

Feature Matrix Version 20.2.1

CANoe MedTech DE / CANoe MedTech TBE

Products and Editions at a Glance

Desktop Edition (DE)

CANoe MedTech DE is the comprehensive software tool for developing complete networked systems or individual system components and is primarily designed for the medical technology market.

The comprehensive functions for simulation, testing and analysis support network designers, development and test engineers.

Test Bench Edition (TBE)

CANoe MedTech TBE is available for the execution of tests at test and production stations. The Test Bench Edition enables remote access and execution in a real and virtual environment.

The feature set is identical to CANoe MedTech DE.

System Requirements

Component	Recommended	Minimum
CPU	> CPU with x86-64 Instruction Set from Intel or AMD (e. g. Intel Core i9 Raptor-Lake or AMD Ryzen 9 9900)*** > ≥ 16 cores	> CPU with x86-64 Instruction Set from Intel or AMD (e.g. Intel Core i7 or AMD Ryzen 7 9700)*** > ≥ 4 cores
Memory (RAM)	≥ 64 GB	≥ 32 GB
Hard Disk Space	8 GB NVMe	8 GB SSD
Screen Resolution	4K	Full HD
Operating System*	> Windows 10 64-bit (≥ version 1803) > Windows 11 64-bit (≥ version 21H2) > Windows Server 2022 Standard** > Windows Server 2025 Standard** * Not virtualized. Running in a virtual machine is possible but not tested. Operation with Vector hardware may be affected by virtualization (e.g., higher latencies may occur). ** Test Bench Edition only. No other licenses possible. Use only as a single-user computer. No server operation with multiple users possible. *** CPUs with ARM Instruction Set are not supported.	

General Data on the Number of Channels and Supported Bus Systems as Well as Their Network Description Formats

Several different bus systems can be analyzed and stimulated simultaneously with one configuration. The specific network description files are supported directly.

Feature	CANoe MedTech DE & TBE
Number of configurable CAN channels	255
Number of configurable Ethernet channels respectively Ethernet networks ¹	32
DBC databases (CAN, CAN FD, CANopen) ¹	✓
CANdb++ Editor (CAN, CAN FD) ¹ Create and display DBC files	✓

Functions for Bus Analysis and Monitoring

The extensive functions support online analysis. In addition it is also possible to perform offline post-analysis of recorded logging files.

Feature	CANoe MedTech DE & TBE
Variable Measurement Setup Central configuration of analysis windows and logging	✓
Measurement Setup Import Reuse of Measurement Setups from other configurations (complete or individual branches)	✓
Trace Window Detail, Difference and Statistics views for displaying the time flow of events	✓
Statistic Window (CAN, CAN FD, Ethernet) ¹ Display bus statistics on the node or frame level	✓
Bus Statistic Window Display of bus statistics at channel level	✓
Trigger (CAN, CAN FD) ¹ Control data logging	✓
Data Window Momentary display of bus signals and system variables	✓
Graphics Window Graphic display of signal responses	✓
Video Window Record and play back video files.	✓
Oscilloscope Window (Scope) (CAN, CAN FD, 10BASE-T1S) ^{1, 5} Display of physical bus level and logical interpretation	✓
State Tracker Display of system states, discrete values and CAN, CAN FD frames/bursts	✓
Filter in Measurement Setup (CAN, CAN FD, Ethernet) ¹ Permanent removal of data in a branch of the Measurement Setup	✓

Feature	CANoe MedTech DE & TBE
Analysis Filter in the Trace Window Temporary reduction of displayed data	✓
Channel Filter Reduce the displayed data	✓
Variables Filter Reduce the displayed data	✓
Offline Mode Replay a logged measurement	✓
Data Export Use the logged data in other programs: *.csv, *.mat (MATLAB), *.mdf, *.pcap, *.pcapng	✓
Protocol Monitor (Ethernet) ¹ Display of connections between endpoints	✓
Map Window Displays position data. The Map Window can be synchronized with other analysis windows	✓

Functions for Stimulation, Simulation and Modeling

Extensive functions are available for stimulating and simulating networks. Interactive generators make it possible to spontaneously stimulate, for example.

Feature	CANoe MedTech DE & TBE
Interactive Generator – CAN (CAN, CAN FD, CANopen) ¹	✓
Signal Generator (CAN, CAN FD) ¹ Configuration of signal curves	✓
Application Panel Interactive stimulation and display of application layer objects	✓
Macros Tool automation	✓

Feature	CANoe MedTech DE & TBE
Start Value Window Values that are set on measurement start can be preassigned for symbols	✓
Replay Replay a logged measurement in parallel to a running simulation	✓
System Variables Variables with global validity, can be applied to all analysis windows and logging	✓
Symbol Mapping to link symbols	✓
Simulation Setup Symbolic display of the network	✓
Communication Setup	✓
Access to application layer objects Distributed objects and communication objects	✓
Execute Simulation Models Simulation modes: Real Bus, Simulated Bus (as fast as possible/animated with factor)	✓
Modeling libraries Vector interaction layer	✓ r
CANopen¹ node simulation Simulate the object directory, SDO Servers/Clients, network management, PDO communication	✓
Packet Builder (Ethernet) ¹ Create and send packets	✓
MQTT (Client and Broker) Simulation, analysis, monitoring and error injection of devices via the MQTT protocol	✓
HTTP (Client and Server) Simulation, analysis, monitoring and error injection of devices via the HTTP protocol	✓
Modbus (Client, Server and Gateway) Simulation and analysis of devices via the Modbus protocol	✓
gRPC (Client, Unary Requests) Simulation and analysis of devices via the gRPC protocol	✓
DDS	✓

Feature	CANoe MedTech DE & TBE
Simulation, analysis and monitoring of devices via the DDS protocol	
SDC Simulation, analysis and monitoring of devices via the SDC protocol	✓
BT/BLE Central and Peripheral mode (GATT and L2CAP layer), pairing, HCI tracing und injection	✓
NFC/UWB Reader and Card/Tag mode (ISO 7816 APDU), UCI interface for Initiator and Responder mode	✓

Extending the Range of Functions for Analysis, Simulation and Testing by Integrated or External Programming Capabilities

CAPL as an internal programming language offers flexible options for extending the range of functionality for extensive analysis and stimulation tasks.

Feature	CANoe MedTech DE & TBE
CAPL programming/execution/debugging	✓ / ✓ / ✓
Bus access with CAPL functions (CAN, CAN FD, Ethernet) ¹	✓
.NET programming (C#) For implementing application models and tests.	✓
Python Programming For implementing application models and test units.	✓
Ethernet TCP/IP Stack Support (Ethernet) ¹	✓

Panels for Extending the Graphic User Interface

It is possible to create your own graphic panels that can be used for display, control or stimulation.

Feature	CANoe MedTech DE & TBE
Create panels Panels can be created, modified, added and removed.	✓
Execute panels Panels can be executed at runtime.	✓
.NET panel elements	✓

Test Support — Test Feature Set

Tests, that are always reproducible, can be executed automatically. Automated report generation and integration of special test hardware is also supported.

Feature	CANoe MedTech DE & TBE
Test Setup for Test Units Organize and configure test units	✓
Test Trace Observe and analyze tests during the test run	✓
Test Feature Set (TFS), Test Service Library (TSL) Reproducibly execute (semi-)automated tests	✓
Test Report Viewer format (*.vtestreport)	✓
REQM/TDM Integration Interface to the requirements system	✓
VIO System support	✓
VT System support	✓

Extension of Functional Range by Integration of Other Interfaces or Additional Options

The combination with different systems is supported. This makes it possible to perform such tasks as driving auxiliary measurement hardware, or integrating MATLAB/Simulink models in the simulation.

Feature	CANoe MedTech DE & TBE
CAPL DLL Implement your own functions in C	✓
Distributed Mode Realtime extension for extended latency and jitter requirements	✓
ERT – Extended Real Time Improves latency, and determinism of CANoe and CANape with supported hardware	✓
I/O hardware interface Link analog/digital measurement hardware from third-party suppliers	✓
GPIB support Access to external measuring instruments	✓
IOpiggy support	✓
COM Interface Automation interface for remote control	✓
FDX (Fast Data Exchange) UDP/IP based protocol for fast data exchange with external systems	✓
MATLAB Integration and Model Viewer Integrate Simulink models in the simulation	✓
LabVIEW Interface Data exchange with LabVIEW via shared network variables/COM/FDX	✓
Functional Mock-up Interface (FMI) Integration and Export of FMU files. Supported versions: FMI 1.0 and FMI 2.0	✓
Option Scope⁵ (CAN, CAN FD, 10BASE-T1S) ¹ Integration of USB oscilloscope hardware from PicoTech	✓
GNSS Visualize and log the vehicle's position	✓

Feature	CANoe MedTech DE & TBE
TCP/IP socket access in CAPL	✓
RS232 access in CAPL	✓
SIL Kit Framework for coupling different simulation tools	✓

Option For EtherCAT

With the Option For EtherCAT it is possible to use EtherCAT compliant EtherCAT MainDevices or SubDevices. This makes it possible to integrate EtherCAT SubDevices from other manufacturers into a project or test system.

Feature	CANoe MedTech DE & TBE
ETG (EtherCAT Technology Group) compliant EtherCAT MainDevice (2 MainDevice instances / EtherCAT networks can be operated in parallel)	✓
Configuration of EtherCAT networks	✓
Support of EtherCAT SubDevice Information Files (.esi) and Network Information and Variable Description Files (.eni)	✓
Diagnostics of EtherCAT networks	✓
Access to input and output PDOs of the EtherCAT SubDevices via system variables	✓
Parallel operation of EtherCAT networks and VT System	✓

Option Scope

Option Scope is an integrated oscilloscope solution based on an USB oscilloscope hardware. With bus-specific trigger conditions and the integrated time synchronization, you can find the cause of protocol errors much faster than with any traditional oscilloscope.

Funktion	CANoe MedTech DE & TBE
Automatic configuration of sampling rate and acquisition time (according to baudrate)	✓
Bit-accurate decode of bus signal	✓
Complete decode of protocol errors (e.g. CAN, CAN FD, 10BASE-T1S Error Frames)	✓
Trigger conditions for frames and protocol errors	✓
Trigger modes "single" and "repeat"	✓
Full import/export of scope measurements for offline analysis	✓
Export of scope measurement data to ASCII (CSV) or MATLAB format (MAT)	✓
CAPL interface for automatic scope test including report creation (available with CANoe Test Feature Set)	✓
Eye diagram analysis with bitmasks defined via CAPL (available with CANoe Test Feature Set)	✓
CAPL measurement functions for bus signal voltage and time difference (e.g. bit time) (available with CANoe Test Feature Set)	✓
Serial bitmask analysis with definable analysis ranges	✓
Complete edge analysis for rising and falling edges	✓
CAPL-controlled configuration of the oscilloscopes	✓

Option Sensor

The Option Sensor enables a variety of applications related to the analysis, simulation and testing of sensors and control units. Among other things it is possible to:

- > Record and analyze the communication between ECUs and sensors.
- > Simulate sensors in order to test the functions of an ECU.
- > Simulate ECUs to test sensors.

Option Sensor is not required for I2C, SPI and UART.

Feature	CANoe MedTech DE				
	PSI5	SENT	SPI	I2C	UART
Sensor configuration dialog for uniform configuration of sensor communication	—	—	✓	✓	✓
Analysis of sensor communication with the CANoe analysis windows	—	—	✓	✓	✓
Sensor simulation	—	—	✓	✓	✓
Sensor simulation via BLF logging file	—	—	—	—	—
Simulation of the control unit side of sensor communication	—	—	✓	✓	✓
CAPL API to realize continuous data flows	—	—	✓	✓	✓
Serial hardware module VT2710	—	—	✓	✓	✓
Piggyback for VT2710: 4 PSI5 or 4 SENT channels	—	—	—	—	—
SENSORPiggy SENT for VN1640A and VN1500 family	—	—	—	—	—
Support for LVDS and RS-485	—	—	—	—	✓
SENSORPiggy UART for VN1670 and VN1150	—	—	—	—	✓

Standalone

Option	CANoe MedTech DE & TBE	
	Basic	Extended
Basic CAN	✓	✓
CANopen	✓	✓
Connectivity	✓	✓
DDS	✓	✓
Ethernet	—	—
Basic Ethernet	✓	✓
FlexRay	—	—
For EtherCAT*	—	—
ISO11783	—	—
J1587	—	—
J1939	—	—
LIN	—	—
Scope	—	—
SDC	✓	✓

*The license for Option For EtherCAT must be activated additionally if required.

Legend

Symbol	Description	Symbol	Description
✓	(several times) available	7	With restricted hardware assortment (see Distributed Mode: Configuration Requirements). VN8900: only IOpiggy is supported.
r	Runtime only (the configuration cannot be changed)	8	The actual functional range depends on your product variant.
—	Not available	9	This feature is not supported by VN8900.
1	This function requires the noted bus system extension or additional options. All bus system extensions are individually available and may be used in any combination. Additional CAN bus based options such as CANopen or J1939, require the bus option for CAN.	10	—
2	Due to restricted debugging possibilities Distributed Mode should be used as a runtime environment for additional DLLs but not for developing them.	11	Only BLF is supported.
3	VN8900: only NI adapters are supported.	12	VN8900: via USB adapter.
4	The Diagnostic Feature Set is based on the CANdela diagnostic process and requires CANdela description files (CDD) or ODX files.	13	The standalone mode has the same restrictions as the used product variant.
5	Additional product that is not included in the standard delivery.	14	Runtime only (Video sources and recordings can be configured, Video Window not available)
6	Only available in the send branch (not in the Measurement Setup).	15	Runtime only (GNSS receivers can be configured, Map Window not available)