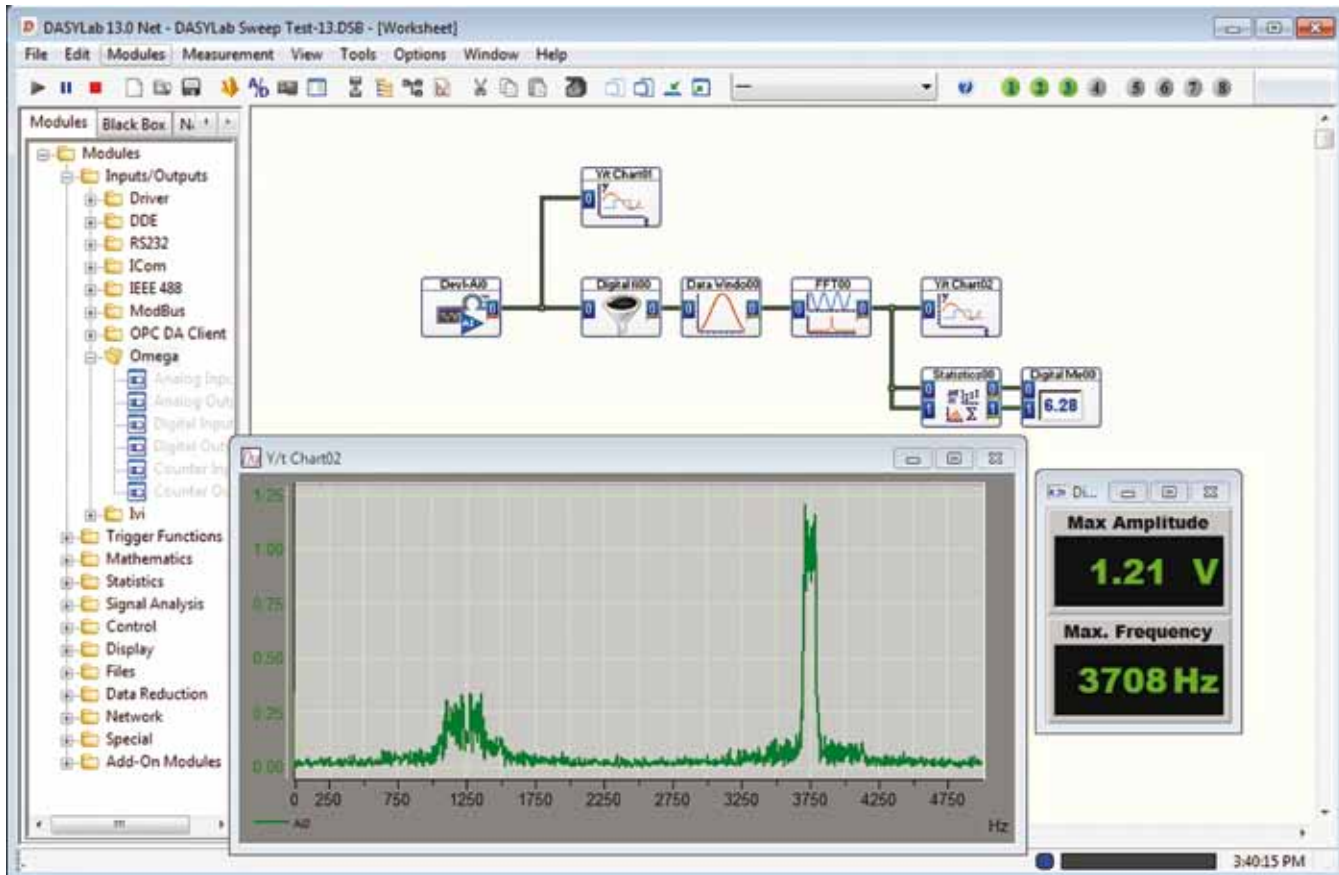# Data Acquisition System Laboratory

SWD-DASYLAB

✔ **Acquisition: Analog and Digital Input, Counters and Timers; RS232 and RS485, as well as IEEE-488 Instruments**

✔ **Control: Binary Logic, Status Display and PID Control**

✔ **Signal Generation: Used with DACs as a Programmable Function Generator and Simulations**

✔ **Analysis: Complex Real-Time Data Analysis**

✔ **Display Formats Include Strip Chart, Scope, Digital and Analog Meters**

✔ **Customized Reports and User Interface**

✔ **DDE and ODBC to Communicate with Other Programs**

✔ **DASYLab Plus Also Features Worksheet Test Manager, FFT and Filter Modules, and Action Modules for Event-Based Actions**

Solve Acquisition Problems in Just a Few Minutes

The easy-to-use DASYLab software helps you solve complex data acquisition and control scenarios easily and quickly by working with a flowchart directly on the screen. Module icons are placed on the screen and connected with wires in a schematic diagram, which represents the flow of data through the system. Each icon represents an input, operation or output function. Real-time acquisition rates of up to 800 KHz and on-line display of up to 300 KHz can be achieved.

The actual rates depend on the data acquisition board and other hardware used.

Acquisition, Control, and Analysis Modules

The versatility of DASYLab lies in its rich set of function modules. These include analog input (ADC), analog output (DAC), triggers, digital I/Os, function generators, action operation*, digital filters*, spectral/FFT analysis*, and mathematical, statistical and logical operations. Output modules allow for file writing, DDE output, and various types of displays, including strip charts, x-y graphs, digital and analog meters, and bar graphs. User definable icons include the ability to create a Black Box icon containing many icons, enhancing the usability for large worksheets. The module icons can be connected manually or, using the integrated Autorouter feature, wire paths will be determined automatically.

The Display

Results of acquisition and analysis can be displayed in strip charts, t-y graphs, and x-y graphs with a selectable system of coordinates. Linear, logarithmic, and polar coordinates are available. The results can also be displayed as bar graphs, analog and digital meters, and status lamps. The operator can interact with the displays while the system is running, changing the X, Y or time scales, selecting data channels to be displayed, or even looking back in time on the chart recorder. With DASYLab Plus, those changes to the displays can be done automatically based on system events.

Signal Generation

You can test your DASYLab flowcharts by using simulated signals from the signal generator by temporarily replacing the ADC icon with the signal generator. This, in combination with the mathematical functions, can be used to generate complex wave forms. In addition, a sequence generator is available that allows you to generate even more arbitrary functions, combining ramps and curves.

Control

PID control, and binary logic control can be defined using the module icons. Pulse generators can be used for exact time dependent control, even with complex control signals.

Events and Actions*

There are a class of modules that allow you to cause events in the system based on user action acquired or calculated data. These events can automatically cause certain action. Using the action modules, you can print a display window, change the characteristics of a display window, or even change the whole display. You can automatically notify the operator of problems and suggest remedies.

Saving and Loading Data

Data can be saved to disk in several formats via the file I/O icon. Importing of data from disk during a real-time run is also supported from files of several formats. Store and retrieve data from standard ODBC databases. Using the DDE (Dynamic Data Exchange) interface, DASYLab can act as a server, transferring data on-line to other DDE-compatible Windows programs.

Module	Lite	Basic	Full	Pro
Trigger Functions				
Pre/Post Trigger	•	•	•	•
Start/Stop Trigger	○	•	•	•
Combi Trigger	○	•	•	•
Sample Trigger	○	•	•	•
Trigger on Demand	○	•	•	•
Relay	•	•	•	•
Mathematics				
Formula Module	○	•	•	•
Arithmetic	•	•	•	•
Comparator	○	•	•	•
Trigonometry	○	•	•	•
Scaling	•	•	•	•
Differentiation/Integration	○	•	•	•
Logical Operations	○	•	•	•
Bit-Logic	○	•	•	•
Flip Flop	○	•	•	•
Gray Code	○	•	•	•
Slope Limitation	○	•	•	•
Reference Curve	○	•	•	•
Statistics				
Statistical Values	○	•	•	•
Position in Signal	○	•	•	•
Histogram	○	•	•	•
Rainflow	○	○	○	•
Two channel counting	○	○	○	•
Regression	○	•	•	•
Counter	○	•	•	•
PWM Analysis	○	•	•	•
Min/Max	○	•	•	•
Sort Channels	○	•	•	•
Check Reference Curve	○	•	•	•
Signal Analysis				
Filter	○	•	•	•
Correlation	○	•	•	•
Data Window	○	•	•	•
FFT	○	•	•	•
Polar/Cartesian	○	•	•	•
FFT-Filter	○	○	○	•
FFT-Maximum	○	○	○	•
nHarmonic	○	○	○	•
Electric Characteristics	○	○	•	•
Harmonic Distortion	○	○	•	•
Period Check	○	○	•	•
Third/Octave Analysis	○	○	○	•
Control				
Sequence Generator	○	○	○	•
Generator	•	•	•	•
Switch	○	•	•	•
Slider	○	•	•	•
Coded Switch	○	•	•	•
PID Control	○	•	•	•
Two-point Control	○	•	•	•
Time Delay	○	•	•	•
Latch	○	•	•	•
Signal Router	○	•	•	•
TTL Pulse Generator	○	•	•	•
Stop	○	•	•	•
Global Variable Read	•	•	•	•
Global Variable Set	•	•	•	•
Blocktime Info	•	•	•	•

Module	Lite	Basic	Full	Pro
Display				
Y/t Chart	•	•	•	•
X/Y Chart	○	•	•	•
Chart Recorder	•	•	•	•
Polar Plot	○	•	•	•
Analog Meter	•	•	•	•
Digital Meter	•	•	•	•
Bar Graph	•	•	•	•
Diagram	•	•	•	•
Status Lamp	○	○	•	•
List Display	•	•	•	•
Files				
Read Data	•	•	•	•
Write Data	•	•	•	•
Backup Data	○	○	•	•
ODBC Input	○	○	•	•
ODBC Output	○	○	•	•
Data Reduction				
Average	•	•	•	•
Block Average/Peak Hold	•	•	•	•
Separate	○	•	•	•
Merge/Expand	○	•	•	•
Shift Register	•	•	•	•
Cut Out	○	•	•	•
Time Slice	○	•	•	•
Circular Buffer	○	○	•	•
Network				
Net Import	○	○	○	•
Net Export	○	○	○	•
Message Import	○	○	○	•
Message Export	○	○	○	•
DataSocket Import	○	•	•	•
DataSocket Export	○	•	•	•
Special				
New Black Box	○	•	•	•
Export/Import Module	○	•	•	•
Action	○	○	•	•
Message	○	○	•	•
Send E-mail	○	○	•	•
Time Base	○	•	•	•
Signal Adaptation	○	•	•	•
Add-on Modules				
Convolution	○	○	○	•
Weight	○	○	○	•
Transfer	○	○	○	•
Universal Filter	○	○	○	•
Save Universal File	○	○	○	•

Program Options	Lite	Basic	Full	Pro
Control Sequencer	○	○	•	•
Number of Layout Windows	1	1	200	200

DASYLab Lite Version is restricted to 64 data channels

Legend	
Included in this version	•
Not included in this version	○

The chart above shows the versions and which modules are provided with each version

Module	DASY Lite	DASYLab	DASYLab Full	DASYLab Pro
Input Output				
Analog Input	•	•	•	•
Analog Output	•	•	•	•
Digital Input	•	•	•	•
Digital Output	•	•	•	•
Counter Input	•	•	•	•
Frequency Output	•	•	•	•
RS-232 Input	•	•	•	•
RS-232 Output		•	•	•
ICOM (TCP/IP) Input	•	•	•	•
ICOM (TCP/IP) Output		•	•	•
IEEE488 Input		•	•	•
IEEE488 Output		•	•	•
DDE Input	•	•	•	•
DDE Output	•	•	•	•
OPC DA Input	•	•	•	•
OPC DA Output	•	•	•	•

Controlling Your Test Sequence*
The Worksheet Test Manager allows you to control the sequence of tests, the order in which they are performed, and provides a high level view of the series of tests.

Analysis Toolkit Option*
Add a variety of high-end functions,including the Transfer Function, Octave analysis, Rainflow Statistical Analysis, and Setpoint/Sequence Generation

DDE IMPORT
Other programs such as Visual BASIC can control the DASYLab application by starting, pausing, and stopping the experiment.

RS232/RS485/OPC
Read data from a wide variety of instruments including scales, balances and data recorders.

HARDWARE SUPPORTED
CIO-CTR05/10, CIO-DAS08/16 family, CIO-DAS800/1400/1600, CIO-DAS6402, CIO-DAC family, CIO-DI024/48/96/192 family, CIO-DISO48, CIO-EXP16/32, CIO-DAS-TC, DRX series, PCI-DIO24/48/96 family, PCI-DAS08/1000/1200/1600/6402

family, PCI-DAS-TC, INET-100, INET-400 series, D1000/2000/3000/4000/5000/6000/8000 series, OMB-DAQBOOK family, OMB-TEMPBOOK-66, OMB-WAVEBOOK, DAQBOARD, OMB-DBK family, OMB-DAQ-54/55/56, OMB-DAQ-3000 series, OM-USB-1208FS, OM-USB-1208HS, OM-USB-1408FS, OM-USB-1608FS, OM-USB-1608G, OM-USB-TC, OM-USB-TEMP, OM-USB-2404, OM-USB-2404-UI, OM-USB-3100 and OMB-DAQ-2416 Series

DASYLab Lite
DASYLab Lite is an economical version of DASYLab that provides only the most basic functions and is limited to 64 data channels.
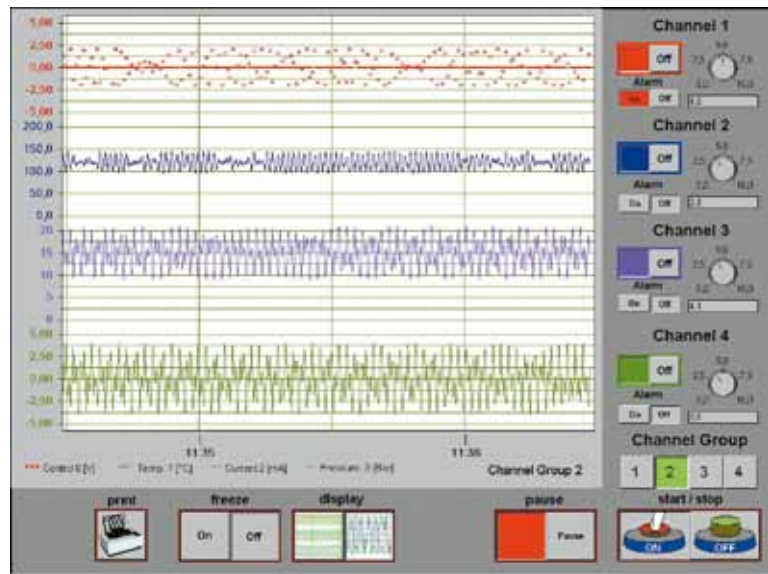
To Order

Model No.	Description
SWD-DASYLAB	DASYLab software
SWD-DASYLAB-PRO	DASYLab Plus with Analysis Toolkit
SWD-DASYLAB-FULL	DASYLAB Plus software, with realtime FFTs and filters, Actions, Worksheet Test Manager, 200 Layouts
SWD-DASYLITE	DASYLab Lite

Ordering Example: SWD-DASYLAB software.