m+p Analyzer
Dynamic Signal Acquisition and Analysis

The m+p Analyzer acquires multichannel FFT and time data while displaying the data in real time for general FFT analysis and optional structural analysis, rotating machinery, acoustics and many other advanced applications. Acquisition, analysis and reporting are integrated within a common user interface for ease of use, and requiring a minimum of training.

Key Features

- Real-time data acquisition, analysis and reporting in one package
- Wizard-driven set-up of all measurement parameters for quick and easy operation
- Free installation of the m+p Analyzer Viewer software to actively view/analyze data on any MS Windows/Office PC
- Supports a range of hardware front-ends for maximum system flexibility
  - 4/8-ch m+p VibPilot and m+p VibMobile for portable systems
  - m+p VibRunner with up to hundreds of input channels for highest lab performance
  - National Instruments acquisition hardware* (USB, Ethernet, Wifi, PCI and PXI modules)
  - Windows Audio devices
  - PCB 485B39 | Digital ICP® USB Signal Conditioner
  - Spectrum Instrumentation high-speed digitizers*

DSA Standard

Data Acquisition

- Multi-channel FFT and time history data acquisition
- Continuous or triggered measurements
- Peak and rms time history data reduction
- Real-time acceleration to velocity and displacement computations
- Display and storage of all intermediate results
- Repeated measurements using sequencing feature

Time History Recording

- Time recording to memory or file, limited to 2 MSamples per channel, max. 16 channels

Data Analysis

- High-resolution online FFT analysis using the 2D/3D viewers of the m+p Analyzer eReporter
- Copy & paste ActiveX elements to MS Word and PowerPoint
- Data import and export for *.UFF, *.SOT, *.TXT *.RPC III file format
- Data import for m+p VibControl file format
- User programming for automation of tasks

DSA Pro
includes all DSA Standard features plus:

Time Recorder

- Unlimited throughput to disk acquisition
- Typical throughput of 102 KSamples/second for 256 channels using standard PC hardware
- Online display of time or spectrum data while recording

Post-Processing

- Analysis of large measured or imported time data files
- Wide range of analysis functions with up to 128,000 spectral lines (FFT, PSD, FRF etc.)
- Automated, comprehensive test reporting using the Reporting Wizard
- All data import/export filters
- Calculator

DSA Add-Ons

- Real-time acoustic analyzer
- Additional input channel drivers
- Sound intensity measurement
- Temperature logging with NI 9211 or NI 9213/ 9217/9219

*Please contact your m+p international sales account manager for details on supported modules.

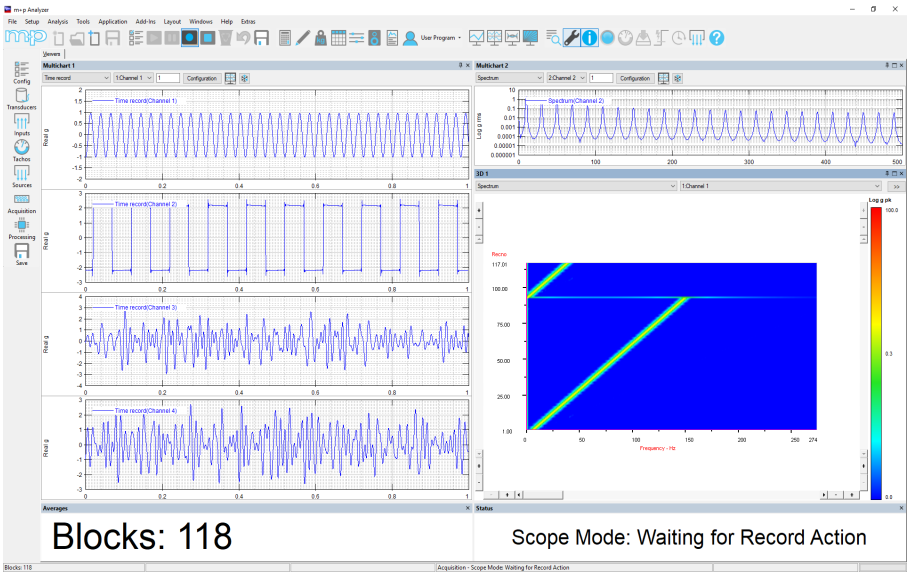
Applications

- Multichannel recording of vibration signals
- Rugged portable, mobile and stationary systems
- Online and offline analysis in the time and frequency domain

Overview

The Windows based Dynamic Signal Acquisition and Analysis software uses intelligent wizards that guide the user step by step through the process of data acquisition and analysis. Alternatively, the user can access any set-up menu directly for faster operation.

Data management is done with the central eReporter. For displaying data multiple 2D and 3D style viewers can be configured. The viewers are the same for both the acquisition and the analysis process. A 2D viewer can show single or multiple data records. The waterfall viewer's main purpose is to show time variances of multiple sequentially acquired data blocks. Both viewers offer a multitude of analysis functions like cursors, mathematical operations and data cuts. The Multi-Chart Viewer makes setting up chart displays very simple to operate: It allows from 1 to 64 charts to be included in one window with the user's preferred aspect ratio. Data can also be copied from the viewers and pasted to ActiveX applications like MS Word or PowerPoint, providing the same user interface in those applications.



Acquiring dynamic data

General Data Acquisition and Time Recording

Multichannel data can be acquired as blocks of data or as continuous time data streams. Blocks can be stored as single or averaged functions like spectrum, PSD etc. while time recording provides gap-free storage of time domain data. For time records above 2 MSamples data are stored directly to disk[1)].

Data can be viewed online or offline in user-configurable windows.

All intermediate results (calculated functions) can be visualized in real-time on any measurement channel. For instance this allows monitoring of time data, windowed time data, power spectra etc. while measuring a frequency response function. The calculated functions can also be saved. User-definable header information (metadata) can be entered and then be used as annotation in the 2D viewer during measurements or for offline analysis.

1) DSA Pro only

Acquisition Setup

The available parameter options are defined by the individual frontend specifications.

- Unlimited and freely definable list of user-specific header information (metadata) for annotation, data retrieval, sorting and reporting
- Simple parameter entry for the channels in tables including engineering units, transducer calibration data and inputs
- Channel type = excitation, response, inactive; DC or AC coupled; input range, offset, pregain, acoustical weighting; FIR weighting filters hand, arm, body, user defined
- Channel input = V, ICP, Bridge
- Enter transducer calibration data or import from Excel
- Source modes: random, burst random, periodic random, sine, stepped sine, burst sine, chirp, sine sweep, multiple level controlled fixed/swept sine and random
- Acquisition setup: sample rate or useful bandwidth, blocksize, arming
- Trigger modes: free run, source, channel, pos./neg. slope, zone entry/exit; level, pretrigger view up to 100%
- Data processing: time record, spectrum, autopower, crosspower, PSD, cross-PSD, FRF, coherence, autocorrelation, crosscorrelation, histogram, probability distribution, probability density, impulse response
- Averaging: none, linear, exponential
- Windows: Uniform, Hanning, Hamming, Flattop, user definable force and exponential
- Throughput to disk[1)]: total acquisition time, storage location on disk, throughput period
- Sequenced measurements over longer periods with defined measurement interval
- Auto-ranging: instant graphical feedback, automatic/manual ranging, range up only
- Overload handling: ignore, retry or break
- Save and recall measurement and display setups
- Save calculated functions
- Calibration: calibrate transducers and update calibration database, calibrate offset
- Tacho signal from analog inputs or dedicated tacho inputs

1) DSA Pro only

General Data Analysis

The m+p Analyzer DSA software supports a large number of analysis functions. The analysis functionality and the user interface are the same for acquisition and analysis. Data can be directly measured by the m+p Analyzer or imported from other systems. The m+p Analyzer allows interfacing with many third-party N&V data acquisition systems. Octave analysis, acoustic intensity analysis and sound quality are available as add-ons.

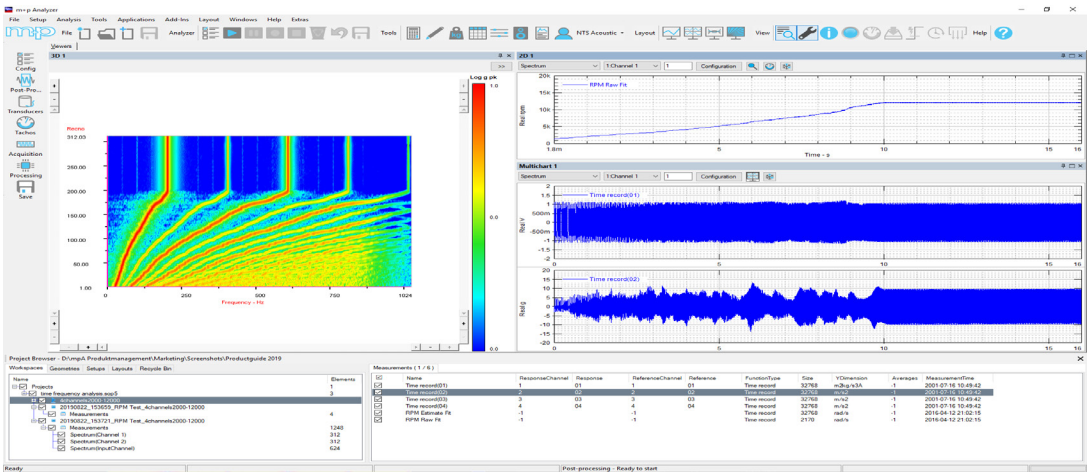
- High-resolution FFT analysis
- Copy & paste to ActiveX applications
- Data import/export

Analysis with the 2D Viewer

- Same display functionality online and offline
- Unlimited number of displays and number of traces per display
- Change appearance of chart, plot area, axes, grids, traces, cursors
- Add header information to display
- Y-axis type: real, imaginary, amplitude, phase, log, dB, real+imaginary, amplitude+phase, log+phase, dB+phase, Nyquist
- Y-axis scaling: autoscale, free, fixed, rms, peak, peak-peak with automatic data conversion
- X-axis type: lin, log, octave
- X-axis scaling: autoscale, free, fixed
- Data cursors
- Cursor functions: harmonic, nudge, seek to peak, seek to max, show value, show difference, RMS and Q factor calculation between/at cursor(s)
- Display calculator functions: acoustic weighting and unweighting, 1/1 and 1/3 octave, fft, integrate, differentiate, square root, orbit
- Tacho/frequency readout from time data
- Least squares fit analysis
- Amplitude distribution statistics: standard deviation, skewness, kurtosis
- Zooming, scrolling and rescaling with mouse, scroll mouse or keyboard entry
- Data cuts
- Export to clipboard for Excel import

Analysis with the 3D Viewer

- Same display functionality online and offline
- Unlimited number of displays and up to 1024 traces per display
- Change appearance of chart, plot area, axes, grids, traces, cursors
- Traces as line, plate, shaded plate, surface, shaded surface, bar, shaded bar, 2D color plot XZ and ZX, colors configurable
- XYZ cursors and harmonic cursors
- Y-axis: real, imaginary, phase, log, dB, rms, peak and peak-peak scaling
- X-axis: lin, log, octave, order
- Z-axis: rpm, time, order, Z, record number
- Zooming and rescaling with the mouse
- 3D viewer for analog tacho inputs on any number of channels for RPM spectral maps and manual order tracks.[1)]



2D and waterfall displays

Post-Processing[1)]

The additional Post-Processing function of the DSA Pro software provides the same advantages and functionality as the acquisition setup, with record size and sample rate being predefined.

- Simultaneous processing of multiple data sets (channel data)
- No limits on input sample rate, size or number of channels

1) DSA Pro only

Real-Time Acoustic Analyzer (DSA Add-On)

The DSA add-on Real-Time Acoustic Analyzer supports real-time octave analysis.

Acquisition Setup

- Time domain based octave analysis, compliant with ANSI S1.4 and IEC 61672
- Octave spacing: 1, 1/3, 1/6, 1/12, 1/24
- Internal or external A/B/C/D/Z weighting filters
- Start and stop frequency
- Response: fast, slow, impulse, custom, linear avg., LEQ
- Averaging: none, peak OASPL, peak bands, linear

Post-Processing[1)]

- Same as Acquisition, with record size and sample rate being predefined

Operating System

- Microsoft Windows 10 Pro 64 bit

1) DSA Pro only

ISO 9001 CERTIFIED

Germany
m+p international Mess- und Rechnertechnik GmbH
Phone: +49 511 856 03-0
sales.de@mpihome.com

United Kingdom
m+p international (UK) Ltd.
Phone: +44 1420 521222
sales.uk@mpihome.com

China
m+p international China Co., Ltd.
Phone: +86 512 6510 0765
sales.cn@mpihome.com

USA
m+p international, inc.
Phone: +1 973 239 3005
sales.na@mpihome.com

France
m+p international Sarl
Phone: +33 130 157874
sales.fr@mpihome.com

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