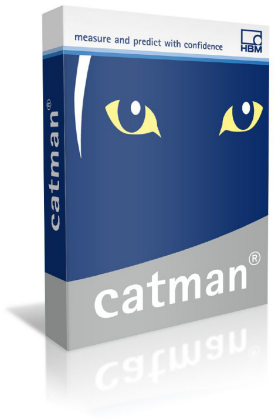
DATA SHEET

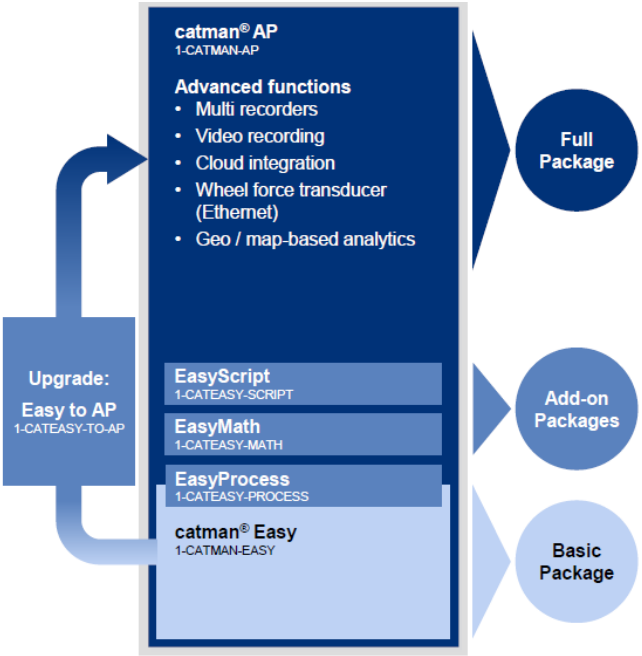
catman® Easy/AP
Universal data acquisition and analysis software

SPECIAL FEATURES

- For HBK hardware (QuantumX/SomatXR, MGCplus, PMX, FS22 and DMP41)
- Visualization of measured data
- Online analysis based on powerful math library
- Data analysis (offline)
- Save and export data in various formats
- Reporting



catman® EASY/AP STRUCTURE



Overview of product packages

- catman® Easy: Data acquisition and visualization
- catman® AP: Data acquisition, visualization, analysis, and report generation about your measured data[1)]
- catman® PostProcess: Data evaluation and reporting

Software packages include maintenance for the first 12 months

Supported Windows versions

- Windows® 10
- Windows® 11

Supported DAQ families

- QuantumX/SomatXR
- MGCplus
- PMX
- FS22
- DMP41

Additional supported devices

- Global navigation satellite system (GNSS) via USB, RS-232, Ethernet
- Weather station via USB and RS-232: Vaisala WXT520
- Kistler KiRoad/RoaDyn wheel force sensor via Ethernet
- GOM Aramis, system for 3D movement and deflection measurement via Ethernet
- Devices with CAN interface, e.g. wheel force sensors, GNSS

Supported cameras

The camera must support the Windows DirectShow feature, meaning drivers compatible with WDM (Windows Driver Model) or VfW (Video for Windows) must be installed. This, for example, applies to the following cameras:

Manufacturer	Type	Technology	Tested cameras	Note
Axis	All Ethernet network cameras	Ethernet	M7001, Dome Q7035-E	Installation of Axis Streaming Assistant required
Logitech	C series	USB	C910, C920	
Liebherr	MDC3	Ethernet	MDC3	

Comments: Only camera models listed in the "Tested cameras" column were tested with catman®. All other models should also work according to the specification, but were not tested explicitly.

Recommended Codec: Microsoft Windows Media Video 9.

1) Upgrading to catman AP is possible at a later date (ordering number: 1-CATEASY-TO-AP)

Feature	Details	catman® edition		
		Easy	AP	Post Process
Live data viewing and saving				
Data acquisition at up to 12 MS/s or 100 MB/s	Analog, digital, CAN bus and CAN raw signals Signals from additional devices, e.g. GNSS, weather station	☑	☑	
Live data visualization over time, angle, other physical inputs, and frequency	Real-time graph: y(t), y(x), up to 12 axis planes, digital display, simple measured value table, flexible measured value table, analog meter, bar graph indicator, multiple bar graph indicator, frequency spectrum, polar diagram, cursor graph, LED, CAN raw table	☑	☑	
	Spectrogram Angle-synchronous graph	EasyMath module required	☑	
Visualization control objects	Button, slider	☑	☑	
	Checkbox, combo box, text box, table, rotary knob, switch, LED array	EasyScript module required	☑	
Visualization layout objects	Text, background image, border	☑	☑	
Video integration	Video recording: - up to 4 cameras with Notebook / PC - 1 or 2 with CX22B (depending on camera type and video format)	⊗	☑	
Digital integration of Kistler wheel force sensors	KiRoad performance, system 2000: Connection to QuantumX/SomatXR via Ethernet	⊗	☑	
Integration of GNSS data	Via USB, RS-232, Ethernet, or CAN bus	☑	☑	
Live visualization of GNSS data in maps		⊗	☑	
Parameterize optical measurement modules and record the module data	Measurement modules MXFS SI, MXFS DI, and FS22	☑	☑	
Integration of the GOM testing controller	Aramis system, integrate optical camera channels (deflection measurement, etc.)	⊗	☑	

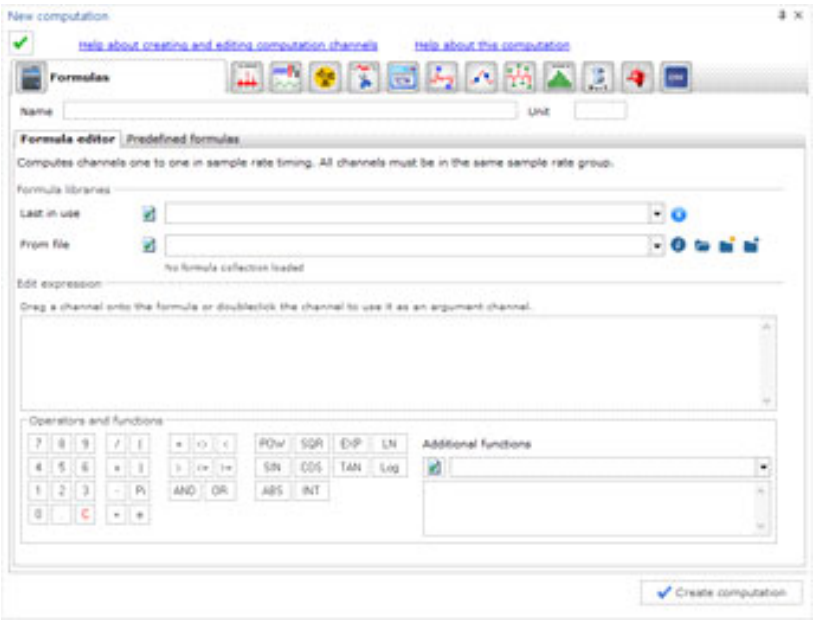
Feature	Details	catman® edition		
		Easy	AP	Post Process
Measurement and data acquisition tasks	Data storage start/stop condition: Manual, trigger, defined time and duration	☑	☑	
	Pre-trigger and post-trigger	☑	☑	
	Automatic execution of actions on starting or stopping measurement: Zero balance, run EasyScript	☑	☑	
	Data storage modes: Take into account all measurement data, manual check, check via script, peak values per time interval, cycle-dependent and time-dependent intervals, Fast Stream	☑	☑	
	DAQ job repetitions	☑	☑	
	Save test parameters and sensor configurations as metadata	☑	☑	
	Define parallel recordings with individual triggers and files	⊗	☑	
	Continuous data transfer to Microsoft Power BI for visualization of data on the web	⊗	☑	
	Continuous data transfer to an InfluxDB for data storage for various dashboard visualization systems	⊗	☑	
Save in various data formats	ASCII, MS Excel, DIAdem, NI TDMS, MDF 3/4, MATLAB, RPCIII, HBM nCode s3t and nSoftDAC, UFF58	☑	☑	
FTP/SFTP upload	Automatic uploading of measurement files to an FTP/SFTP server	☑	☑	
MQTT client function	Channel data (hardware channel, time channel, calculation channel or auxiliary channel) can be provided to an MQTT broker	⊗	☑	
Statistics journal	Save min, max, average and instantaneous values for defined time intervals and channels	☑	☑	
Limit value and event monitoring	- Level overranging/underranging - Frequency spectrum - Channel overflow (for a defined time) - Digital input - Time interval - Keyboard event - Script (EA_DAQ.TriggerEvent) - Measuring error - Reception of a defined CAN message	☑	☑	
Actions in case of exceeding or underranging limit value and events	Send email Set digital output Log message Play sound file Start/stop measurement, save single value, trigger start/stop Run script	☑	☑	
	Start/stop video recording	⊗	☑	

Feature	Details	catman® edition		
		Easy	AP	Post Process
Live data analysis				
General scientific math	- Basic algebra - Statistics - Integral calculus - Differential calculus - Trigonometric functions - Save custom functions to a personal formula library	☑	☑	
General filters and phase correction	- Bessel LP - Butterworth LP - Bessel HP - Butterworth HP - Phase correction (phase delay) - Moving average - Average - Moving RMS	☑	☑	
Math for structural durability testing	- SG stress analysis - Peak-valley detection (peak value)	☑	☑	
Math for electrical power	- Root mean square value (RMS) - Active power - Apparent power - Reactive power - Power factor	EasyMath module required		
Noise analysis	dBA sound pressure filter	EasyMath module required	☑	
Human body vibration filter according to EN ISO 8041	Wb, Wc, Wd, We, Wf, Wh, Wj, Wk, Wm	EasyMath module required	☑	
Classifications	- Rainflow from-to and range-mean - Dwell time - Span pairs	EasyMath module required	☑	

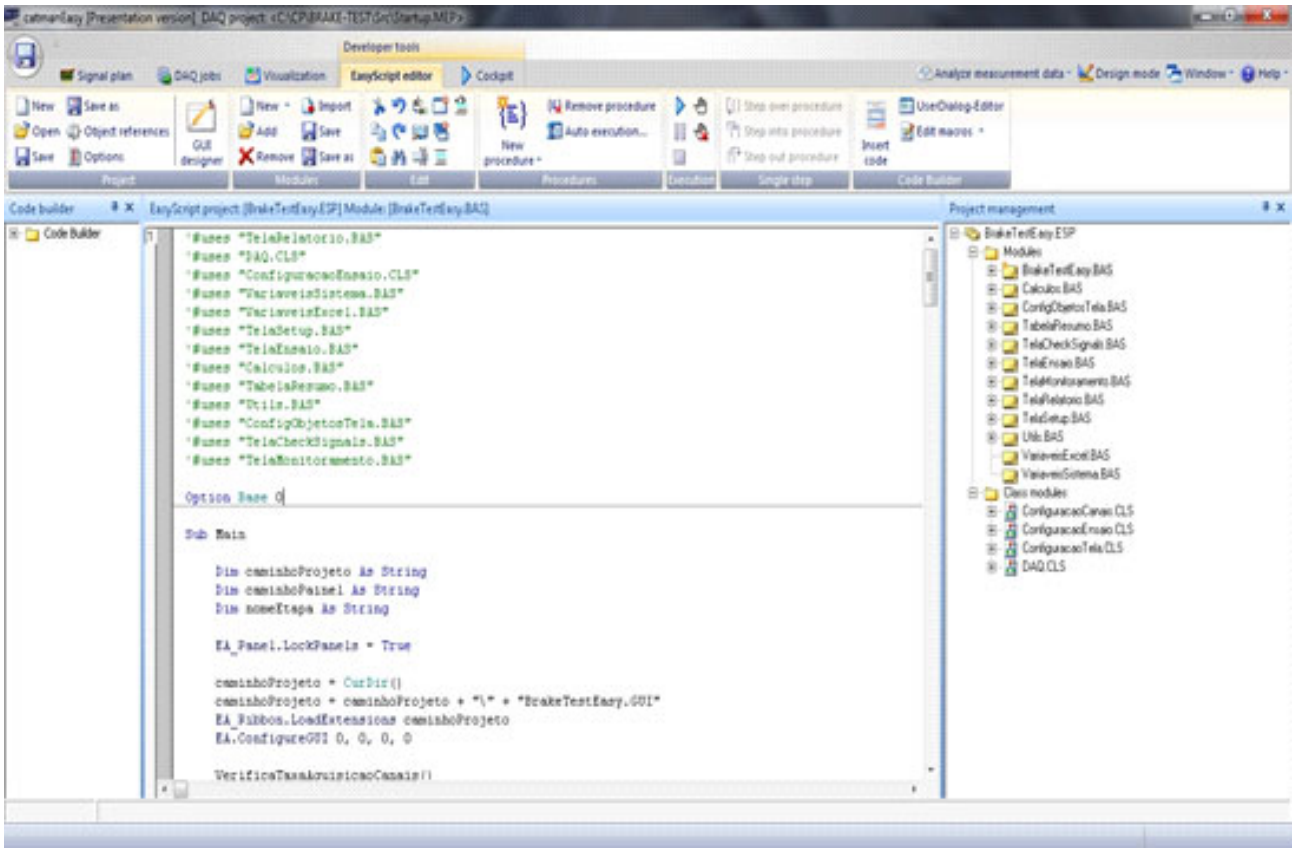
Feature	Details	catman® edition		
		Easy	AP	Post Process
Post-process data analysis and processing				
Test Explorer	Search for tests using simple text search or metadata parameters Add complete tests or single channels to an analysis project	☑	☑	☑
Graphical data visualization over time, angle, and other physical inputs	- Post-process graph - Cursor graph - Polar diagram - Contour diagram - Histogram - 3D chart - Frequency spectrum - Flexible table - Data table - Statistics table - Metadata table - Waterfall diagram - Spectrogram - Angle-synchronous graph	☑	☑	☑
Visualization and analysis of CAN raw data	CAN Raw table Decoding CAN raw data	EasyMath module required	☑	☑
Visualization of GNSS data in maps		⊗	☑	☑
Data cleansing and processing: Curve operations, statistics	- Curve operations: Cut, Delete, Edit - Statistics of selected curve segments: Min, max, average and RMS - FFT of selected curve segment	EasyMath module required	☑	☑
Annotations		☑	☑	☑
General filters and phase correction	- Bessel LP, HP, bandpass, bandstop - Butterworth LP, HP, bandpass, bandstop - Chebyshev LP, HP, bandpass, bandstop - Elliptical LP, HP, bandpass, bandstop filter - Savitzky-Golay smoothing filter - Running mean - Arithmetic mean over time - RMS over time	EasyMath module required	☑	☑
Video-based data analysis	Synchronized display of video and measurement data	EasyMath module required	☑	☑
General scientific math	- Basic algebra - Statistics - Integral calculus - Differential calculus - Trigonometric functions	EasyMath module required	☑	☑
CFC crash test filters	CFC60, CFC180, CFC600 and CFC1000	EasyMath module required	☑	☑

Feature	Details	catman® edition		
		Easy	AP	Post Process
Data export	- ASCII - Excel - DIAdem - NI TDMS - MDF 3/4 - MATLAB - RPCIII - HBM nCode s3t and nSoftDAC - UFF58 - Audio (.wav) - Vector BLF (CAN raw only) - Vector CANalyzer log - PCAN Trace	☑	☑	☑
I/O and channel parameterization	- TEDS - Sensor database	☑	☑	
CAN parameterization via DBC file/ARXML file		☑	☑	
Diagnosis	- Channel status - Performance monitoring and diagnostic window	☑	☑	

ADDITIONAL MODULES FOR catman® EASY

EasyMath (1-CATEASY-MATH)
Spectrogram Angle-synchronous graph
Sector monitoring Electric power Human body vibration filter Autosequences
Algebra & formulas SG stress analysis Filters & phase correction Classifications Noise filter Sector monitoring
Root mean square value (RMS) Active power Apparent power Reactive power Power factor
dBA sound pressure filter
Wb, Wc, Wd, We, Wf, Wh, Wj, Wk, Wm
- Calculations (algebra, trigonometry, differential calculus, logic) - Frequency analysis - Filters (Butterworth, Bessel, Chebyshev, elliptical, dBA sound pressure, human body vibration) and moving average - SG stress analysis - Curve operations - Eliminate outliers - Interpolation - Peak values - Classification (rain flow, dwell time, range pairs) - Matrix calculations
Autosequences: Automate individual measurement and analysis sequences by graphical arrangement of function blocks.


EasyScript (1-CATEASY-SCRIPT)	
Automate processes	Free VBA programming in measurement and analysis mode
Visualization control objects	- Button - Checkbox - Combo box - Text box - Table - Slider - Rotary knob - Switch - LED array



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