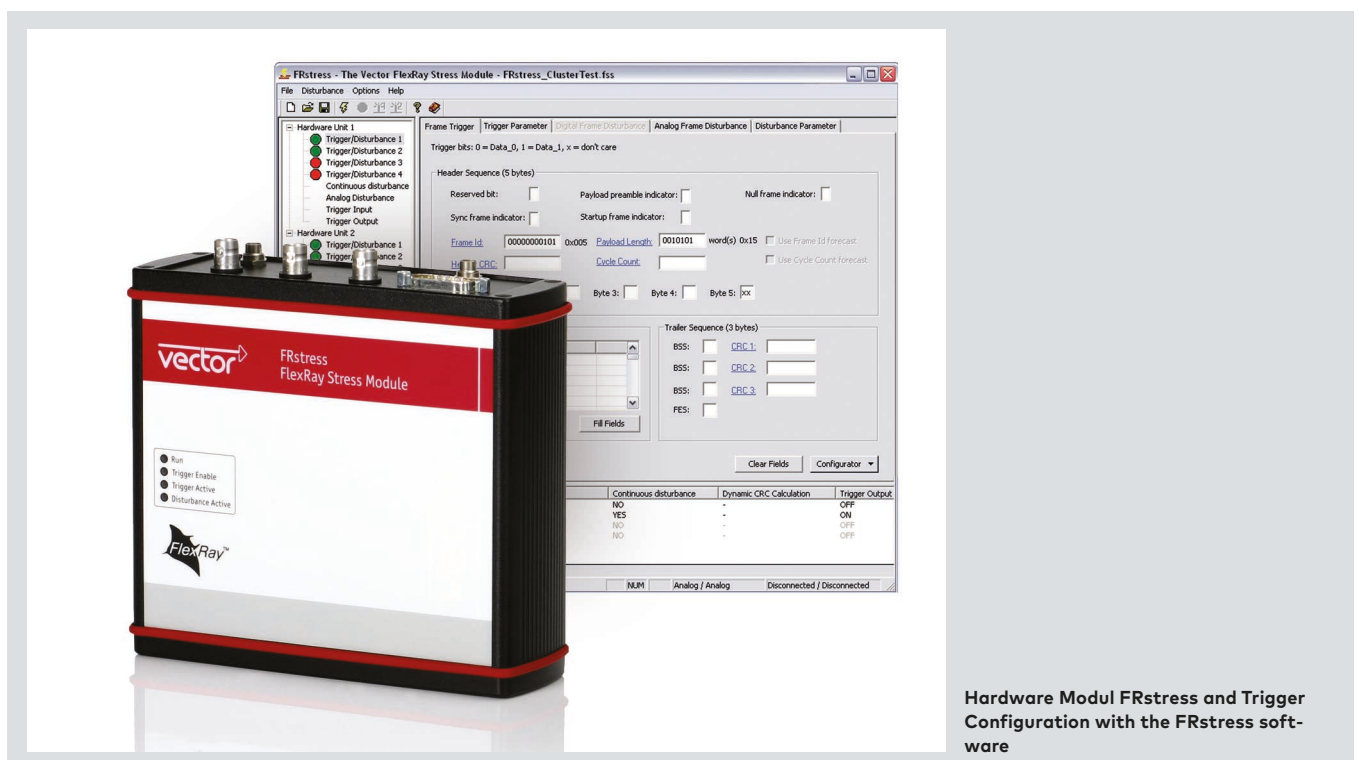
Overview of Advantages

- > Easy testing of disturbance handling in FlexRay systems and nodes
- > Reproducible simulation of line problems
- > Comfortable configuration and control via a user-friendly Windows-based operating program

- > Various trigger conditions, disturbance sequences and values of line resistors and the capacitor for analog disturbances
- > Integration in CANoe test environment

Functions

- > Generation of asynchronous and synchronous disturbance sequences
- > Modification of individual frame bits including CRC recalculation (e.g. Sync flag)
- > Switch-in RC network with adjustable resistances and an adjustable capacitor
- > Switchable connections between the bus lines, to ground and to supply voltage
- > 4 parallel trigger conditions and associated disturbance sequences
- > Configuration via FIBEX AUTOSAR databases
- > Trigger output to drive external devices such as an oscilloscope or signal generator
- > Synchronization capability for parallel operation of two FRstress modules to disturb both FlexRay channels



Hardware Modul FRstress and Trigger Configuration with the FRstress software

Application Areas

- > Synchronous manipulation of bit fields of FlexRay frames with immediate CRC recalculation
- > Disturbance of specific ECUs
- > Simulation of slowly evolving failures
- > Simulation of additional line lengths
- > Tolerance analyses by delayed transmission between one node and the rest of the network

Trigger Sources and Disturbance Modes

Trigger Conditions

- > Triggering on FlexRay frame elements
- > Triggering on frame coding elements
- > Manual triggering via the FRstress software
- > External trigger: Voltage signal at trigger input

Disturbance

- > Asynchronous sequence on the FlexRay bus
- > Modification of the elements of FlexRay frames with bit precision

More information: www.vector.com/frstress

Technical Data

	FRstress
FlexRay channels	1 disturbance module per FlexRay channel, synchronized operation with 2 modules
Resistance range	0 Ω ... 2.558 kΩ in 1.25 Ω steps
Capacitor	0 pF ... 3150 pF in 50 pF steps
Triggering	External, manual or on trigger conditions
Maximum disturbance sequence	4095 bits
Module configuration	USB
Ports	FlexRay in/out, trigger input & output, Sync input, voltage supply
Supply voltage	8 V ... 40 V DC (5-pin connector)
Disturbance voltage range	0 V ... 40 V
Temperature range	-10 °C ... +75 °C
Dimensions (LxHxW)	151 x 53 x 168 mm (aluminum housing)