

CANstressD and CANstressDR

Resistance on the Network

CAN networks are highly tolerant in respect of disturbances of the bus communication and failures.

In order to test whether a system is behaving properly in case of disturbances or failures, a device is used to disturb the CAN bus, its physical properties and the logical levels (recessive and/or dominant) in a targeted, reproducible way.

With CANstressD (Digital) or CANstressDR (Digital and Resistor Network), the CAN developer uses a comprehensive disturbance instrument.

Features and Advantages

CANstress is a standalone hardware module that is inserted directly onto the CAN bus. It contains various triggering conditions and disturbance logics. The fully equipped module includes a number of resistors that can be software-controlled. These resistors are used to force different bus levels onto the bus lines by limiting the voltage supplied.

Functions

CANstress supports a range of error and test modes, e.g.:

- > Emulation of line failures
- > CAN system failures
- > Accompanying development tests of electronic control units
- > Disturbances of CAN controllers
- > Programmable short circuits and interruptions

A programmable static capacitor inserted between the bus lines can be used to simulate various line lengths.

Application Areas

Reproducible simulation of line failures

- > Error statuses in accordance with ISO 11519-2 (line/line short circuit, line/supply voltage short circuits, interruptions)
- > Simulation of bit corruption
- > Targeted imposition of bus levels

Examination of disturbance handling by CAN systems

- > Test environment for the development of CAN controllers and CAN nodes
- > Targeted disturbance of bus nodes by destruction of its CAN messages at any bit position
- > Targeted manipulation of bit fields within the CAN messages (SOF, arbitration, data, CRC, ACK, etc.)
- > Testing the behaviour of the bus nodes in the event of errors
- > Triggering of external devices
- > Inspection of recovery behaviour after disturbances in ECUs

Activation of the Disturbance

When CANstress is in the neutral position, the bus is undisturbed. When the system is triggered, the configured disturbance sequence becomes active. The disturbance sequence consists of a sequence of interfering pulses at the bit level or the BTL level. A single disturbance pulse can force a dominant or recessive level on the bus, or leave the bus unaffected.



Integrated database CANdb++
 As with other CAN tools from Vector, CANdb++ is completely integrated. Messages and signals can easily be configured out of CANdb databases.

The disturbance of the CAN system is initiated by the following trigger sources:

- > Triggering on CAN bit fields: maskable content of the bit fields within messages of standard or extended format
- > Triggering on error frames, on the start-of-frame edge, the end-of-frame, bus idle sequence or any maskable bit sequences
- > Triggering via the CANstress software
- > External trigger: voltage signal at the trigger input (TTL level)

The following disturbance modes are available:

- > The disturbance persists for a specified period.
- > The disturbance persists until manual stop.
- > The disturbance persists as long as the trigger is active.
- > The disturbance sequence is initiated after a trigger for a definable number of trigger events.

Convenient Configuration

CANstress is configured and controlled via a Windows operating program. The CAN parameters, the trigger sources, the disturbance sequences, and the values of the line resistors and the capacitor can be programmed. To enable bit field triggering, the data from the CANdb can be used. The user-defined configuration files are loaded into the CANstress module via the serial (RS-232/USB) interface. Then a new network analysis can be begun immediately.

Integration of CANstress

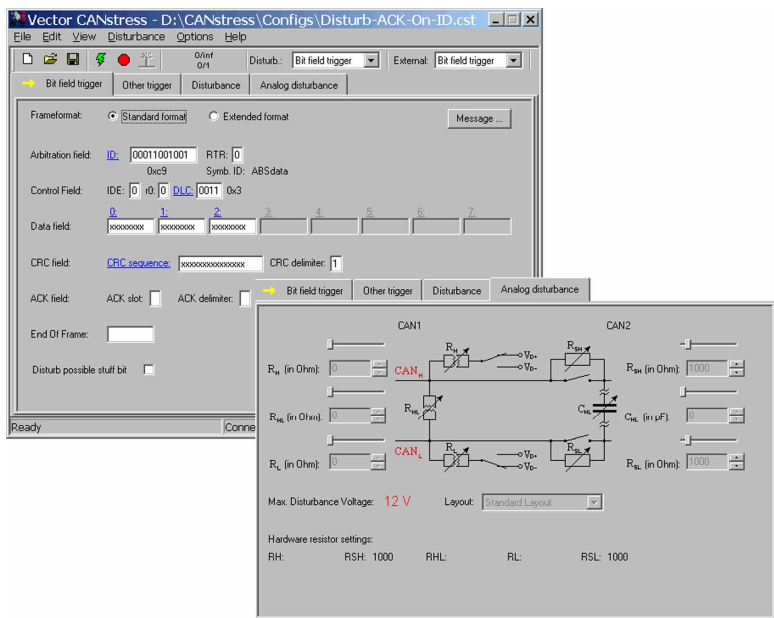
Optimum development and test environments are achieved through the use of a CANstress module together with other analysis tools of the Vector tool chain, such as CANalyzer, CANoe, and CANscope. With CANstress, targeted disturbances are generated, a detailed analysis of the effects of the disturbance at the physical level is provided with CANscope. Via the COM automation interface CANstress can be integrated into automated test environments like CANoe.

Technical Data

- > Resistance decades: 0 Ω..10.24 kΩ in 2.5 Ω steps
- > Capacitors: switchable 0 nF..15.75 nF in 250 pF steps
- > Disrupting voltage range: 0 V..40 V
- > Connections: RS 232 control bus (9-pin D-SUB socket), USB control bus (4-pin socket), trigger input/output (BNC sockets), CAN IN/OUT (15-pin D-SUB socket), CAN interface (CAN high-speed and CAN low-speed)
- > Triggering: external, manual, or on CAN events
- > Disturbance sequence: max. 2048 pulse steps at bit or BTL level
- > Voltage supply: 8 V..40 V direct voltage (5-pin plug)
- > Housing: 151 x 168 x 53 mm, aluminium

Included with Delivery

- > CANstress disturbance module
- > Configuration software for MS Windows 9x/NT/2000/XP
- > Cable set and power pack



CANstress Configuration Software