

# CANscope

## The Ideal Tool to Analyze the CAN Bus

CANscope is the measuring device for recording and evaluating the voltage levels on the CAN bus. CANscope offers a robust recording module and an easy-to-use evaluation software program. The recording module is connected to the PC via an RS232 or USB interface.

### Features and Advantages

CANscope enables the developer to analyze the effects of

- > Various cable types
- > Various cable lengths
- > Bus drivers
- > Bus terminations
- > Failures
- > EMC influences
- > Errors in the ECU software or in CAN controllers

For targeted debugging, there are many trigger conditions available. For example, upon occurrence of a particular CAN message or error frame, or if a level is exceeded or under-run, the trigger is activated and the trigger environment is completely recorded.

### Functions

The following central functions facilitate users' work with the CAN bus:

- > Oscilloscope Window for displaying the bus level
- > Eye diagram for evaluating the signal quality
- > Difference view for comparing voltage curves

### Application Areas

Typical application areas for CANscope are:

- > Analysis of the bus physics for analyzing specific features of a constructed network
- > Direct measuring mode for online evaluation of the data collected
- > Standalone operation for later analysis on a PC
- > Integration into automated test environments via the COM automation interface.

### Hardware Interfaces

CANscope offers the following connection options: CAN pass through (high-speed or low-speed), RS232 interface, and trigger input/output.

### Direct Measuring Mode

After triggering a measurement, CANscope records the bus level with a configurable sampling frequency of up to 32 MHz and a maximum resolution of 20 mV. The module then transmits the data independently to the connected computer, where it can be interpreted and evaluated immediately by the evaluation software.

### Standalone Mode

In addition to the direct measurement mode, CANscope can be operated in a standalone mode without a PC, e.g. during test runs in a vehicle or in an industrial facility. Evaluation occurs later on the PC.



**Integrated database CANdb++**

As with other CAN tools from Vector, the database CANdb++ is completely integrated. Message and signal designations can be represented symbolically in all windows and dialog boxes.

**Detailed Evaluation**

The evaluation software displays the bus levels of CAN-high and CAN-low as well as their difference voltage graphically in an Oscilloscope Window on a time axis (see picture below). Via an additionally generated graph the stuff bits in the signal process are displayed.

**Oscilloscope Window/Trace Window**

The Oscilloscope Window offers many functions, including those in the following areas

- > Configuration of the display detail
- > Comfortable measurement cursor
- > Configuration of the signal channels

The levels sampled are interpreted by the evaluation software and listed in a trace window, as CAN messages, message fragments, and error frames complete with time stamps. The bit fields of the message can be expanded (identifier, DLC, signal values, etc.). Selecting a bit field means that it will be marked on the oscillogram.

The direct analysis of the oscillogram is also supported. If the measurement cursor is placed on a bit to be interpreted, the corresponding message and the bit field will be displayed textually.

**Difference View and Eye Diagram**

The difference view in CANscope compares the voltage curves of the signals of two recordings loaded into CANscope (e.g. for a

reference measurement) and displays them as difference signals in the Graphic Window.

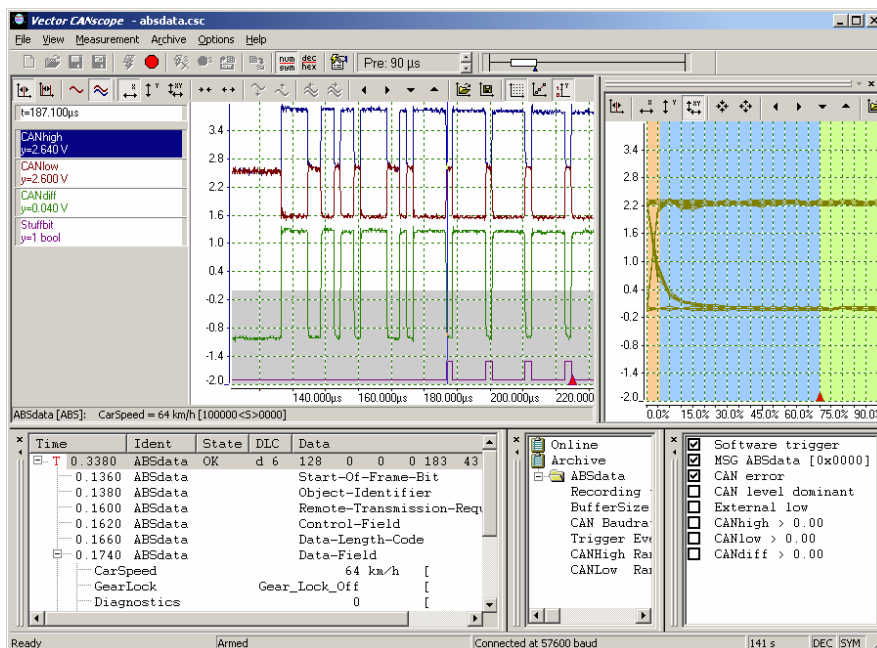
With the eye diagram the signal quality can be rated fast and easily.

**Technical Data**

- > Sampling frequency: 160 kHz..32 MHz
- > Resolution: 20 mV (0 V..5 V)/ 40 mV (-2 V...+8 V)/ 80 mV (-4 V...+16 V)
- > Buffer size: 1000..32000 sample points (2 kB..64 kB)
- > Connections: RS232, USB 1.1 via included adapter, standard CAN interface (9-pin Sub-D connector), trigger input/output (BNC sockets)
- > Triggering: various trigger types (external, CAN messages, voltage change, etc.), configurable pre-trigger
- > CAN interface: 82C251 (high-speed) or TJA1053 (low-speed)
- > Voltage supply: 9 V..18 V DC voltage
- > Housing dimensions: 215 x 85 x 35 mm
- > Weight: approximately 500 g

**Included with Delivery**

- > CANscope recording module
- > CANscope evaluation software for MS Windows 98/NT/2000/XP
- > Cable set, power supply, USB-to-RS232 adapter



**CANscope Evaluation Software**  
 Display of the signal levels on the CAN bus in an Oscilloscope Window and in the eye diagram