DASYLab®

Data Acquisition System Laboratory

MEASUREMENT COMPUTING

Drag, drop, and connect function modules on the DASYLab Worksheet to interactively develop Windows-based applications with custom graphical user interfaces (GUIs) that acquire, display, and analyze data.

Features

- Easy-to-use icon-based programming environment
- Short user-learning curve
- Real-time acquisition, analysis, control, and display modules
- Layout windows for creating custom user interfaces and defining professional reports
- Display on up to 16 monitors
- Reusable code blocks created with the Black Box module

Supported Operating Systems

- Windows® 10/8.1/7 32/64-bit

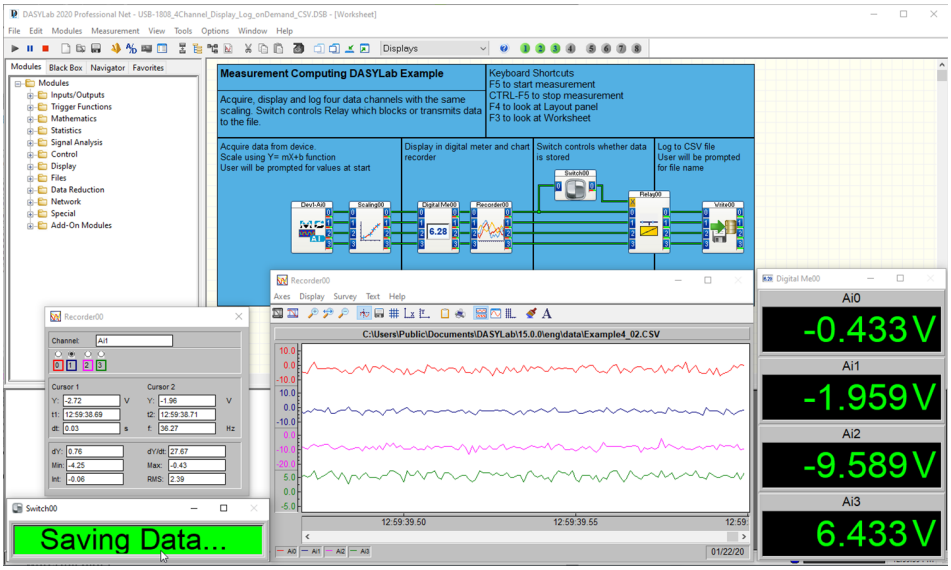
Supported Hardware

- Measurement Computing
- Data Translation
- and more

Overview

Rapidly changing measurement, control and regulation tasks require flexible systems. With the Windows-based DASYLab software, you can easily develop and deploy a wide range of applications in a very short time. Use DASYLab to interactively develop Windows-based data acquisition applications by simply connecting functional icons.

DASYLab offers real-time analysis and control, and the ability to create custom GUIs. Unlike other graphical programming environments which can require weeks of training to master, DASYLab has a very short learning curve. Many applications can be configured in a few minutes, rather than days or weeks.



Versatile and Flexible Software

DASYLab supports a variety of measurement testing and monitoring processes. A wide spectrum of analysis, control, and visualization modules are available for creating applications.

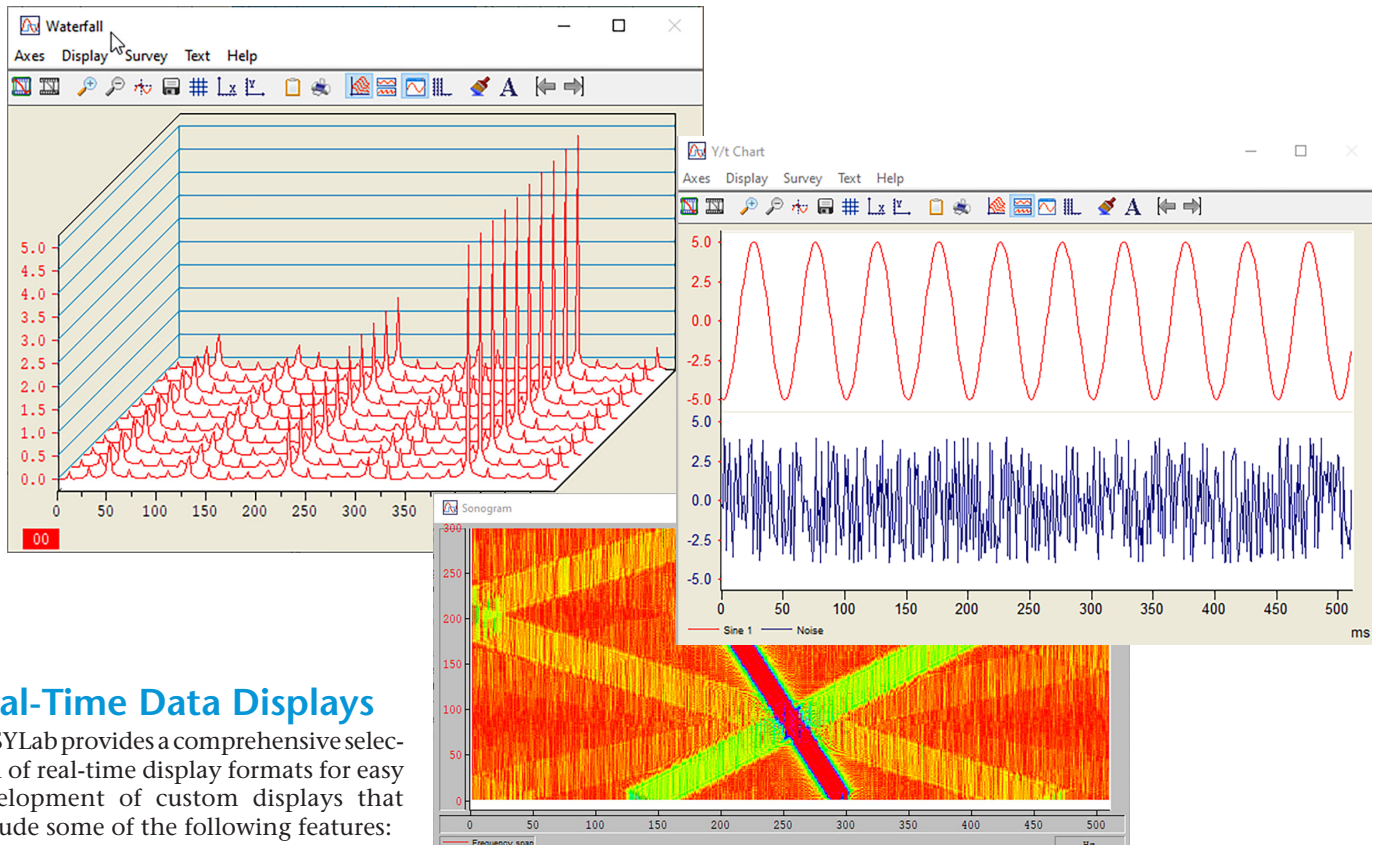
By combining various function modules, users can turn a computer into an oscilloscope, multimeter, or data logger and analyze different signal types.

Easy-to-Use Worksheet Elements

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 task in the worksheet and links them with other modules using connecting lines that represent the signal flow.

Connecting the modules requires very little effort – simply click and drag to wire them together or drag the output of one module to the input of another module.

Each module includes a Properties dialog box to easily configure the number of channels and other options of the function module.



Real-Time Data Displays

DASYLab provides a comprehensive selection of real-time display formats for easy development of custom displays that include some of the following features:

- **Limit and trend indicators**
- **Zooming and scrolling of waveforms**
- **Display overlapping traces**
- **Waterfall plots**

Powerful, Real-Time Data Analysis and Control

Real-time data analysis and control functions are available, including modules to perform the following operations:

- **n^{th} order Formulas**
- **FFTs**
- **Digital filtering**
- **Compute electrical characteristics**
- **Measure harmonic distortion**
- **Logical operations**

Control Sequencer

Use the Control Sequencer tool to supervise the execution of multiple worksheets based on user-defined conditions and events. Users can define multiple actions for each worksheet to control the flow of the application.

State Machine Module

The State Machine module implements sequences of operations in a much simpler way than previous DASYLab versions. Users define a sequence of steps with conditions for going from one step to the next and perform operations on outputs or variables based on these conditions.

With internal counters and adjustable timeouts for steps, users can set up sophisticated sequences more efficiently than combining several Action, Trigger, Relay, and Arithmetic modules to perform the same operations. Easily reorder steps, or insert, delete, or append steps at any position in the State Machine.

Layouts and Reports

Use layout windows to create clear and informative data presentations. Represent data in scope displays, numerical listings, chart recorders, or graphs by placing objects in the layout and connecting them to the worksheet modules. Add text or graphical elements to enhance the clarity and usability of an application. Integrated layout windows are available to create custom GUIs with screens that contain information pertinent to a specific test. Draw and place switches, charts, digital and analog indicators, text, and custom bitmap images.

A DASYLab Full or Pro application can contain 200 animated layout screens, and each screen can be dynamically activated based on prescribed conditions within a test or process using the Action module or the Key Actions dialog box.

Layout screens can be displayed on different monitors while keeping the main worksheet view visible on a separate monitor.

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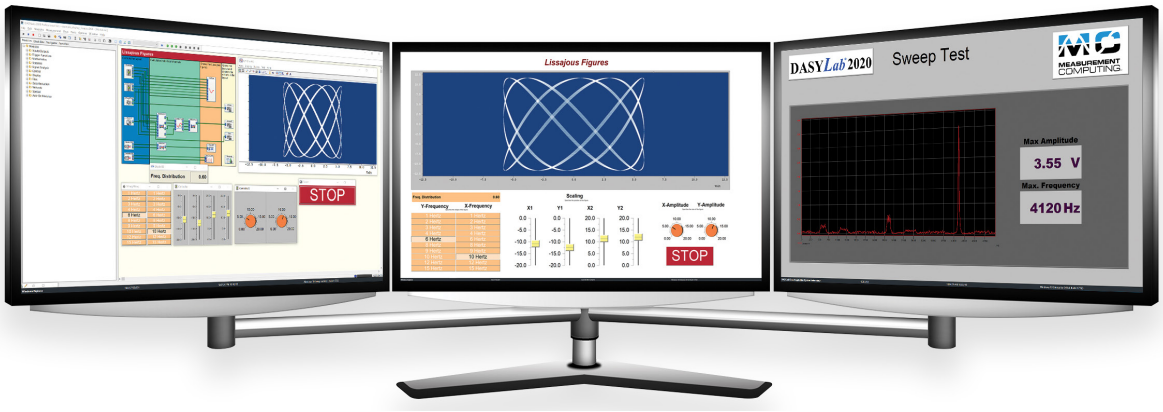

Combine display windows with text and graphics in a Layout page to design GUIs and reports. Users can create multiple customized layouts for visualization and documentation.

Linear and Angular Quadrature Encoder Support

DASYLab supports encoder mode on supported hardware to calculate the relative position of a quadrature encoder. Both angular and linear encoders are supported.

Phase A, Phase B, and Z Index are supported for each connected encoder. X1, X2, and X4 count modes are provided to count the encoder inputs. Debounce circuitry eliminates switch-induced transients that may occur with encoders. Refer to the device hardware manual for specific encoder information.

Flexible Data Storage Options

Store data in compact DASYLab binary format or choose from ASCII (CSV or Text) or NI TDM/TDMS formats to exchange data with other applications. Create a files series based on data size or events. Customize and standardize file names using multifile series and global strings to dynamically create the file name and path.

Optionally, store data to a supported ODBC database, such as Excel or SQL.

Custom Function Modules

Create your own module using the Python-based Script module. DASYLab supports Python 2.7.10 and many Python libraries in the public domain. Advanced programmers can use the same API that DASYLab developers use to write DASYLab modules in C/C++. Complete examples and documentation are included with the Extension toolkit.

Virtual Time Bases

Users can refer data sources such as a Switch, Slider, or Generator module to a virtual time base, and then change the synchronization to the real time base for all modules at once.

Extensive Hardware Support

DASYLab supports hardware drivers from over 20 vendors, including:

- Measurement Computing Corporation™ (MCC)
- Data Translation™
- IOtech
- National Instruments™ (NI-DAQmx, NI-XNET, NI-CAN and NI LIN)
- Omega™ Engineering (OMB/OM, Newport/Omega OMB Enhanced)
- DDE, OPC DA, EIP, MQTT, IEEE488 (GPIB), Modbus RTU/TCP-IP and RS232 modules are available to communicate with other programs and sensors

Help and Example Programs

The DASYLab Help provides information about the installed standard drivers and example programs.

Example worksheets demonstrate the working method of the modules in the data flow. Use these worksheets as templates when creating your own worksheets.

The *DASYLab: Data Acquisition, Controlling, and Monitoring* document installed with the software provides step-by-step instructions about performing various DASYLab tasks.

New in DASYLab 2020

- Multi-monitor layouts and better support for high-resolution monitors
- New modules: Block Relay and Flagbender
  - *Block Relay* only releases full blocks (Trigger Functions module group)
  - *Flagbender* manipulates channel flags on blocks (Special module group)
- New drivers: MQTT-Publisher/Subscriber and Ethernet/IP
- Various improvements with configuration, settings, and modules

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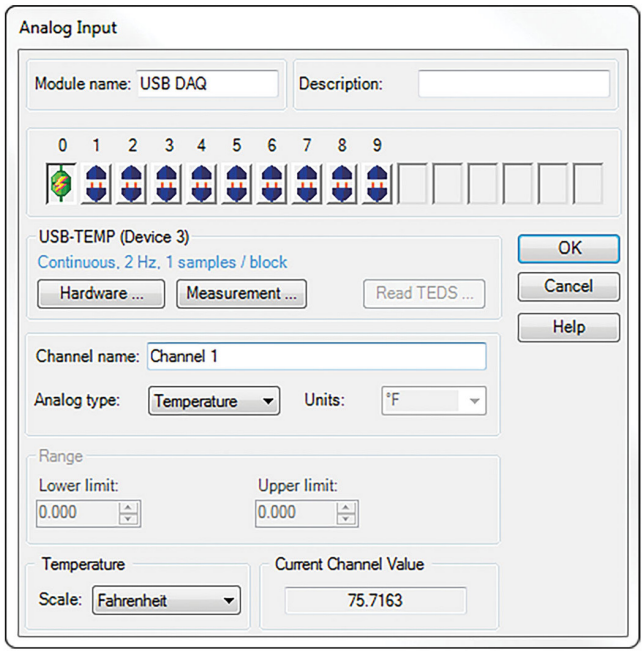
Measure, Display, and Control in 3 Easy Steps

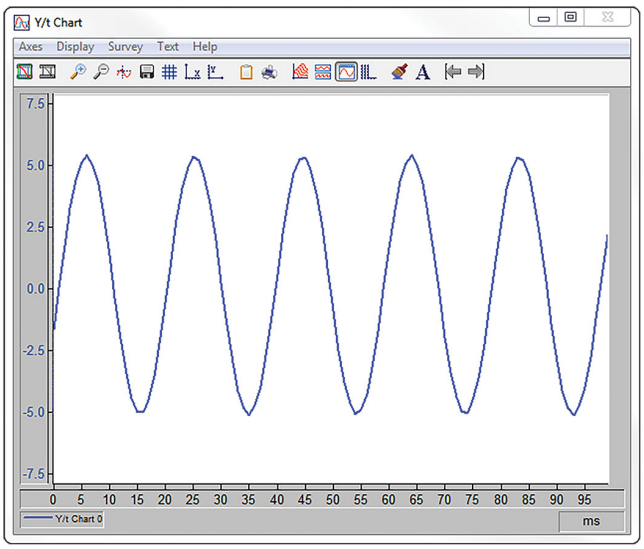
1. Select your MCC DAQ hardware.



Each module has an associated dialog box to configure options

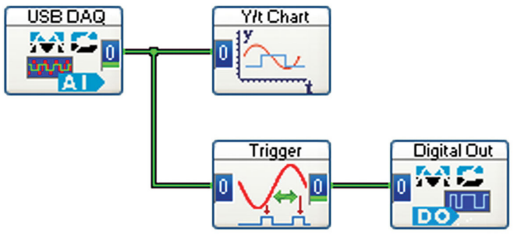
2. Add a display.

Connect a wire between inputs and outputs to link modules together

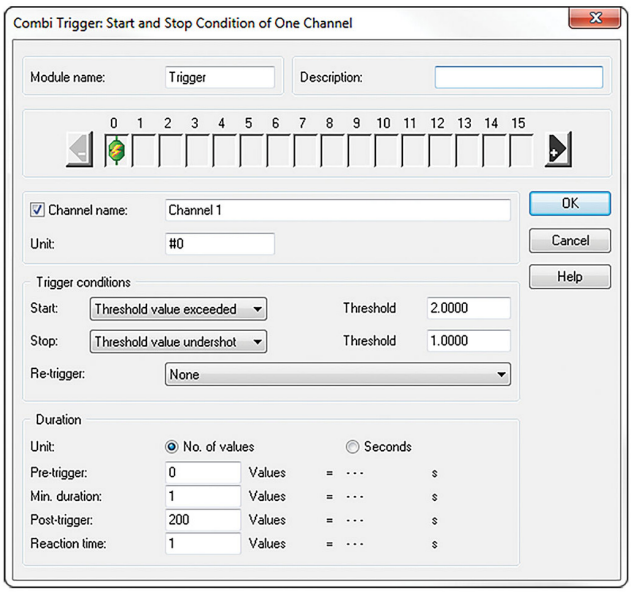


Real-time data appears on the display when you run the application

3. Add and configure a trigger and digital output, all *with no programming.*



Add additional modules and link them together to build your application



A variety of trigger modules are available to control the data flow in the worksheet. The Combi Trigger module dialog box is shown here

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Module Group	Lite	Basic	Full	Pro
Driver Inputs and Outputs				
DDE Input/Output	✔	✔	✔	✔
ICom TCP/IP				
Input	✔	✔	✔	✔
Output	✗	✔	✔	✔
IEEE488 (GPIB) Input/Output	✗	✔	✔	✔
IVI Instruments				
Counter	✔	✔	✔	✔
DC Power	✔	✔	✔	✔
DMM	✔	✔	✔	✔
Scope	✔	✔	✔	✔
Switch	✔	✔	✔	✔
ModBus Inputs and Outputs	✔	✔	✔	✔
OPC Input/Output	✔	✔	✔	✔
RS232/Serial				
Input	✔	✔	✔	✔
Output	✗	✔	✔	✔
Standard Drivers (Analog, Digital, Counter I/O)				
ADAM	✔	✔	✔	✔
Data Translation	✔	✔	✔	✔
EtherNet IP Input	✔	✔	✔	✔
InstruNet	✔	✔	✔	✔
IOtech	✔	✔	✔	✔
IXXAT CAN	✔	✔	✔	✔
Measurement Computing	✔	✔	✔	✔
Microstar Laboratories DAP DLL I/O (premium driver)	✗	✔	✔	✔
MQTT Publish and Subscribe	✔	✔	✔	✔
National Instruments NI-DAQmx/XNET/CAN/LIN	✔	✔	✔	✔
NuDAM	✔	✔	✔	✔
Omega Engineering	✔	✔	✔	✔
Vector CAN	✔	✔	✔	✔
Trigger				
Block Relay	✔	✔	✔	✔
Combi Trigger	✗	✔	✔	✔
Pre-/Post-Trigger	✔	✔	✔	✔
Relay	✔	✔	✔	✔
Sample Trigger	✗	✔	✔	✔
Start/Stop Trigger	✗	✔	✔	✔
Trigger on Demand	✗	✔	✔	✔
Mathematics				
Arithmetic	✔	✔	✔	✔
Bit Mask	✗	✔	✔	✔
Comparator	✔	✔	✔	✔
Create Reference Curve	✗	✔	✔	✔
Differentiation/Integration	✗	✔	✔	✔
Flip Flop	✗	✔	✔	✔
Formula Interpreter	✗	✔	✔	✔
Gray Code	✗	✔	✔	✔
Logical Operations	✗	✔	✔	✔
Scaling	✔	✔	✔	✔
Slope Limitation	✗	✔	✔	✔
Trigonometry	✗	✔	✔	✔

Module Group	Lite	Basic	Full	Pro
Statistics				
Check Reference Curve	✗	✔	✔	✔
Counter	✗	✔	✔	✔
Histogram Classification	✗	✔	✔	✔
Minimum/Maximum	✗	✔	✔	✔
Position in Signal	✗	✔	✔	✔
Pulse Analysis	✗	✔	✔	✔
Rainflow Classification	✗	✗	✗	✔
Regression	✗	✔	✔	✔
Select Values	✗	✔	✔	✔
Sort Channels	✗	✔	✔	✔
Statistical Values	✗	✔	✔	✔
Two Channel Classification	✗	✗	✗	✔
Signal Analysis				
Correlation	✗	✔	✔	✔
Digital Filter	✗	✔	✔	✔
Data Window	✗	✔	✔	✔
Electro Technical Characteristics	✗	✗	✔	✔
FFT	✗	✔	✔	✔
FFT Filter	✗	✗	✗	✔
FFT Maximum	✗	✗	✗	✔
Harmonic Distortion	✗	✗	✔	✔
nHarmonic	✗	✗	✗	✔
Period Check	✗	✗	✔	✔
Polar/Cartesian	✗	✔	✔	✔
Resample	✗	✗	✗	✔
Third/Octave Analysis	✗	✗	✗	✔
Control				
Coded Switch	✗	✔	✔	✔
Generator	✔	✔	✔	✔
Latch	✗	✔	✔	✔
PID Control	✗	✔	✔	✔
Read/Write Global Variable	✔	✔	✔	✔
Sequence Generator	✗	✗	✗	✔
Signal Router	✗	✔	✔	✔
Slider	✗	✔	✔	✔
State Machine	✗	✗	✔	✔
Stop	✗	✔	✔	✔
Switch	✗	✔	✔	✔
Time Delay	✗	✔	✔	✔
TTL Pulse Generator	✗	✔	✔	✔
Two-Point Control	✗	✔	✔	✔
Write Block Time to String	✔	✔	✔	✔
Display				
Analog Meter	✔	✔	✔	✔
Bar Graph	✔	✔	✔	✔
Chart Recorder	✔	✔	✔	✔
Diagram	✔	✔	✔	✔
Digital Meter	✔	✔	✔	✔
List	✔	✔	✔	✔
Polar Plot	✗	✔	✔	✔
Status Display	✔	✔	✔	✔
X/Y Chart	✗	✔	✔	✔
Y/t Chart	✔	✔	✔	✔

Module Group	Lite	Basic	Full	Pro
Files				
Backup Data	✗	✗	✔	✔
ODBC Input/Out	✗	✗	✔	✔
Read Data	✔	✔	✔	✔
Write Data	✔	✔	✔	✔
Data Reduction				
Average	✔	✔	✔	✔
Block Average/Peak Hold	✔	✔	✔	✔
Circular Buffer	✗	✗	✔	✔
Cut Out	✗	✔	✔	✔
Multiplexer/Demultiplexer	✗	✔	✔	✔
Separate	✗	✔	✔	✔
Shift Register	✔	✔	✔	✔
Signal Switch	✗	✔	✔	✔
Network				
DataSocket Export	✗	✔	✔	✔
DataSocket Import	✔	✔	✔	✔
Message Input/Output	✗	✗	✗	✔
Net Input/Output	✗	✗	✗	✔
Special				
Action	✗	✗	✔	✔
Black Box Export/Import	✗	✔	✔	✔
E-Mail	✗	✗	✔	✔
Empty Black Box	✗	✔	✔	✔
Flagbender	✗	✗	✔	✔
Message	✗	✗	✔	✔
Signal Adaptation	✗	✔	✔	✔
Script-based Module Packages	✔	✔	✔	✔
Script Creation/Editing/Packaging	✗	✗	✔	✔
Time Base	✗	✔	✔	✔
Add-On				
Block Weighting	✗	✗	✗	✔
Convolution	✗	✗	✗	✔
Save Universal File	✗	✗	✗	✔
Transfer Function	✗	✗	✗	✔
Universal Filter	✗	✗	✗	✔
Developer Features				
Control Sequencer	✗	✗	✔	✔
Number of Layouts	1	1	200	200

Legend

✔ - Included

✗ - Not Included

Notes

- DASYLab Lite is limited to a maximum of 64 data connection wires.
- Driver features vary by manufacturer and device.
- Software features may vary by country.

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DASYLab Versions

Choose from the four different DASYLab versions to get the exact features that you need. Includes most drivers; additional drivers are available from the device vendor.

DASYLab Lite

- Ideal for data logging and monitoring
- Includes basic function modules for creating a worksheet
- Supports 32 analog inputs and up to 64 worksheet wires
- Supports one layout window for advanced user display management or reporting

DASYLab Basic

- Supports unlimited worksheet wires
- Supports up to 256 analog inputs and one layout window
- Includes PID, Statistics, Formula, FFT, Filter and other analysis features
- Includes control functions, Two-point Control, Switch, Slider, Coded Switch, as well as flexible triggers and comparison modules

DASYLab Full

- Includes all standard modules (a base selection of Signal Analysis modules, all Action and Action-enabled modules)
- Supports up to 200 layout windows
- Includes the powerful Control Sequencer module for controlling a series of test worksheets

DASYLab Pro

- Includes the full set of modules – Control Sequencer, all signal analysis tools, the Sequence Generator, and all available add-on modules (without third-party modules)
- Includes the suite of Network modules

DASYLab Runtime

- Simplified user interface in which users can open a worksheet, load a sequence, operate a layout, and modify the window arrangement
- Use Runtime mode for projects in which users can implement but not change the application

Order Information

Part No.	Description
DASYLab LITE	Includes most drivers; comes without analysis, limited module count, and one layout window.
DASYLab BASIC	Includes all DASYLab Lite features plus standard analysis modules and unlimited module count.
DASYLab FULL	Includes all DASYLab Basic features plus standard modules, 200 layout windows, unlimited module count, and control sequencer.
DASYLab PRO	Includes all DASYLab Full features plus advanced signal analysis and control modules.
DASYLab RUNTIME	Users can run an existing worksheet application on an additional computer (with compatible hardware configurations).
DASYLab Training	MCC offers both scheduled training workshops at our Norton, Massachusetts, headquarters facility, and customized, on-site training at your plant. For more information: • Phone: 1-800-234-4232 • Email: training@mccdaq.com • Website: www.mccdaq.com/events.aspx

Free 28-Day Trial Available

Download a FREE 28-day trial version of DASYLab before purchasing from www.mccdaq.com/DASYLab