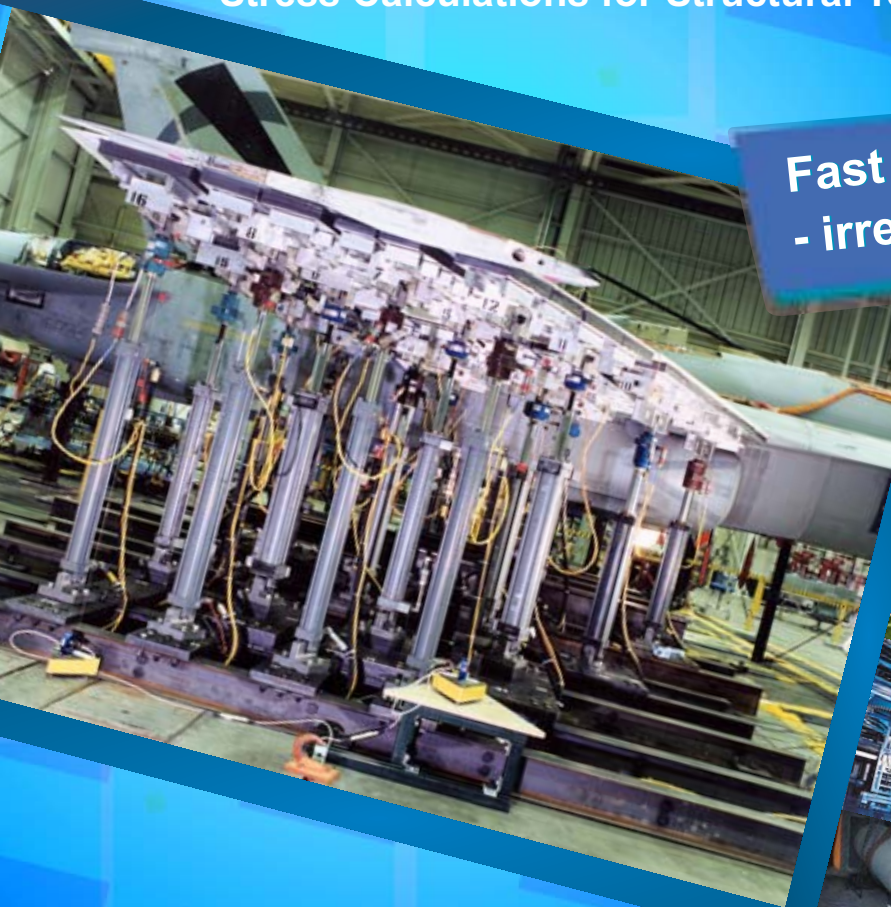


# Coda

## Continuous Data Acquisition, Signal Analysis and Process Monitoring

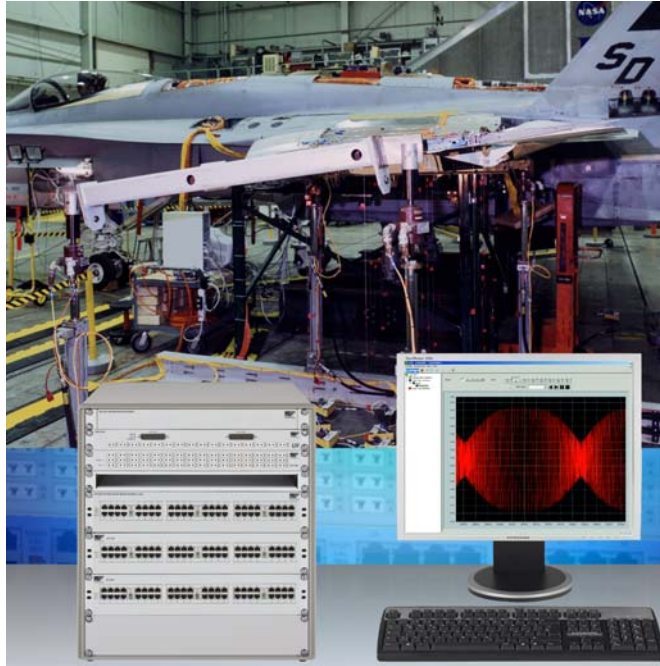
- Turnkey Software Solution
- Support of Powerful VXIbus and LXIbus Frontends for Measurements of Temperatures, Pressures, Forces, Accelerations, Frequencies, Strains, ...
- Excellent Data Handling Performance for High-Channel Count Applications
- Optional Strain Gage Measurements and Stress Calculations for Structural Testing

**Fast and Efficient Measurements  
- irrespective of the Channel Count**



# Coda

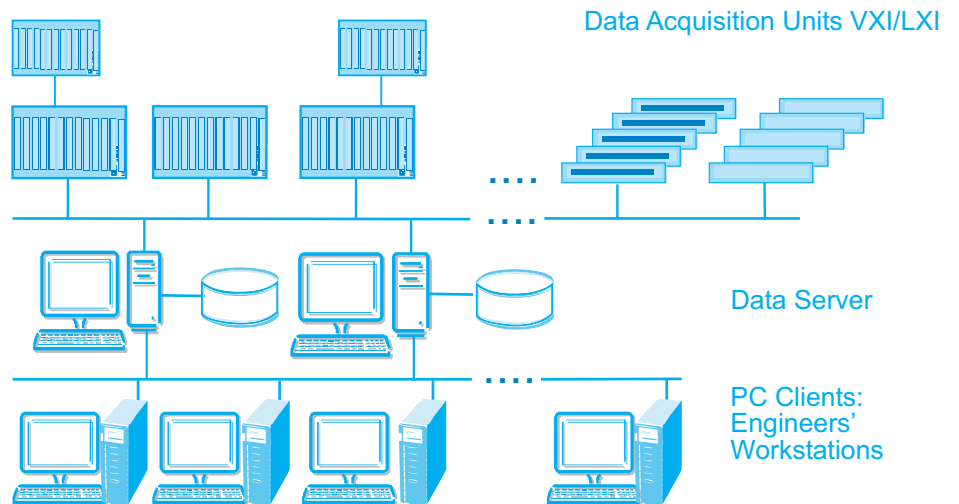
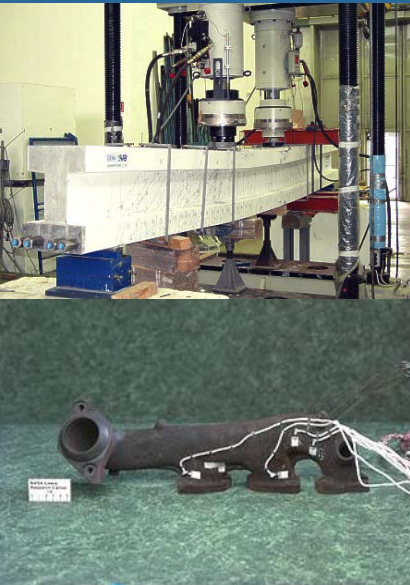
Coda is a universal, turnkey software platform for data acquisition, signal analysis and process monitoring. It provides quicker time to test by eliminating costly application programming and long learning curves through comprehensive out-of-the-box functionality. Equipped with an intuitive graphical user interface Coda supports measurement set-up with hundreds of channels within a few minutes.



Thanks to its modular structure and easy parameterization, Coda is the perfect solution for a wide range of applications:

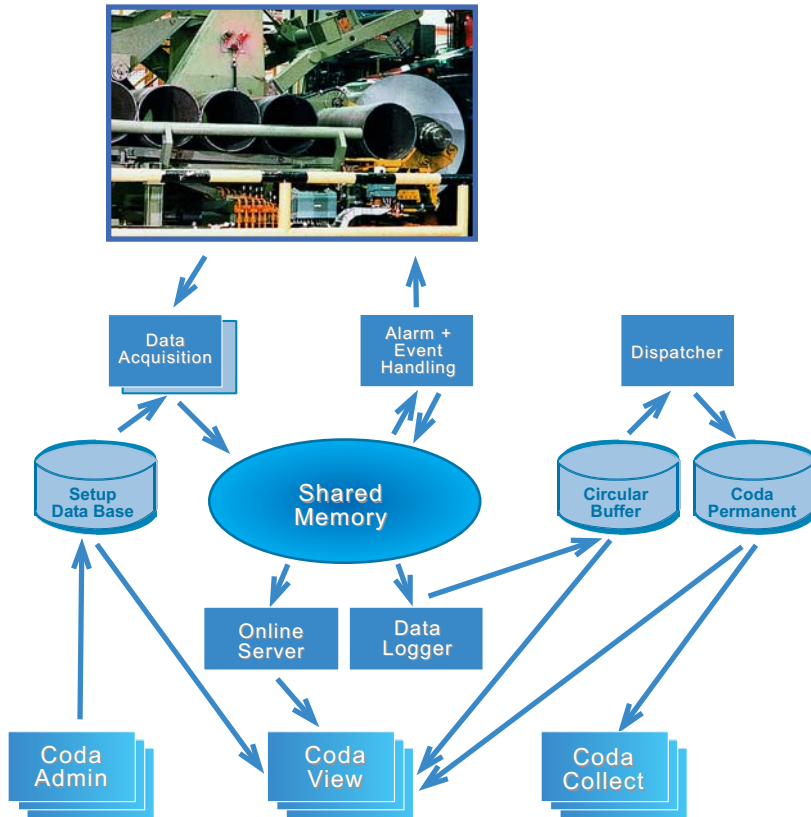
- general-purpose measurements on test stands and test assemblies
- continuous product and process data acquisition in production
- process monitoring in power plants, refineries, water or sewage works

Whether temperatures, voltages, pressures, forces, accelerations, frequencies, strains, etc. are to be measured – Coda processes all these signals without difficulty. Even high-channel count applications using hundreds of channels can be configured within a very short time and are handled safely and efficiently.



Static and dynamic structural tests, e. g. on aircraft or rail vehicles, are a specialty of Coda. Features include measurements with single- and multi-channel strain gages, real-time strain and stress calculations, limit checking and communication with the load control system.

As standard, Coda supports a wide range of VXIbus and LXIbus frontends which are ideally suited for many measurement tasks in industry and in the laboratory because of their performance, measurement accuracy and reliability. Special measurement instrumentation can be easily integrated and Coda also communicates with subordinate process computers for data transfer.

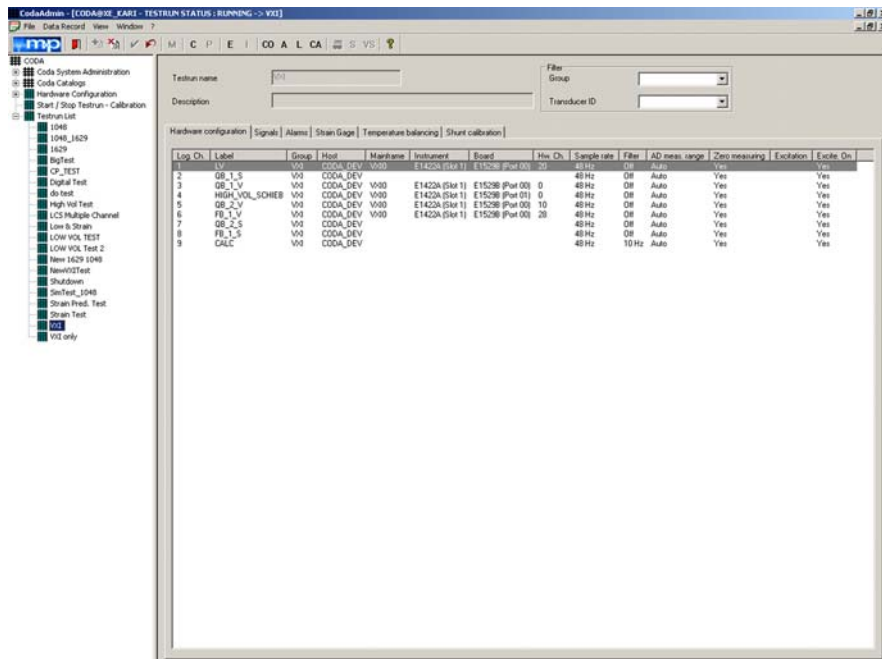


Coda stores and processes the acquired data in its uniform data model. Even different sampling rates for data groups or data acquired in an asynchronous way are permitted. As a rule, Coda stores the measured raw data to ensure access to the original data at any time. Key features such as client/server architecture, SQL data base for parameter management, automatic frontend identification, real-time analysis of virtual channels using user-specific mathematical functions, alarm functions with user-definable alarm actions specified for every channel, data replay or data export into common file formats ensure the economy and efficiency of every Coda project.

*Strain gage measurements on an ATV (Automatic Transport Vehicle) tank at EADS Deutschland GmbH, Ottobrunn/Germany*

# Main Software Modules

## CodaAdmin

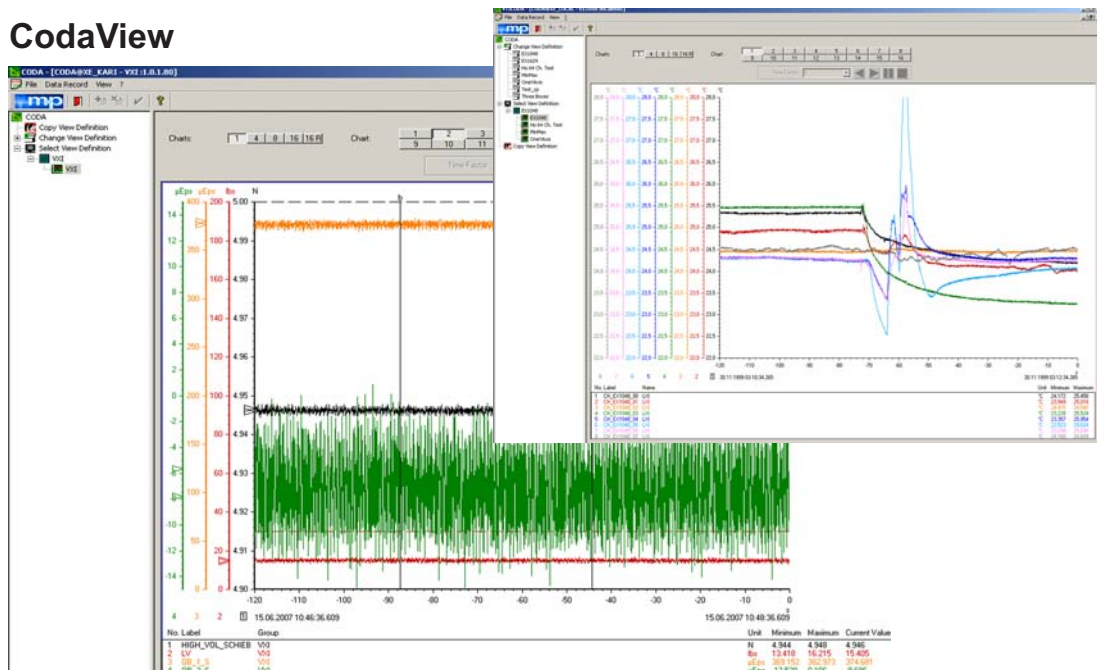


CodaAdmin is the core module of the Coda software system. It provides access to many of the key features such as:

- Automatic instrument identification

- Configuration of measurement hardware
- Administration of Coda system
- Definition of test runs
- Start/stop of test runs
- Hardware calibration, etc.

## CodaView

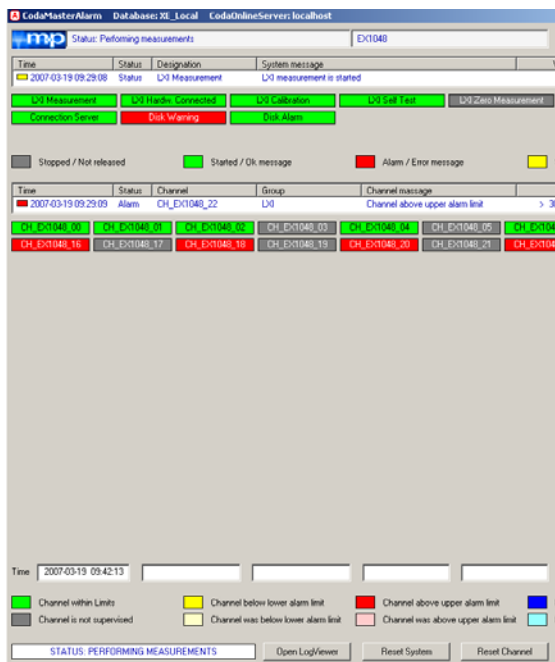


CodaView is used to display the channels in a multitude of ways:

- Individual graphical interfaces
- y/t or y/x diagram, bar chart, tachometer, digital numbers

- Marker, zoom functions, etc.
- Up to 64 traces per diagram
- Data replay

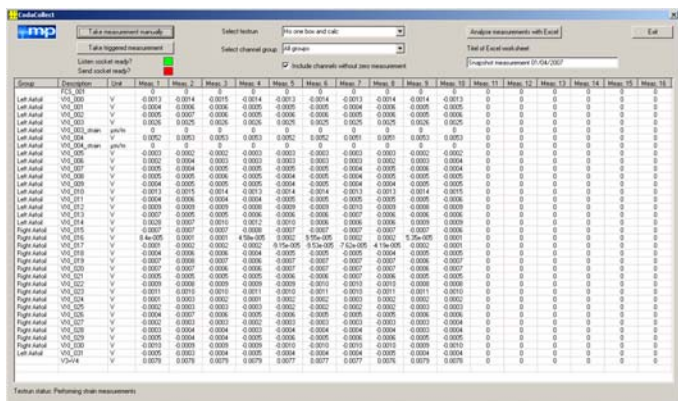
# CodaAlarm



CodaAlarm provides an overview of all active channels and their current status with regard to alarm limit violations:

- Alarm monitoring for general system components and for every channel
- Alarm events are entered into the logfile
- Clearly arranged window allowing the user to see the current status at a glance

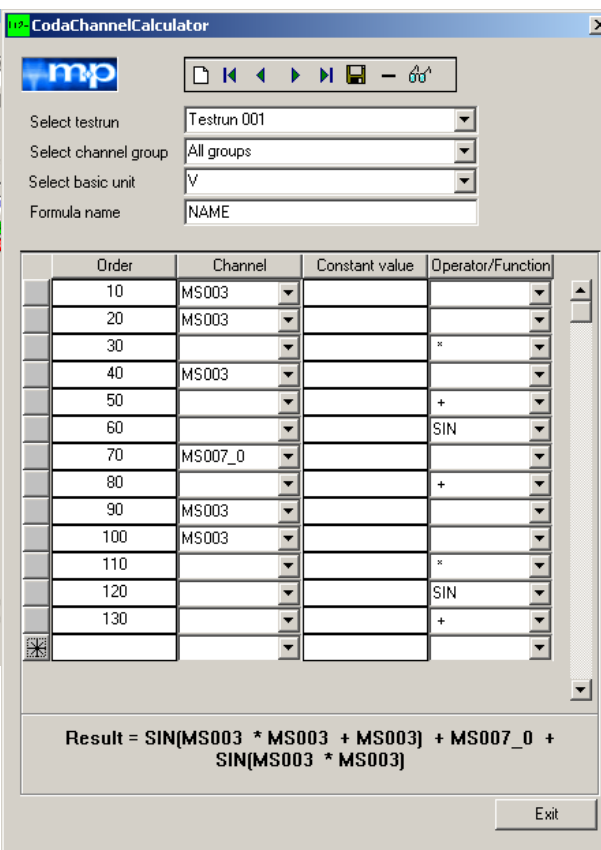
# CodaCollect



CodaCollect allows the user to take snapshots (or screenshots) of the data in digital form to store and output the complete screen:

- Snapshots of all measurement data or of a filtered group of data

# CodaChannelCalculator



CodaChannelCalculator is used to calculate virtual channels online:

- Calculated channels are handled and analyzed in the same way as the real channels
- Easy creation and combination of formulas based on “Reverse Polish Notation” (RPN)
- Large number of operators available such as +, -, \*, /, SIN, COS, TAN, ABS, SQR, ^2, ^3

- Unlimited number of snapshots per test run
- Manual/triggered
- Analysis in Excel spreadsheets

## Key Features

### ■ Scalable System for Hundreds of Channels

The scalable architecture of Coda makes this package ideal for any test size, from tens to hundreds of channels. Large channel count systems can be easily configured and are ready to test within a very short time.

### ■ Client/Server System

The powerful client/server architecture allows shared use of acquired data, enabling several clients to have concurrent online access for data display and analysis operations. The online server approach also ensures reliable data archival and retrieval with integrated error diagnostics to guard against connection and data access issues.

### ■ Intuitive Graphical User Interface

Coda runs in the familiar Microsoft Windows environment which means minimum operator training with easy and fast set-up, operation and analysis, thus leading to high-quality results quickly. It means that your time is focused on the task at hand, and not spent programming and debugging code. Channels – even if they are coming from different frontends – are displayed for set-up and analysis in uniform GUI's.

### ■ Database-Supported Management

All Coda configuration data are stored in a central SQL database enabling the user to easily change the complete set-up, e.g. the number of channels to be acquired and the number of instruments to be connected. In addition, the tree structure of the database helps to react to customer-specific requirements flexibly and at any time.

### ■ Automatic Instrument Identification

By a simple mouse-click, Coda is able to identify the connected measurement hardware. If supported by the hardware, Coda also identifies the number of connected channels.

### ■ Measurement Functions

Coda is capable of supporting ¼-, ½- and full-bridge configurations, rosette type sensors, standard thermocouple types (J, K, T, E, S, R, B, N, and user-definable) as well as voltage and current transducers. During the test run the relative zero point (or reference) of all or selected channels can be acquired at any time.



## ■ Data Storage

Powerful storage functions allow for comprehensive data management and temporary or permanent, pre-programmed or event-controlled data storage for all or selected channel groups. The storage capacity is only limited by the disk space. All configuration data are also stored and taken into account for further analysis. Also these configuration data can be saved on an external storage medium from which Coda can directly analyze them without having to re-import.

## ■ Event Handling

Coda gives the user full control over important events such as starting and stopping measurements, disturbances in the connected hardware and the server connections, residual storage capacity of the hard disk, etc. To ensure safe data acquisition, Coda provides limit checking and alarm monitoring on every channel. Alarm events are displayed in a separate window and entered into the logfile. It is also possible to set digital channels to generate direct actions in connected instruments.

## ■ Comprehensive Visualization

The measured values can be graphically displayed in a y/t- or y/x-diagram, as a bar chart or tachometer, or as digital numbers by a simple mouse-click. The time history is made convenient with stepless zoom and marker functionality. Up to 64 traces can be displayed in one diagram and up to 16 diagrams in a single window. The user can arrange the windows as desired on the screen both for real-time measurement and visualization. The visualization features also include linear/logarithmic representation and free selection of the graphical element colors. Data can also be displayed on multiple workstations.

## ■ Replay Function

The easy-to-use replay function with adjustable replay speed makes simulation and analysis much more convenient. All graphical online functions are available during the data replay.

## ■ Real-Time Mathematical Functions

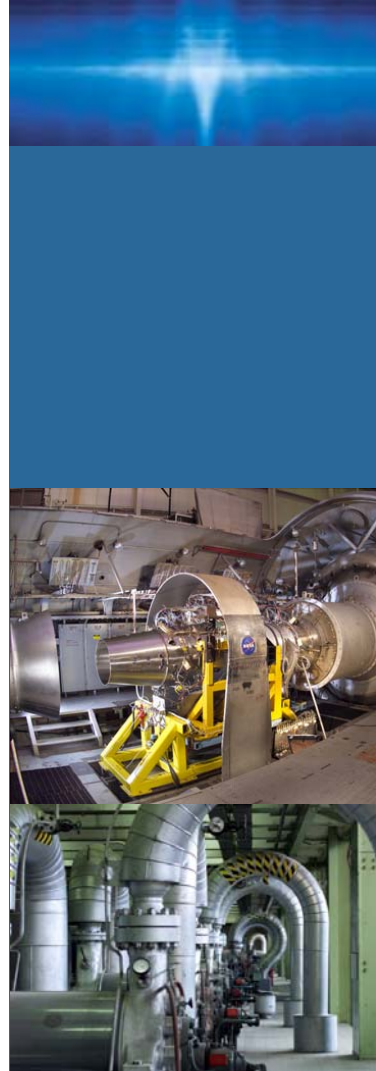
Coda supports diverse real-time mathematical functions to calculate virtual channels. These calculated channels are handled in the same ways as the acquired channels for analysis and reporting purposes.

## ■ Standardized Data Interfaces

Coda has standardized data interfaces which enable easy integration of different measurement devices, acquisition of data coming from process control systems (e.g. via LAN, FireWire, etc.) and synchronization of various data sources.

## ■ Data Export

The formatted data of selected or all channels can be easily exported into Excel, ASCII, MATLAB or other popular analysis packages.



## Coda Specifications

### Hardware Support

- VXI: VT1413B/C, VT1419A, VT1422A, VT1459A
- LXI: EX1000A/16A/32A/48A, EX1629
- Other hardware support on request
- Multiple client/server system configuration

### Measurement Setup

- Automatic instrument identification
- User authorisation management
- Catalogs for measurement dimension, engineering units, material properties
- User-definable channel groups
- Save/recall and copying of setups
- Export/import setups to/from Excel sheets
- Signal configuration with copy and auto-complete functionality
- Alarm monitoring for general alarms and per channel based on user-definable limit values with actions e.g. digital output, logging
- Shunt calibration and verification
- Temperature balancing
- Predicted strain limits
- Calculated channels
- Real-time strain and stress calculations
- Rosette type sensors

### Measurement Functions

- Manual start/stop of measurement
- Triggered start/stop
- Automatic zero setting
- Acquisition of relative zero points during test run
- Pre- and post-trigger for events

## Visualization Functions

- Preparing individual view definitions, copying of view definitions
- Digital/tabular displays
- Time history with marker and zoom functions
- x/y graph with marker and zoom functions
- Bar graph
- Tachometer
- Lin/log representation
- Up to 64 traces in one diagram
- Up to 16 diagrams per window
- Several windows
- Channel selection and changing in diagrams
- Data export to several data formats
- Log viewer
- Save and recall data
- Multi-workstation function
- Data replay, adjustable speed

### Options

- Snapshots in MS Excel
- Circular buffer
- Running average
- FFT computation/display



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