Ixxat®
BY HMS NETWORKS

CanEasy

PRODUCT INFORMATION AND FEATURE MATRIX

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EMBEDDED SYSTEMS SOLUTIONS

GLOSSARY

Abbreviation	Meaning
ASC	ASCII Log File
ASAM MCD-2 MC	ASAM - ECU Measurement and Calibration Data Exchange Format
BAP	Bedien- und Anzeigeprotokoll (VAG)
BLF	Binary Log File
CELOG	CanEasy Log File (Binary)
CAPL	Communication Access Programming Language (Vector Informatik)
CDD	CANdelaStudio Diagnostic Description
COM API	Component Object Model API
CRC	Cyclic Redundancy Check
DAQ	Data Acquisition
DBC	Database CAN
DTC	Diagnostic Trouble Code
FDX	Fast Data Exchange
FIBEX	Field Bus Exchange Format
LDF	LIN Description File
MDF	Measurement Data Format
OBD-II	On-Board Diagnostics II
ODX	Open Diagnostic Data Exchange
PDX	Packaged ODX
PCAP	Packet Capture
PCAPNG	Packet Capture Next Generation
PDU	Protocol Data Unit
REST API	Representational State Transfer API
SKB	Seed and Key Binary
SOME/IP	Scalable service-oriented middleware over IP
UDS	Unified Diagnostic Services
VBA	Visual Basic for Applications
VSTA	Visual Studio Tools for Applications
WPF	Windows Presentation Foundation
XCP	Universal Measurement and Calibration Protocol
CCP	CAN Calibration Protocol
XML	Extensible Markup Language

CanEasy OVERVIEW

CanEasy 8 Editions

Professional
The full program. CanEasy Professional contains the full range of features and functions including the possibility to execute CAPL scripts and create RichPanel Runtime workspaces.

Standard Plus
Standard Plus Diagnostic and RichPanel package. CanEasy Standard Plus extends the capabilities of CanEasy standard by supporting diagnostics and RichPanels.

Standard
For everyday use. CanEasy Standard reduces CanEasy Professional to the most important main features.

Can Easy 8 Editions Feature Comparison

Feature List	CanEasy Professional	CanEasy Standard Plus	CanEasy Standard
Number of busses	99	99	99
Bustypes			
CAN	✓	✓	✓
LIN	✓	✓	✓
Automotive Ethernet	✓	✓	✓
Protocols			
CCP/XCP	✓	✓	
SOME/IP	✓		
DoIP	✓	✓	
UDS	✓	✓	
J1939	✓	✓	✓
BAP	✓	✓	✓
Playback	✓	✓	✓
Trigger	✓	✓	✓
Scheduler	✓	✓	✓
Macrorecorder	✓	✓	✓
Trace window	✓	✓	✓
Signal-Plots	✓	✓	✓
Datenbase editors	✓	✓	✓
Datenbase formats (DBC, ARXML, LDF)	✓	✓	✓
Recording formats			
CELOG	✓	✓	✓
ASC, BLF, MDF	✓	✓	✓
Diagnosis formats (CDD, PDX, ODX)	✓	✓	
Fault memory window	✓	✓	
Signal-Monitors	✓	✓	✓
User-Panels	✓	✓	✓
Automated Panels	✓	✓	✓
Search functions	✓	✓	✓
Snapshots	✓	✓	✓
Standard-Plug-Ins	✓	✓	✓
Matlab/ Simulink-Plug-In	✓	✓	✓
Integrated VBA/ VSTA editor	✓	✓	✓
MultiStudio	✓	✓	✓
External usage of the API	✓	✓	✓
Environment variables	✓	✓	✓
CAPL converter	✓		
CAPL loader	✓		
RichPanels	✓	✓	
RichPanel Runtime Generator**	✓		

REASONS TO USE CanEasy

Compatible to many existing tools and hardware interfaces

- CanEasy allows for a transition from existing tools for ECU test and simulation
- CanEasy natively supports third-party simulations
- CanEasy is compatible with common automotive file formats
- CanEasy supports the most common CAN, LIN and Automotive Ethernet hardware interfaces, such as Vector, PEAK or Ixxat (see detailed table below)

Many Programming Features

- Choose your preferred development environment
  - MultiStudio (with VS-Code)
    - MultiStudio allows writing and debugging code using C#, Python, C++, JavaScript and CAPL in Visual Studio Code
    - Users can find several integrated templated for realizing applications
  - Plugins (Develop your own plugins using our ANSI-C API)
  - VBA (Develop Visual Basic apps via the integrated VBA-IDE)
  - VSTA (Develop C# or .Net apps via the integrated Visual-Studio-IDE)
- Integrate CanEasy into other applications or control it remotely
- Use the powerful event system of our database to get full control
- Access the recorded frames or handle transmission events
- Use our COM or Rest-API to automate all functions and features of CanEasy

Database Editor

- Import, Modify and extend DBC, LDF, and ARXML files directly within CanEasy
- Support for managing and adapting messages, signals, and attributes without requiring external editors
- Export to XML, DBC or CDB

Diagnosis and Flashing

- Import of ODX/PDX and CDD files to work with diagnostic services
- Use UDS over CAN, LIN and Automotive Ethernet (DoIP)
- Integrate ODX/PDX flasher for ISO-80126
- CanEasy Flash can be a special solution

Powerful and Easy-to-Use User Interface

- Intuitive using of ‘sent to’, ‘drag & drop’ to create new views
- RichPanels (Powerful panels based on WPF)
  - Create hardware accelerated, zoomable panels
  - Support of rotation, animations, and 3D controls
  - Use of layers, grouping and alpha controls
  - Adjustable controls by many properties
  - Develop code in C#
- Intuitive using of ‘sent to’, ‘drag & drop’ to create new views
- Fast access to all functions by unified context menu
- Auto generated panels by double click and drag & drop
- Explorer navigation gives direct access to attributes
- Use MIDI keyboard to change signals
- Importing files by drag and drop
- Search in database with filters and regular expressions
- Save complete simulation on one workspace
- Import and export of views and database content
- Change simulation behavior and database at runtime

Automation

- Integrated interaction layer and network management
- Automatic deactivation of interaction layer during replay
- Plugins for modulation, keyboard shortcuts, checksums,…
- Using of mathematical expression to calculate signal values
- Create scheduler tables using macro recorder
- Create test sequences by drag and drop
- Use trigger to execute schedule tables

Plug-Ins and Extensions

- Modulator plug-in
- AUTOSAR network management
- MATLAB/Simulink
- Python code generator
- CRC plug-in
- Formel plug-in
- Shortcut

Licensing and Add-Ons

- Essential features like LIN and J1939 are already included in the Standard edition
- Simple and straightforward licensing and feature structure with a lot of included add-ons

Supported Hardware Interfaces

Hardware Vendors	CanEasy
Ixxat	✓
Peak	✓
Vector	✓
Kvaser	✓
Intrepid	✓
ETAS	✓
Softing	✓
National Instruments	✓
Sys Tec	✓
MHS Elektronik	✓
NV Melexis	✓

LICENSE TYPES

Workstation licence

CanEasy may be installed on a computer and used only on this computer by arbitrary users.

USB dongle licence

The CanEasy licence is stored on a hardware key (e.g. USB stick) and can be used on any computer to which the key is connected.

Floating licence

CanEasy may be installed on any number of computers. However, the simultaneous use is limited to the number of purchased floating licences.

FEATURE MATRIX

Feature	CanEasy
Overview on Channels, Bus Systems and Description Formats Several different bus systems can be analyzed and stimulated simultaneously with one configuration. The specific network description files are supported directly.	
Number of configurable CAN channels	99
Number of configurable Ethernet channels	99
Number of configurable FlexRay clusters	*
Number of configurable K-Line channels	*
Number of configurable LIN channels	99
DBC databases (CAN, CAN FD, J1939)	✓
LDF databases (LIN)	✓
FIBEX databases (CAN, FlexRay)	*
AUTOSAR system descriptions (CAN, Ethernet, FlexRay) Supported format versions: 3.x, 4.x.	✓*
CANdb and LDF editor (CAN, CAN FD, LIN) Create and display DBC and LDF files.	✓*
AUTOSAR system descriptions (CAN, CAN FD, Ethernet, FlexRay, LIN) Supported format versions: 3.x, 4.x.	✓*
AUTOSAR system description display and editor (CAN, CAN FD, FlexRay) Display and modify AUTOSAR files for CAN and FlexRay.	✓*
Support of EtherCAT Slave Information files (.esi)	*
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.	
Variable measurement setup Central configuration of analysis windows and logging.	✓
Measurement setup import Reuse of measurement setups from other CANoe configurations (complete or individual branches).	✓
Trace window Detail, difference and statistics views for displaying the time flow of events.	✓
Statistic window (CAN, CAN FD, LIN) Display bus statistics on the node or frame level.	✓

Feature	CanEasy
Bus statistic window Display of bus statistics at channel level.	✓
Statistic protocol (CAN, CAN FD)	✓
Trigger (CAN, CAN FD, J1939, LIN) Control data logging.	✓
Symbol mapping to link system variables / environment variables / signals	✓ Can be done by API or Formular.
Data window Momentary display of bus signals, environment variables and system variables.	✓
Graphics window Graphic display of signal responses.	✓
Video Window Record and play back video files.	✓ Can be used in Rich-Panel control.
State tracker Display of system states, discrete values and CAN frames/bursts.	✓ Plot window supports showing value table.
LIN analysis Feature Set Special CAPL functions for LIN-specific bus analysis.	✓
Filter in trace/measurement setup (CAN, CAN FD, Ethernet, FlexRay, J1939, LIN)	✓* Filtering can be done in trace window.
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.	✓
Trace export TXT, CSV, ASC, CELOG	✓
Trace import ASC, LOG, MDF, PCAP, PCAPNG, BLF	✓
Protocol monitor Display of connections between end points.	✓ Trace window can be used to analyse ethernet.
Protocol analyzer Checks protocol-specific contents and displays results in the Trace Window.	✓
Stimulation, Simulation and Modeling	
Interactive Generator – AUTOSAR PDU / Modulator (AUTOSAR - CAN, CAN FD, Ethernet, FlexRay, LIN)	✓*
Interactive Generator – CAN / Modulator (CAN, CAN FD, J1939)	✓
Interactive Generator – Ethernet / Modulator	✓
Signal Generator / Modulator (CAN, Ethernet (AUTOSAR PDUs), FlexRay, LIN) Configuration of signal curves.	✓*
Create/execute graphic command sequences with the Visual Sequencer / Scheduler (CAN, CAN FD, LIN)	✓ Scheduler or shortcut plugin.
Macros tool automation	✓
Start value window Values that are set on measurement start can be preassigned for system variables / environment variables / signals.	✓
.NET snippets tool automation	✓
LIN interactive scheduler Simulation of a LIN master.	✓
LIN node simulation (Master/Slave)	✓
LIN network management window	✓ We show the Sleep/ Wake state directly as channel.
Replay Replay a logged measurement in parallel to a running simulation.	✓
FlexRay frame panel Offers an easy way to send out frames.	*
FlexRay PDU panel Offers an easy way to send out frames.	*
System variables Variables with global validity, can be applied to all analysis windows and logging.	✓
Simulation setup Symbolic display of the network.	✓ Just as tree under the database.

Feature	CanEasy
Simulation setup: Filters for messages/channels, dependent on bus system: CAN, Ethernet (channel filter), FlexRay	✓*
Communication setup	✓
Access to application layer objects Distributed objects and communication objects.	✓
Access to environment variables	✓
Model design/generation/execution from the network description	✓
Execute simulation models	✓
Modeling libraries (e.g. transport protocol, interaction layer, network management, OEMspecific Extensions)	✓
Modeling library for SOME/IP node simulation	✓
Modeling library for J1939 node simulations with interaction layer	✓
Packet builder Create and send packets	✓
External Programming Capabilitites	
CAPL programming/execution/debugging	(✓) / ✓ / (✓)
Bus access with CAPL functions (CAN, CAN FD, Ethernet, J1939)	✓
Create/execute graphic command sequences with the Visual Sequencer / Scheduler	✓ Scheduler or shortcut plugin.
Bus access with the Visual Sequencer / Scheduler (CAN, CAN FD, LIN)	✓
C, C++, Python and C# Library C, C++ and Python API for developing application-specific code.	✓
Ethernet TCP/IP stack support	✓
Panels for Extending the Graphic User Interface	
Create/execute display elements	✓
Create/execute control elements	✓
.NET panel elements	✓
Test Support	
Visual Sequencer / Scheduler graphically create test sequences	✓
Bus access with the Visual Sequencer / Scheduler (CAN, CAN FD, LIN)	✓
Test setup for test units Organize and configure test units.	✓
Test setup for test modules Organize and configure test modules.	✓
Test Feature Set (TFS), Test Service Library (TSL) Reproducibly execute (semi-)automated tests.	✓
XML test report Visualize test results with navigation options.	✓
Transport Protocol Support, Diagnostic Support, Supported Protocols Diagnostic Feature Set (CAN, Ethernet, LIN)	
TP observer (CAN) TP observer according to ISO 15765-2.	✓
TP observer (Ethernet) TP observer supporting IP (incl. fragmentation) and TCP.	✓
TP observer (J1939) TP observer according to BAM, CMDT and fast packet.	✓
Support of DoIP (Diagnostics over internet protocol)	✓
Diagnostic protocols (KWP 2000, UDS)	✓
Diagnostic observer Symbolically interpret diagnostic messages.	✓
Diagnostic tester Consists of diagnostic console, diagnostic session control and fault memory window.	✓
Diagnostic simulation	✓
Diagnostic parameters window	✓
Integrated OBD-II tester	✓
Diagnostics with CAPL	✓
Basic diagnostics Diagnostic support without description file.	✓

Feature	CanEasy
Display diagnostic description files (ODX/PDX/COD)	✓ Services and Parameters
.NET diagnostic scripting	✓ Diagnostic sequences can be create with scheduler.
DTC monitor (J1939) Display error codes.	✓
Diagnostic memory access (J1939)	✓
Extension of Functional Range by Integration of Other Interfaces or Additional Options	
CAPL-DLL Implement your own functions in C.	✓
I/O-Hardware interface Link analog/digital measurement hardware from third-party suppliers.	✓
IO piggy support	✓
COM Interface Automation interface for remote control.	✓
FDX (Fast Data Exchange) UDP/IP based protocol for fast data exchange with external systems.	(✓) Supports fast data exchange via IPC (inter process comm) features.
MATLAB Integration and model viewer Integrate Simulink models in the simulation.	✓
LabVIEW Interface Data exchange with LabVIEW via shared network variables/COM/FDX.	✓
AMD/XCP Read or write to memory locations in the ECU and analysis of ECUs.	✓
Signal protocol DLL Interpret signals in proprietary protocols.	✓
TCP/IP socket access in CAPL	✓
RS232 access in CAPL	✓
AMD/XCP Features	
XCP/CCP window for configuration	✓
XCP/CCP window for controlling XCP connections and measuring values	✓
Online access to internal ECU values in RAM Over XCP on CAN, XCP on Ethernet (TCP and UDP), XCP on LIN and CCP.	✓
Measurement methods: DAQ, Polling, on connect, single shot upload over CAPL	✓ Just Polling
Writing of variables in ECU RAM via download	✓
Writing of variables in ECU RAM via STIM over XCP on CAN/CAN FD and Ethernet	✓ Just CAN
Supports ASAM MCD-2 MC (A2L) databases up to version 1.7	✓
Support of scalar CCP/XCP data types (UBYTE, SBYTE, UWORD, SWORD, ULONG, SLONG, UINT64, SINT64, FLOAT32_IEEE, FLOAT64_IEEE)	✓
Complex CCP/XCP data types: 1-dimensional arrays, CURVE, MAP (supported axis types: COM_AXIS, SHARED_AXIS, FIX_AXIS)	✓
Secure access via Seed & Key (DLL and SKB format)	✓
Parallel access to multiple ECUs	✓
Address update for ECU symbols from linker map file	✓
Address update for ECU symbols from the ECU at runtime (generic measurement)	✓

* Only works together with FlexRay capable gateway from Ixxat (Ixxat FRC/Mobilizer. See table at the end)

ARTICLE NUMBERS

Perpetual Licenses	CanEasy Professional	CanEasy Standard Plus	CanEasy Standard
Dongle	1.04.0144.00000	1.04.0144.00002	1.04.0144.00001
Workstation	1.04.0144.00003	1.04.0144.00004	1.04.0144.00005
Floating	1.04.0144.00006	1.04.0144.00007	1.04.0144.00008

Product Updates*	CanEasy Professional	CanEasy Standard Plus	CanEasy Standard
Dongle	1.04.0144.01000	1.04.0144.01001	1.04.0144.01002
Workstation	1.04.0144.01003	1.04.0144.01004	1.04.0144.01005
Floating	1.04.0144.01006	1.04.0144.01007	1.04.0144.01008

* Please note information on the licence conditions:

Price per year.

The Product-Update-Contract is part of the licence and serves to continuously develop and to deal with your concerns as quickly as possible (e.g. implementation of new functions). The Product-Update-Contract must therefore be terminated with a notice period of 2 weeks before expiry (included in delivery). After termination, you can use the current version still updates are not possible anymore. After expiration of the Product-Update-Contract, a „Product-Update“ must be purchased to get the latest version.

SUITABLE HARDWARE

	PCAN-USB FD	PCAN-USB Pro FD	Ixxat CAN@net 420
Product description	CAN and CAN FD Interface for High-Speed USB 2.0	CAN, CAN FD, and LIN Interface for High-Speed USB 2.0	CAN/CAN FD Ethernet gateway, bridge and PC interface
CAN channel	1 x	2 x	4 x (max)
Switchable to CAN FD channel	1 x	2 x	2 x (max)
Other interfaces	USB	2 x LIN, USB	Ethernet / MQTT
Protection class	IP20	IP20	IP20
Galvanic isolation	500 V	500 V (USB/CAN)	1 kV

	Mobilizer	FRC-EP170	FRC-EP190	CANnector
Product description	Automotive Ethernet/CAN/ FlexRay platform for gateway, logging, and RBS applications	CAN/FlexRay platform for gateway, logging, and RBS applications		CAN platform for gateway and logging applications
Automotive Ethernet	2 x	-	-	-
FlexRay A/B channel	1 x	1 x	1 x	-
High-speed CAN	-	4 x (max.)	4 x (max.)	4 x (max.)
Switchable high-speed CAN / CAN FD (additional)	8 x	2 x (max.)	4 x (max.)	4 x (max.)
Low-speed CAN	-	1 x (max.)	2 x (max.)	-
LIN	2 x	1 x	2 x	2 x
K-Line	1 x	1 x	1 x	-
USB	3 x (Host/Device)	2 x (Host/Device)	2 x (Host/Device)	3 x (Host/Device)
Digital I/O ports	6 x (max.)	4 x (max.)	4 x (max.)	2 x (max.)
Analog input	2 x (max.)	-	2 x (max.)	-
Analog output	4 x (max.)			
Further interfaces	opt. EtherCAT slave, SENT input	-	opt. EtherCAT slave	opt. EtherCAT slave
SDHC card slot	1 x	1 x	1 x	-
PC connection	Ethernet / USB 2.0 / WLAN (WiFi)			
Protection class	IP40	IP42	IP42	IP40
Galvanic isolation	up to 1.25 kV	-	up to 2 kV	up to 2 kV
Configuration	ACT tool	ACT tool	ACT tool	ACT tool

Ixxat USB-to-CAN V2

In addition to the Peak-System USB adapters, CanEasy also supports the Ixxat USB-to-CAN V2.

Ixxat®
BY HMS NETWORKS

#1 CHOICE FOR ENGINEERS AT THE FOREFRONT OF AUTOMOTIVE COMMUNICATION TECHNOLOGIES.

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