Direct Control of Data Acquisition Hardware
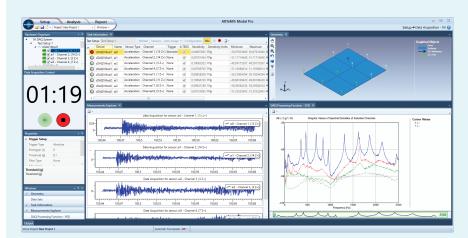
with ARTeMIS Modal

ARTeMIS Modal includes plugins that enable direct control of certain data acquisition hardware. This allows recorded measurements to be directly saved into the active project. Special measurement templates for Operational Modal Analysis (OMA) and Experimental Modal Analysis (EMA) are available.

Structural Vibration Solutions

Multi Setup Direct Measurement for OMA
ARTeMIS Modal communicates with the National Instruments API called NI-DAQmx, and all modules handled by this API can be used in ARTeMIS Modal. This example makes use of two 24-bit NI-9234 units each with 4 channels. As sensors eight B&K 4508b (100 mV/g) accelerometers have been used. Calibration information is automatically read from each sensors Transducer Electronic Data Sheet (TEDS).

No matter if it is an OMA or an EMA project being measured there are some general features available:

· Seamless integration with all other tasks in ARTeMIS Modal.
· Direct streaming of measurements to ARTeMIS Modal test setups.
· Supports IEPE sensors with or without Transducer Electronic Data Sheet (TEDS).
· Operations are shown on screen as well as orally informed.

Currently, the following hardware types can be directly controlled:
· National Instruments. All Sound and Vibration modules that supports the latest NI-DAQmx driver can be used.
· SINUS Messtechnik Gmbh. The following modules are supported: Apollo Box, Apollo Box Light, Soundbook, Apollo PCIe, Tornado, and Typhoon. SINUS driver version 6.0.24, which has the required 64-bit support and is able of reading TEDS information when available.

Time Series Measurements for Operational Modal Analysis
When using an OMA template project in ARTeMIS Modal, the Direct Data Acquisition plugin is optimized to measure and store the raw time series data.

Features summary:
· View acquired time series in real-time.
· On-the-fly calculation of auto spectral densities and singular value decomposition (SVD) of spectral densities of user-selectable channels.

· Recorded measurements of a test setup are stored to new data sets or optionally the current data set is overwritten.
· Multiple recording modes: Manual start/stop, predefined interval of time, triggered start, continuous recording with optional ring-buffer.
· Multiple triggers can be set up. Triggers can be an absolute level trigger, or relative Short Term Average over Long Term Average (STA-LTA) trigger.

Impact Testing Module for Experimental Modal Analysis
When using an EMA template project in ARTeMIS Modal with input set as Impact Hammer, the Direct Data Acquisition plugin is optimized for Impact Testing.

Features summary:
· Hammer Setup. Configure trigger level and pre-trigger time, frequency bandwidth, and force and response windows.
· Measurement sequence is automatically keeping track of number of impacts and current impact position.
· Double hit detection is available and by default active.
· Force and response measurements are shown in time domain, and in frequency domain as spectral densities.
· Frequency Response Functions (FRF's) using H1, H2 or Hv are also shown along with Coherence functions.
· Through the Manage Measurement Task, impacts, FRF's and Coherence functions can be viewed, enabled/disabled or deleted.
· FRF's can immediately be used by the modal estimation methods and be exported in Universal File Format.

ARTeMIS Modal – Direct Control of Data Acquisition Hardware

More information about ARTeMIS Modal/Direct Control of Data Acquisition Hardware is available on our website:
www.svibs.com/DirectDAQ