DASYLab®
Data Acquisition System Laboratory

The Data Acquisition Laboratory Assistant

Monitor, control and analyze with DASYLab

Finished Measurement Application in Just a Few Minutes

Rapidly changing measurement, control, regulation and automation tasks require flexible systems. With the Windows-based DASYLab software, you can develop and operate a wide range of applications in a very short time and without any programming. You save valuable time for your core tasks.

Versatile software for all your data acquisition needs

DASYLab supports almost all measurement, testing and monitoring processes with its wide range of hardware and software interfaces. It is suitable for engineering as well as validation and testing. From simple measurements to the automation of entire test sequences: you need only this single tool to reliably record, analyze, visualize and process signals of all types. In next to no time, you can turn your PC into a different measuring instrument, view signals from various perspectives and automate test routines.

Easy to use

DASYLab stands out due to its strikingly simple operation. Data acquisition applications can be created graphically and interactively in the form of a data flow chart without any programming at all. The user places the function modules required for a specific task in the worksheet, links them to other modules and adapts them to the current task using structured configuration dialogs. The operating concept is so intuitive that you are immediately productive without a long learning phase. You will feel at home again in DASYLab immediately, even if you have not used it for a long time.

Infinitely flexible

Despite its simplicity, DASYLab is enormously powerful. A wide spectrum of analysis, control and visualization modules are available for creating applications. These range from individual data acquisition functions to preconfigured standard sequences. The modules include analog and digital inputs and outputs, triggers, mathematics, statistics, digital filters, FFT analysis, buttons, switches and much more. On top of this, you can conveniently develop and incorporate your own extensions using the integrated Python interface. Anything is possible.

DASYLab is available in four product levels

so that both beginners and experienced users can create measurement and test sequences to meet their needs.

Lite Basic Full Pro

"With more than 120 default modules and excellent extension options, even complex measurement sequences can be implemented and quickly modified again and again, if necessary."

Stephan Gerhards, Software Engineer, measX

DASYLab, the handy toolbox:

- Capture and visualize measurement data
- Analyze signals
- Integrate control and regulation processes
- Automate test sequences
- Configure your own measuring instruments
- Add your own individual functionality (Python interface)

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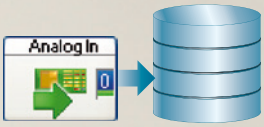
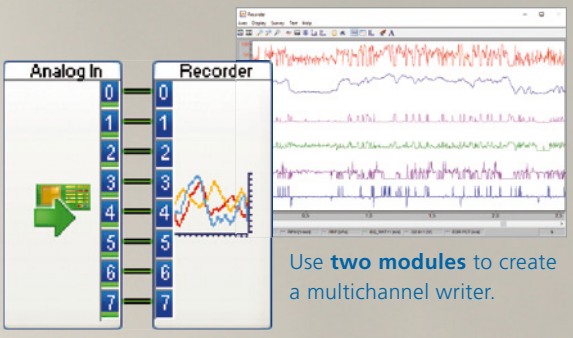
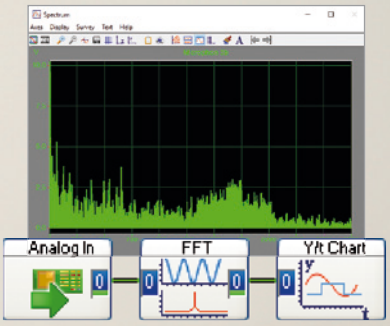


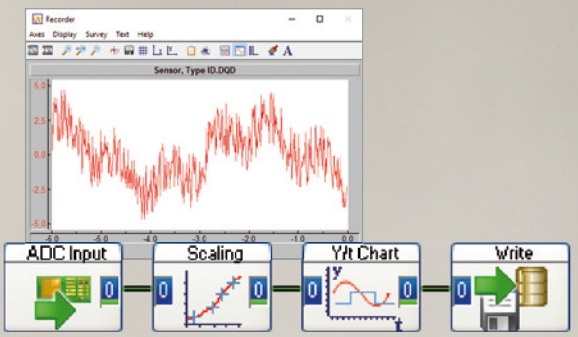
Make a data logger with
just one single module.



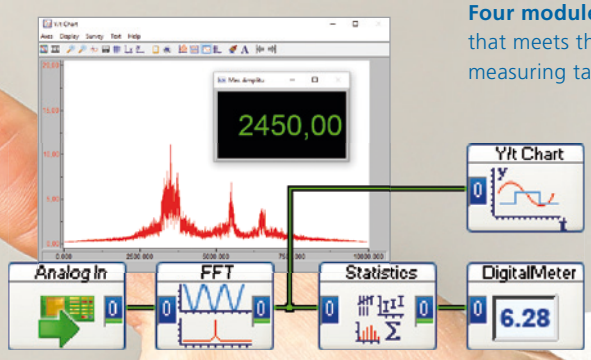
Use **two modules** to create
a multichannel writer.



Create an oscilloscope with FFT signal
evaluation using only **three modules.**



Four modules are sufficient for a measurement setup
that meets the basic requirements for almost any
measuring task.



Only **Five modules** are needed to implement data acquisition
with FFT signal analysis, statistical analysis and presentation
of the results.

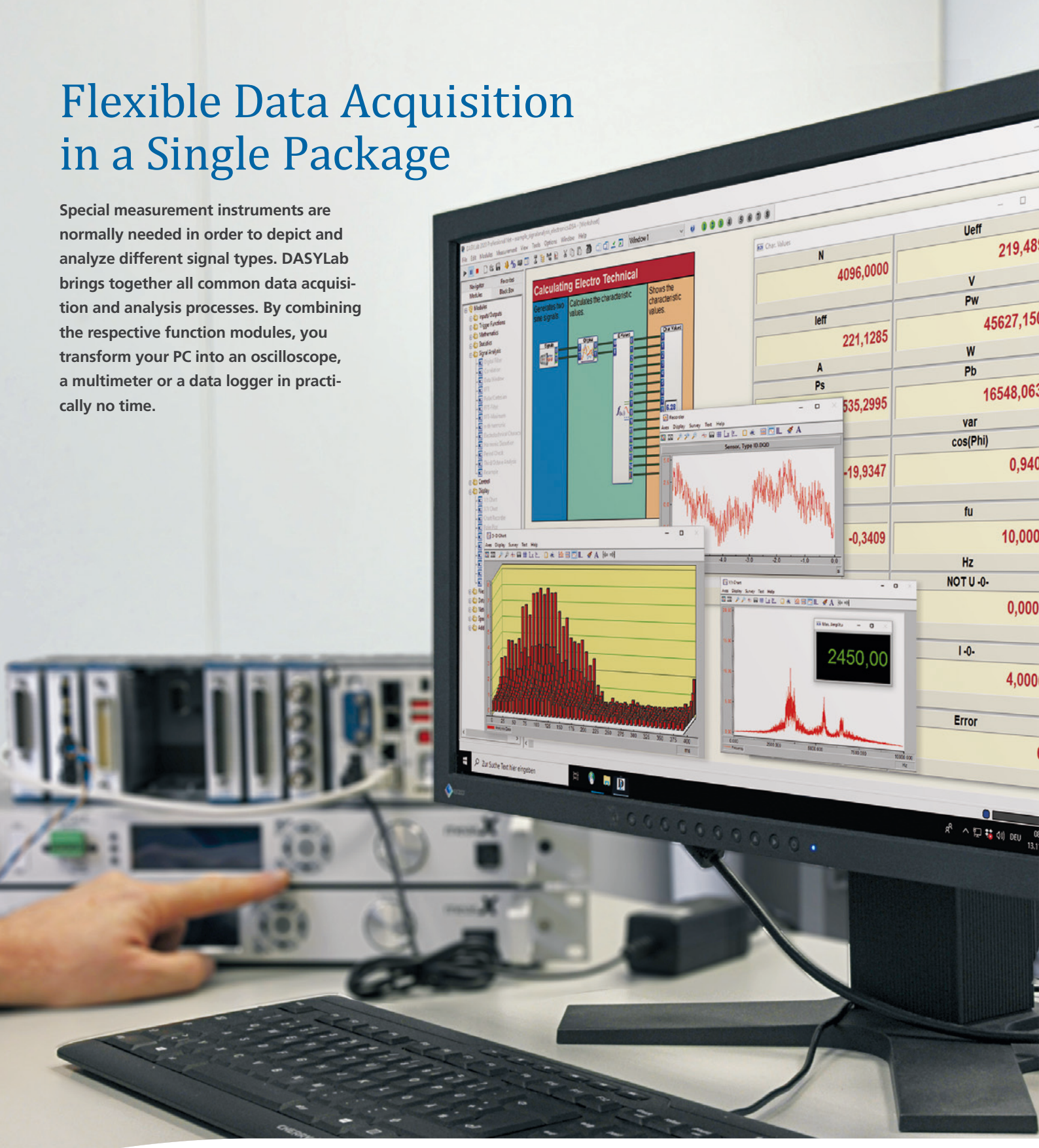
Universal applications

Available since 1993, DASYLab is now one of the most popular tools in all industries worldwide for configuring measurement and testing processes as simply and flexibly as possible. Typical fields of application include:

- Research and development
- Industry, production, quality assurance
- Training, education

Flexible Data Acquisition in a Single Package

Special measurement instruments are normally needed in order to depict and analyze different signal types. DASYLab brings together all common data acquisition and analysis processes. By combining the respective function modules, you transform your PC into an oscilloscope, a multimeter or a data logger in practically no time.



"Urgent situations often occur in which a specific signal has to be evaluated very quickly. This is yet another classic use case for DASYLab."

Heinz Rottmann, DASYLab System Integrator, measX

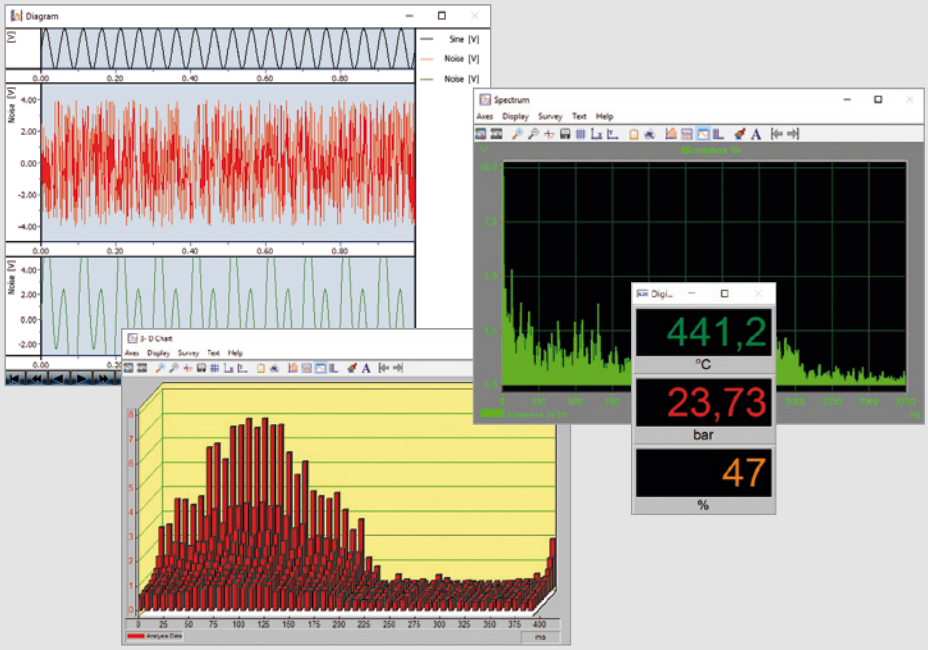
Mobile measurement

The combination of high performance and a simple user interface makes DASYLab an ideal tool for mobile use. If you need to take special measurements at a stationary test bench, the "PC measuring case" is easy to move around.

Capture and visualize measurement data

DASYLab packs a full data acquisition suite into a single device. Your PC becomes the interface for your measuring instrument, and you can individually design and configure this interface. In other words, you decide where the data is to be displayed and how the device is to be operated during the measurement.

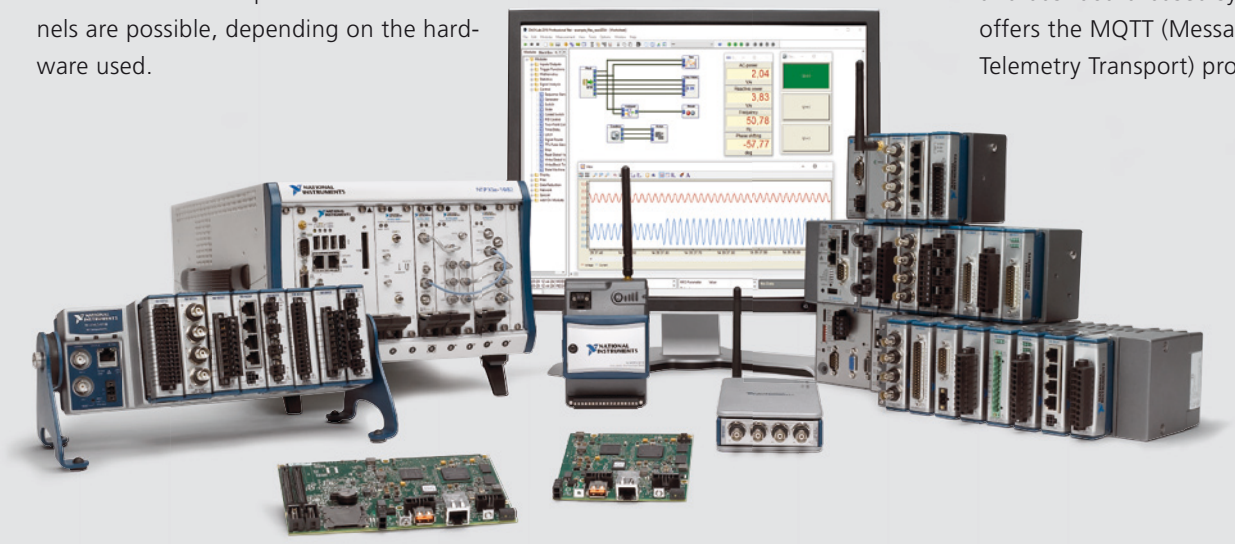
Testdata can be saved in a wide range of data formats for later offline analysis. The software automatically saves the results of entire experimental series in a structured format.



Outstanding integration

DASYLab supports data acquisition hardware from numerous manufacturers and offers a wide range of established software interfaces and protocols. External measuring devices are directly addressed and configured in a simple manner via function modules. Up to 512 data channels are possible, depending on the hardware used.

If specific hardware or software components are not supported despite the large number of existing interfaces, it is very easy to create an interface using Python or the DLL toolkit.
DASYLab's high data connectivity does not only apply to data acquisition, the software also offers excellent options for data analysis. For example, DASYLab reads and writes data in a format suitable for processing in the measX application X-Frame or in DIAdem from National Instruments.
For connections to central monitoring and dashboard-based systems, DASYLab offers the MQTT (Message Queuing Telemetry Transport) protocol.



DASYLab® Supports:

- Analog and digital inputs and outputs, counter input and frequency output
- CAN bus and LIN bus
- RS-232
- IEEE-488
- ModBus/RTU
- OPC-DA
- SPS
- ODBC
- MQTT

High-Performance Online Signal Analysis

Measurement signals are packed full of information that cannot always be recognized immediately. Signal analysis is one of DASYLab's particular strengths. A wide range of function modules for signal processing, mathematics and statistics are available in order to simply but precisely work out the properties of the recorded signals.

Extensive analysis options

Depending on the product level, DASYLab offers basic or extended functions for analyzing the collected data. The spectrum ranges from standard mathematical and statistical functions all the way to complex signal processing with sophisticated filters and frequency analysis functions. Other examples include modules for third-octave and octave analysis and for convolution and weighting of signals.

Accelerate engineering processes

The simple operating principle combined with the wide range of calculation and analysis features makes DASYLab the ideal development tool. Prototypes of applications and systems can be created quickly even if they are to be implemented using another tool later on. Even extensive calculations are carried out in a matter of seconds, making meaningful results available to you in the shortest time possible time.

"DASYLab can be used to easily try out and evaluate a wide range of approaches. This helps users achieve their aims even more quickly."

Bruno Hildebrandt,
Head of Hardware Development, measX

Automate Measurements with No Programming

Automation tasks are solved graphically with DASYLab, with no need for programming. The software provides a range of function modules for this purpose, such as signal generators, switches, controllers and function generators. The corresponding modules are placed in the circuit diagram and configured in order to implement logic switches, controls and analyses.

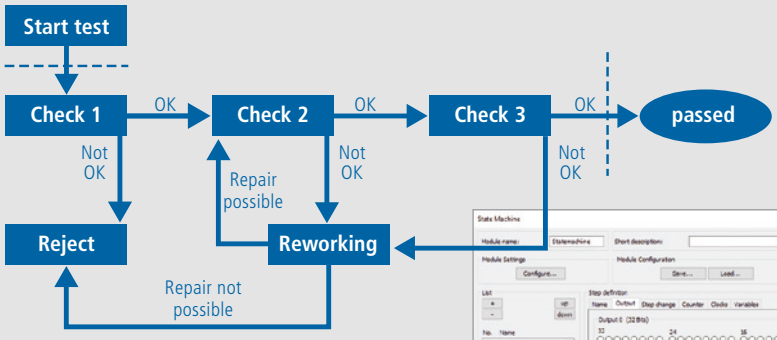
State Machine

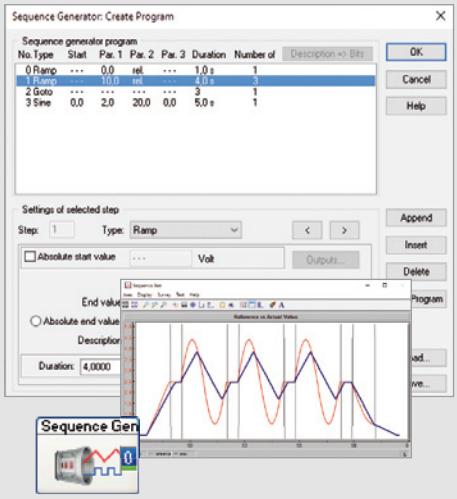
Complex test sequences that could otherwise be built using a combination of action modules, trigger modules, relays and links can be implemented in just a few modules using the state machine module. These sequences are particularly simple to create and maintain because steps in the module can be flexibly added, deleted or reordered as required.

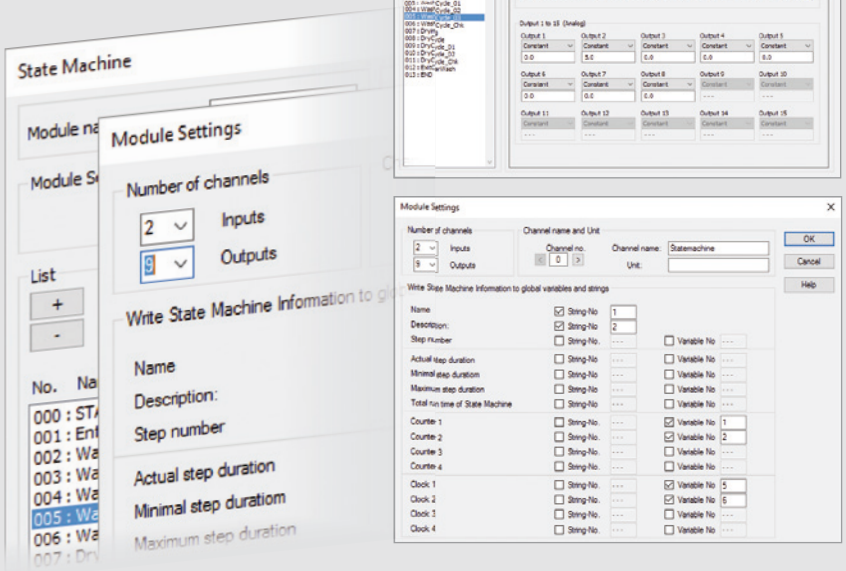
With the conventional setup for a step sequence in DASYLab, all the modules are always processed simultaneously in parallel, even the parts of the step sequence that are not actually needed at the moment. In comparison, only the active parts of the step sequence are processed in the state machine module since all decisions concerning the work step are made in single module. This considerably decreases processing time and memory requirements.

Target value generator

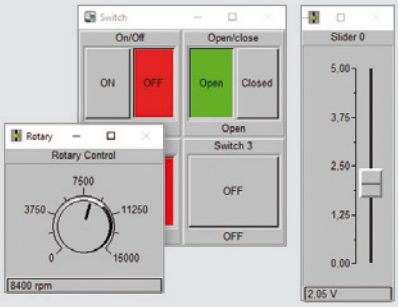
A configurable target value generator enables precise time-dependent controls with complex control signals. It generates the sequence profile using simple parameterization of the individual program steps used for controlling your test bench, for example. This means that switching processes are implemented synchronously with this control profile.







Interactive image elements ranging from rotating knobs to sliders and buttons are available for designing a user interface to control your running application.



DASYLab®

Just a few mouse clicks

Automation tasks can be quickly solved with DASYLab:

- Test sequences
- Monitoring of machines, equipment and processes

Create Your Own DASYLab Modules

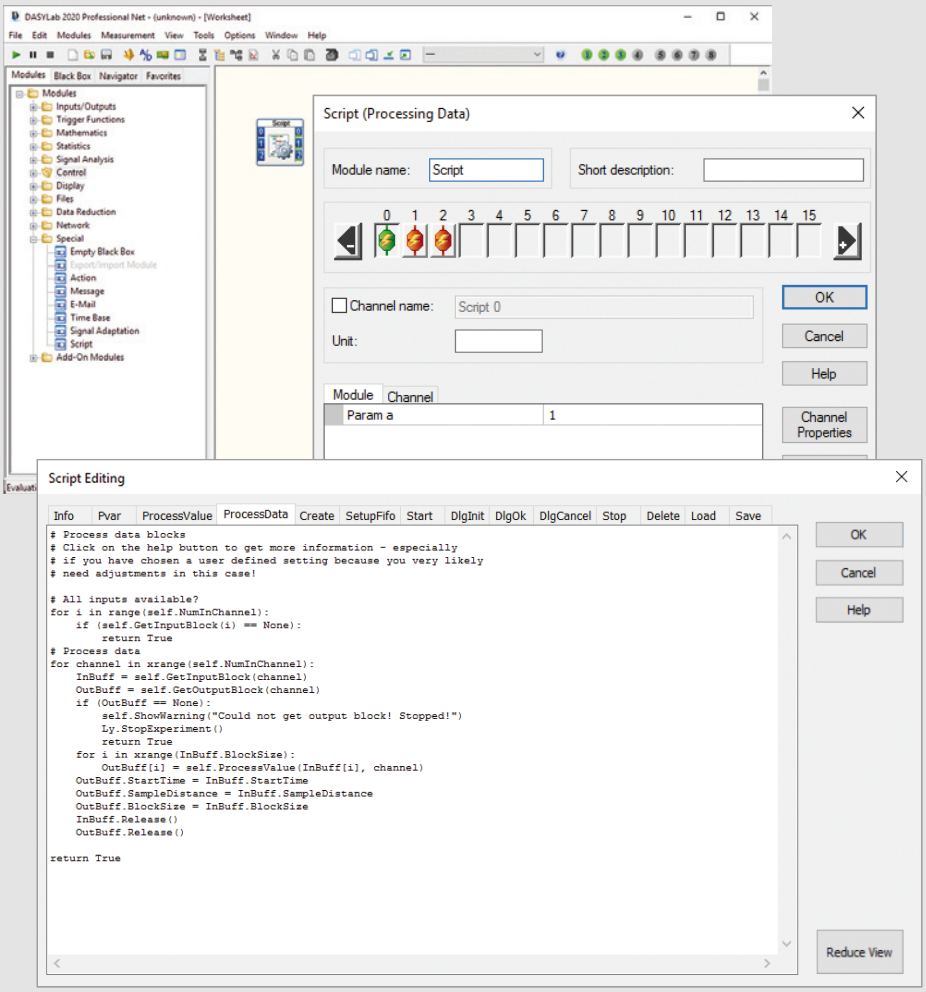
Right out of the box, DASYLab provides a wide range of modules for diverse measurement, control and analysis tasks. If additional functions, hardware or software components are required for an application, these can be integrated by any user (with programming skills) in a reasonable amount of time using the integrated Python interface.

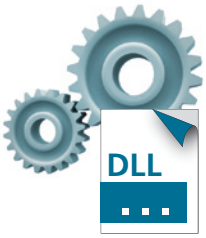
Convenient development environment

The Python script module offers you the ability to create your own modules and integrate new functions with the widely used Python scripting language. These could be additional input modules or data output modules or special mathematical functions not already included in DASYLab despite its wide range of function modules. This makes it extremely easy to adapt DASYLab to special measurement requirements and diverse hardware.

Basic settings, such as the number of inputs or outputs and the data flow properties accepted by the module, can be conveniently specified in a preconfiguration wizard. To specify the functionality of a new module, it is only necessary to input the script code in the dialogs for each individual interface. Module parameters that are to be freely configurable later on are selected from a set of predefined dialog elements, made editable and then combined via scripting to create a simple configuration dialog.

Python script modules can be executed and managed in all DASYLab versions. Users of the Full and Pro versions can also create, edit and export Python script modules.





Incorporation of dynamic link libraries

You can also create your own DASYLab modules using the Extension Toolkit for DASYLab. The toolkit contains descriptions of the DASYLab interfaces and demonstrates how various module types can be implemented in DASYLab. Working with the DLL toolkit requires knowledge of C programming and Windows programming.

Custom Look & Feel

DASYLab offers users a wide range of options for designing a working environment that meets their own personal requirements. This applies to the user interfaces (called layouts) and user navigation in individual applications as well as to the reports and logs that can be generated.

Online visualization

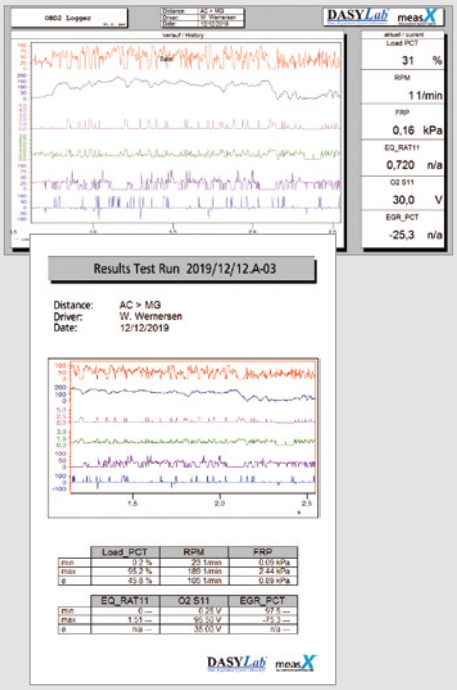
A wide range of control and display modules are available for interface design. These range from standard functions, such as the magnified display of graphical signal sequences, to color-coding of numerical values that violate defined limits.

You can quickly and easily configure all operating elements and display windows to meet your needs by positioning the visualization and control modules and providing them with texts and graphics. Using the integrated layout tool, up to 200 different layout pages can be defined and displayed in parallel on up to 16 connected monitors.

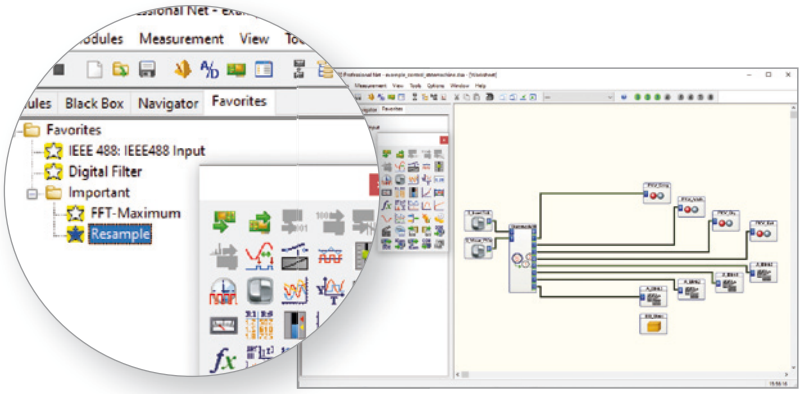
You can display your measured data as graphs using the writer, Y/t chart and X/Y chart modules. The table and digital instrument function blocks display the recorded data numerically. Freely scalable analog instruments, bar charts and state displays are especially suitable for presenting process and test controls.

Reports and documentation

DASYLab can also assist you in the professional presentation of your results. Log sheets and reports can be flexibly designed and configured.



You can adapt the printouts to your printer and have them output manually, triggered by events or after the measurement.



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Use the Favorites tab to store frequently used modules in a tree structure, which you can sort as required. The DASYLab module bar, which allows quick access to frequently used function modules, can also be configured individually.

The Right Version for Every Need

You can choose between four DASYLab program versions: In the Lite version, beginners will find all the basic functions they need for PC-aided data acquisition, and the Basic version offers extensive additional mathematical and statistical functions. The Full version provides all the major modules for solving basic analysis and automation tasks. Over and above this, the Pro version for professional use features even more analysis functions, the target value generator and network functionality. The Runtime version is also available and allows execution of existing circuit diagram files (.dsb) but no editing.

Lite

Lite version*
for beginners
Contains all the basic functions required for PC-aided measurement data acquisition.

* Restricted to 64 data channels

Basic

Basic version
With additional mathematical and statistical analysis functions.

Full

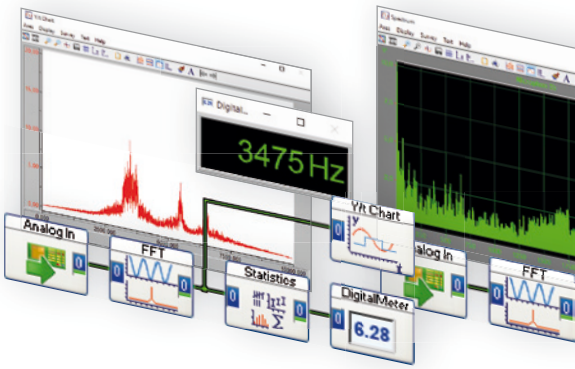
Full version
With additional modules for basic analysis and automation tasks.

Pro

Pro version
Also suitable for complex analysis, control and automation tasks.

Module group/ module	Lite	Basic	Full	Pro
Trigger				
Pre-/Post-Trigger	●	●	●	●
Start/Stop Trigger	–	●	●	●
Combi Trigger	–	●	●	●
Sample Trigger	–	●	●	●
Trigger on Demand	–	●	●	●
Relay	●	●	●	●
Block Relay	●	●	●	●
Mathematics				
Formula Interpreter	–	●	●	●
Arithmetic	●	●	●	●
Comparator	●	●	●	●
Trigonometry	–	●	●	●
Scaling	●	●	●	●
Differentiation/Integration	–	●	●	●
Logical Operations	–	●	●	●
Bit Mask	–	●	●	●
Flip Flop	–	●	●	●
Gray Code	–	●	●	●
Slope Limitation	–	●	●	●
Create Reference Curve	–	●	●	●
Display				
Y/t Chart	●	●	●	●
X/Y Chart	–	●	●	●
Chart Recorder	●	●	●	●
Polar Plot	–	●	●	●
Diagram	●	●	●	●
Analog Meter	●	●	●	●
Digital Meter	●	●	●	●
Bar Graph	●	●	●	●
Status Display	●	●	●	●
List	●	●	●	●

DASYLab comes with an interactive tutorial and more than 150 examples.



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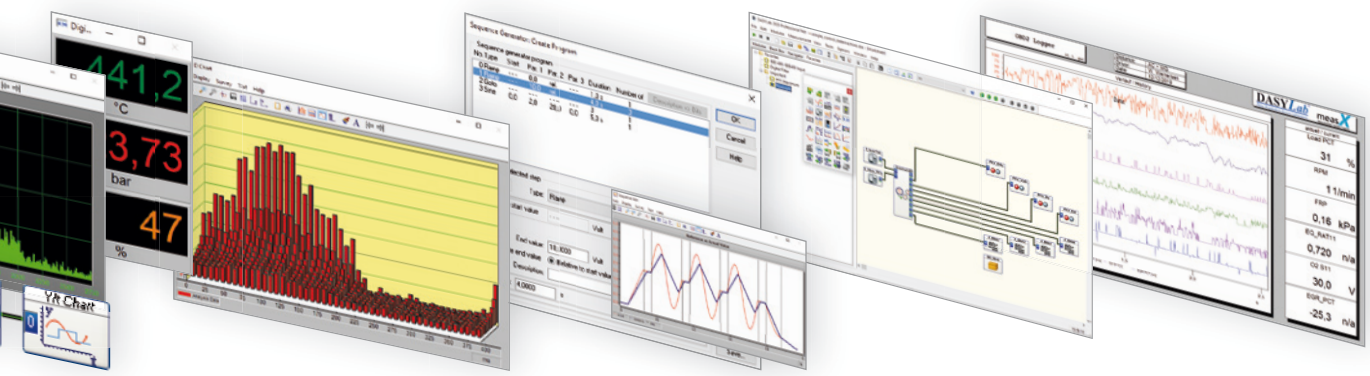
Module group/ module	Lite	Basic	Full	Pro
Signal Analysis				
Digital Filter	–	●	●	●
Correlation	–	●	●	●
Data Window	–	●	●	●
FFT	–	●	●	●
Polar/Cartesian	–	●	●	●
FFT-Filter	–	–	○	●
FFT-Maximum	–	–	○	●
nHarmonic	–	–	○	●
Electrotechnical Characteristics	–	–	●	●
Harmonic Distortion	–	–	●	●
Period Check	–	–	●	●
Third/Octave Analysis	–	–	○	●
Resample (Order Analysis)	–	●	●	●
Control				
Sequence Generator	–	–	○	●
Generator	●	●	●	●
Switch	–	●	●	●
Slider	–	●	●	●
Coded Switch	–	●	●	●
PID Control	–	●	●	●
Two-Point Control	–	●	●	●
Time Delay	–	●	●	●
Latch	–	●	●	●
Signal Router	–	●	●	●
TTL Pulse Generator	–	●	●	●
Stop	–	●	●	●
Read Global Variable	●	●	●	●
Write Global Variable	●	●	●	●
Write Block Time	●	●	●	●
State Machine	–	–	●	●

Module group/ module	Lite	Basic	Full	Pro
Statistics				
Statistical Values	–	●	●	●
Select Values	–	●	●	●
Histogram Classification	–	●	●	●
Rainflow Classification	–	–	○	●
Two Channel Classification	–	–	○	●
Regression	–	●	●	●
Counter	–	●	●	●
Pulse Analysis	–	●	●	●
Minimum/Maximum	–	●	●	●
Sort Channels	–	●	●	●
Check Reference Curve	–	●	●	●
Files				
Read/Write Data	●	●	●	●
Backup Data	–	–	●	●
ODBC Input/Output	–	–	●	●
Data Reduction				
Average	●	●	●	●
Block Average/Peak Hold	●	●	●	●
Separate	–	●	●	●
Multiplexer/Demultiplexer	–	●	●	●
Shift Register	●	●	●	●
Cut Out	–	●	●	●
Signal Switch	–	●	●	●
Circular Buffer	–	–	●	●
Network				
Net Input/Output	–	–	↔	●
Message Input/Output	–	–	↔	●
DataSocket Import/Export	–	–	●	●

Module group/ module	Lite	Basic	Full	Pro
Special				
Empty Black Box	–	●	●	●
Action	–	–	●	●
Message	–	–	●	●
E-mail	–	–	●	●
Time Base	–	●	●	●
Signal Adaptation	–	●	●	●
Create Script module	–	–	●	●
Flag Bender	–	–	●	●
Analysis Toolkit				
Convolution	–	–	○	●
Weighting	–	–	○	●
Transfer	–	–	○	●
Universal Filter	–	–	○	●
Save Universal File	–	–	○	●
Add-On Modules				
Human Vibration (ISO 8041)	–	–	△	△
Sound Level Meter	–	–	△	△
Sound Power Meter	–	–	△	△

Program Properties				
Sequencer	–	–	●	●
Number of layout pages	1	1	200	200

- ● Included
- – Not included or available
- ○ Included in additional analysis toolkit
- △ Available as optional add-on
- ↔ Available in NET add-on for the Full Version



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We can support you with practical services covering all aspects of DASYLab:

- Maintenance / updates / version management
- Technical support
- Commissioning
- Project implementation
- Integration with evaluation solutions (X-Frame, DIAdem, ...)
- Standard trainings, individual trainings

Would you like to find out more?
Just contact us.

measX GmbH & Co. KG
Trompeterallee 110
D-41189 Moenchengladbach

Tel.: +49 (0) 2166 9520-0
Fax: +49 (0) 2166 9520-20
info@measx.com, www.measx.com

Distributor:

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