Technical data sheet

STIEGELE
*Datensysteme GmbH*

MLab - Data acquisition and test rig control

MLab is a universal data acquisition program which can record, calculate, visualize and output data in real-time. Measurement data can be retrieved from different sources (analogue, digital, CAN, Ethernet ...). Leveraging some of the action modules that are available you may customize and facilitate your measurement task. If none of the available action modules meets your requirement, you may create your own extensions using TestControl, a process oriented macro language with a syntax that closely resembles 'C'
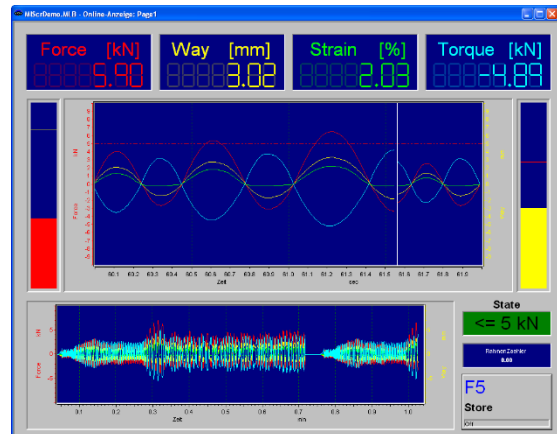
Features

General features

- ❑ Software program optimized for Windows 10 and 7, ready for 64-Bit Windows platforms
- ❑ Data capturing and output from any number of analogue and digital channels
- ❑ Hardware for data capturing: commercially available data capture and output cards and devices
- ❑ Supported interfaces: ISA, PCI, PCIExpress, USB, Firewire, serial port, PCM.
- ❑ Optional: CAB, ProfibusDP, InterbusS, Ethernet, SCSII.
- ❑ Support for external capturing units and measuring cards with electronic counters.
- ❑ Sample rate depends on the hardware and ranges from < 1Hz to > 1 MHz
- ❑ Localized software versions available in English, German and French

Parameter driven channel features

- ❑ Name of Dataset, Description, Unit
- ❑ Calibration via nodes or via coefficient and offset
- ❑ Delay for channels and sensors
- ❑ Grouping of channels
- ❑ Online-Calibration
- ❑ Comments and additional information
- ❑ Change of data format
- ❑ Default values for scaling and color of the graphical display
- ❑ Virtual channels: system variable, freely programmable variable, text variable

Data storage

- ❑ Storage of any number of channels in any number of data files

- ❑ Roll over data storage (post mortem). Storage capacity only limited by capacity of hard disk
- ❑ Pre-/ post trigger
- ❑ Individual measurement due to high measurement precision
- ❑ Online file change
- ❑ Manual and automated naming of data files
- ❑ Data reduction
- ❑ Labelling of single events or measurement ranges
- ❑ Recording of data characteristics

Graphical display

- ❑ Any number of graphical pages can be defined
- ❑ Graphical pages may contain any number of graphical objects like:
  - ❑ Time plots
  - ❑ y(x) charts
  - ❑ bar charts
  - ❑ output fields for numerical data
  - ❑ switches
  - ❑ vector diagrams
  - ❑ Objects for data input and interaction (numerical data, text, sliding controller)

Action list

- ❑ Programming language with a syntax closely resembling 'C'
- ❑ Use of all mathematical functions available for online calculations
- ❑ Loop and control structures (for, if, else ...)
- ❑ Additional commands for generation of setpoints

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Action modules

- ❑ Module for monitoring of limit values
- ❑ Timer module
- ❑ Module for data storage
- ❑ Module for data reduction:
  - ❑ Minimum, maximum, mean value and reduction of random sample (static & dynamic time frame)
  - ❑ Reduction of extreme value
- ❑ Table of measurements
- ❑ Log files
- ❑ Logic modules (AND, OR, NEG, FlipFlop etc.)
- ❑ Module for linearisation
- ❑ Module for smoothing
- ❑ Integration / Differentiation
- ❑ Counter module
- ❑ Trailing pointer

- ❑ Temperature module (Thermocouples and PT100(0))
- ❑ Optional: Calculation of hysteresis

Online calculation

- ❑ Arithmetical functions involving one or more datasets
- ❑ Easy and comfortable definition of formulae
- ❑ Numerical and Boolean operations:
  - ❑ Basic arithmetical calculations
  - ❑ Trigonometric functions
  - ❑ Logarithmic and exponential functions
  - ❑ Absolute value, rounding, signum function
  - ❑ Constants (Euler e, Pi)
  - ❑ Conversion of angular dimensions (Grad into RAD and vice versa)

Program options

Name	Description
Online-FFT	Analytical methods: amplitude spectrum, amplitude density, RMS spectrum, power spectrum density (PSD).
Classing methods	Random sample, exposure time, maximum value I/II/III, class pass.
One channel online rainflow classification	Online classification according to rainflow method.
Digital PID controller	Online PID Control
One channel set point output	Tests with multiple levels, reconstruction of measured and extreme values.
One channel set point reconstruction	One channel reconstruction of rainflow matrixes with residuum.
One channel set point correction	Correction of peak values for all peak value output module.
Output of MWave test programs	Execution of test programs designed inside the MWave editor.
Online analysis of strain gauge rosettes	Online strain gauge rosettes analysis
FIR filter	Online FIR filtering
TestControl extension	Adds support for the TestControl language to the MLab standard package
Video capture	Acquisition and storage of video sequences.
GPS assisted display of geographical position a map	Simultaneous display of measuring data and GPS position on a map.

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Driver options

Name	Description
Drivers for QICSpeed / MicroSAT	Drivers for connection to QIC-Speed / MicroSAT via serial port. Action module for tests for braking and acceleration
Drivers for CAN cards	Connection to CAN-driver systems manufactured by the companies Vector Informatik, Kvaser, Softing and Sorcus.
Drivers for QUASAR	Driver for QUASAR from the company CAEWEISZ / CAESAR
Drivers for MGC-Plus	TCP/IP-Drivers for MGC-Plus for data acquisition via Ethernet.
Drivers for DSA-Link	Drivers for DSA-Link
Drivers for HCE2	Drivers for connection to the electronic control unit HCE2 manufactured by the company Bosch REXROTH
DDI driver connection for InterbusS	Connection to Phoenix DDI driver for InterbusS
ProfibusDP driver connection	Connection to ProfibusDP-drivers for the DP cards 5611 and 5613 from Siemens 5611 and 5613 and to cards manufactured by Hilscher