

# CANalyzer.NMEA2000, Version 7.1

CANalyzer Extension for NMEA2000® Users

NMEA 2000® is a communication protocol of the National Marine Electronics Association (NMEA®) based on J1939 for data exchange between control units in a marine application.

### Features and Advantages

In addition to CANalyzer’s high-performance functionality CANalyzer.NMEA2000 gives the user a tool that can be used for initial development to production of a NMEA2000® project.

The NMEA2000®-specific extension allows the user to concentrate on the actual tasks of data analysis without requiring detailed knowledge of the NMEA2000® protocol. This significantly increases the efficiency of data analysis. Misinterpretations of CAN frames are avoided.

### Functions

CANalyzer.NMEA2000 expands the standard functionality of the CANalyzer with:

- > Support for the BAM, CMTD, and Fast Packet transport protocols
- > Protocol-specific representation in the Trace Window
- > GNSS/GPS display and simulation
- > Graphic display of the network nodes (scanner)
- > Expanded database
- > Diagnostic Trouble Code Monitor (DTC Monitor)
- > Diagnostic Memory Dialog (DiagMem)

These functions will be described in detail below.

### Application Areas

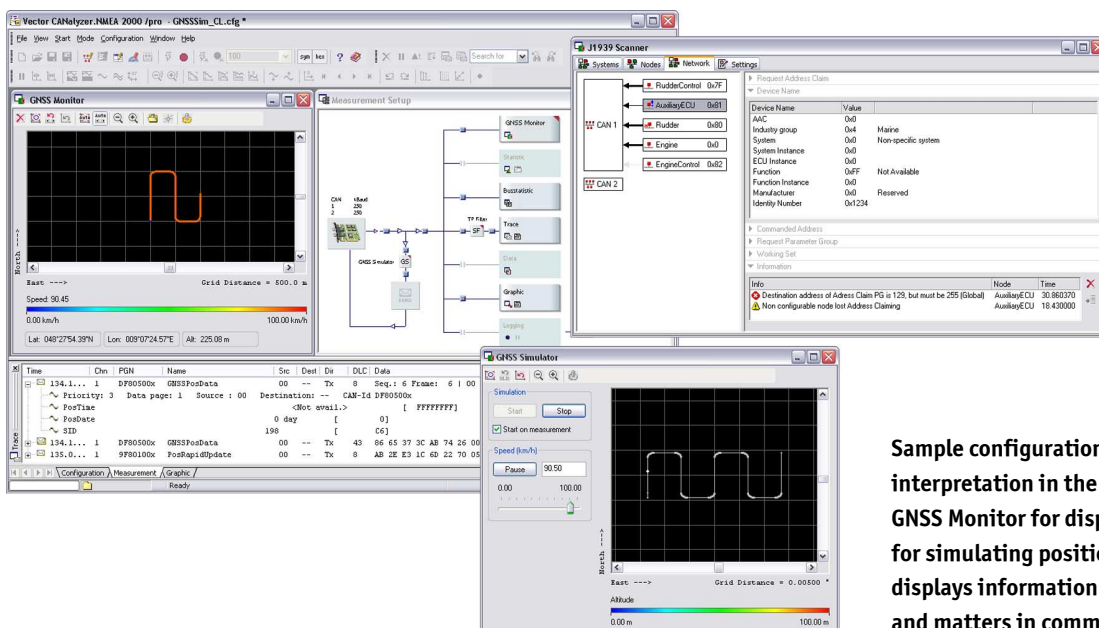
CANalyzer.NMEA2000 can be used wherever NMEA2000® networks are developed, diagnosed, and tested. Networks can also be simulated to a limited extent.

### Hardware Interfaces

All interface cards supported by CANalyzer can be used. For compatibility, however, the use of ISO11898 (ISO High speed) compatible bus drivers (for example CANcab 251 or CANcab 251opto) is recommended.

### Transport Protocols

There is a display of signals that are transmitted using parameter groups. When the “Fast Packet Transport Protocol” is used, CANalyzer.NMEA2000 can reassemble the individual CAN messages transmitted. Since the interpretation of the NMEA2000® protocol can be restricted to the CAN channels selected by the user, gateway solutions with various protocols can be monitored.



Sample configuration with activated NMEA2000® interpretation in the Trace Window. GNSS Monitor for displaying and GNSS Simulator for simulating position data. The J1939 Scanner displays information about protocol violations and matters in communication.

### Protocol-specific Display

CANoe.NMEA2000 allows the user to monitor communication on symbolic level. The Trace Window displays transmitted parameter groups. All relevant information is output in individual columns such as parameter group number, priority or source and destination address. Individual subject areas such as transport protocols or network management are highlighted in color. Additional functions such as Quick Find and View Filter simplify finding specific parameter groups.

Signals selected by the user are displayed in the Data Window. A wide range of display options is available to the user for this purpose, including bar diagrams, hexadecimal, decimal, and binary display. The NMEA2000®-specific coding of the signal values "Error" and "Not Available" are realized with the help of a status display. Signals can be displayed and evaluated as a function with respect to time in the Graphic Window.

### GNSS/GPS Display and Simulation

Display of the current position data (GNSS/GPS) occurs in a special window. Here the saved path is mapped and displayed graphically. In addition to the position, the current speed and height information are output. With the GNSS Simulator, a path can be defined and followed virtually. This enables the easy simulation of corresponding devices. Playback of previously recorded paths is also possible.

After stop of measurement, the GNSS Monitor, Graphic Window and Trace Window can be synchronized for the subsequent analysis.

### J1939 Scanner

The J1939 Scanner monitors communication and makes available a clear display of all network nodes. Information about the functionality and manufacturer is output. If necessary, a central and clear reconfiguration of the node addresses can occur.

### Database

NMEA2000® parameter groups and signals are described in a database. This database is already filled with sample standard objects. The user can expand the database using the CANdb++ Editor (included with delivery). This makes it possible to define application-specific parameter groups, for example. Parameter groups and signals defined thus can be selected symbolically in the entire program.

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### New functions of Version 7.1

#### Button for time-synchronous display

> The time-synchronous display of data can be activated with the help of a button. Starting from location information in the GNSS Monitor the user is lead to the respective parameter group in the Trace Window or gets a measuring point in the Graphic Window at the corresponding point in time or vice versa.

#### CANdb++ Editor optimized for messages with DLC>8

> Simplified arrangement of signals for messages with DLC>8Byte

#### CAPL extension

> The assignment operator supports parameter groups with DLC>8Byte.

#### Error messages with time stamp

> Error messages regarding transport protocols contain a time stamp in the Write Window. This simplifies analysis of cause in the Trace Window or in the log file.

#### Revised J1939 Scanner

> The view is optimized for dynamic networks, which significantly simplifies tracing and analyzing changes in the network configuration.