



Time History Processing

Overview

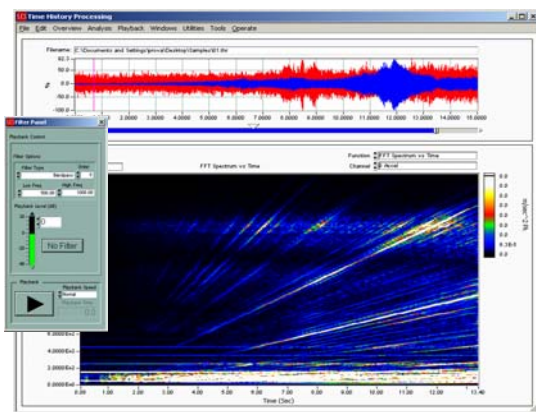
SCS9002W – Time History Processing is a comprehensive application for Time History Recordings and Post-processing. Born as a tool of the SCS9002W Quality Control package, it's now an independent application, for general purpose acoustic and vibration investigations, NVH studies, structural and rotating machinery analysis.

A specific utility has been developed for multichannel recording, calibration, input monitor, etc.

Once the time histories have been recorded, the user can postprocess them extracting time, frequency, or RPM related information's.

A "two layer" user interface architecture makes the software very easy to use.

Multiple time history processing, multiple data recall and display, playback and filtering, RPM extraction utilities, data import/export are available and extremely useful tools.



- Example of Spectrogram with Playback-Filter Panel -

Hardware Specifications

Computer

Standard configuration:

- Desktop Computer (various models)

Optional:

- Industrial Computer (various models)
- Notebook Computer.

Specification (minimum):

- Pentium II Processor, 400 MHz
- 62 MByte RAM
- Graphic board 600 X 800 resolution
- 10 GByte Hard Disk
- 1 PCI Slot available (Desktop and Industrial PC)
- 1 PCMCIA slot (notebook or Symphony based systems)
- Operating System:
 - Windows XP (Standard)
 - On request: Windows 98, NT or 2000

Acquisition Board (for data recording)

National Instrument DAQ Card (bus PCI or PC Card):

- 8 or 16 Analog Input Channels (multiplexed)
- Input range (software selectable): +/- 50 mV up to +/- 5 V
- 200 KHz aggregate Sampling Rate
- 16 Bit A/D Converter (Dynamic range: 85 dB typ.)
- Signal Generator (option).

National Instruments NI447x, Dynamic Signal Analyzers:

- 4 (PCI-4474) or 8 (PCI-4472) Input channels.
- Input Range: 10 V
- 20 KHz bandwidth with A-A filters and ICP support.
- 24 bit A/D Converter (Dynamic range: 85 dB typ.).

Other supported platforms:

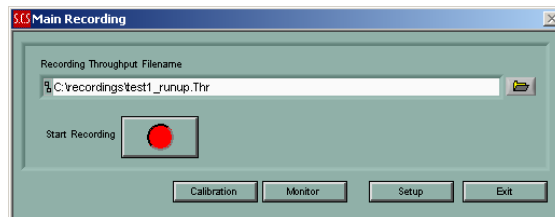
- 01dB Symphonie (2 channels DSP based).
- Audio devices (i.e. Digigram - contact SCS for details)

Software Specification

Recording

Multiple channel recording (up to 8 channels).

- Aggregate sampling rate: typ. 200 KHz (Hardware dependant: see acquisition board's specifications).
- Channel table: name, coupling, range, sensitivity, unit.
- Recording Parameters: sampling rate, max recording time, Hardware settings.
- Start condition: manual, RPM trigger (runup, rundown), input level trigger.
- Add RPM channel (analog input).



- Main Recording Panel -

Recording – Analyzer

Oscilloscope and analyzer for troubleshooting (oscilloscope like) and immediate averaged FFT, 1/1 and 1/3 octave acquisition, analysis. Acquisition results can be stored in a standard format for later review and comparison.

Recording - Calibration

A calibration utilities is available for calibrating sensors: the calibration level is calculated based on a known signal (typically generated thanks to a vibration or acoustic calibrator); if correct, the new EU/Volts calibration level is automatically and permanently stored in the recording configuration file.

Time History Processing

The user can switch at any time between two operating modes:

- Time history processing: a single multichannel recording is displayed on the upper window: the user can select a time subset, then in the lower window the analysis result is displayed, according to the selected function, in a 2D or 3D format. The results can be stored in a multiple record result file, for future analysis and comparisons with other recordings.
- Review: in this mode only pre-stored results (like FFT spectra or order levels), can be recalled, overlay, compared with other results. No time history data are displayed.

Main Available Functions

- Time History Range
- FFT Spectrum Average
- FFT Spectrum vs time
- Cepstrum Average
- RPM Vs. Time
- Order Spectrum Average
- Order Spectrum vs RPM
- Order Levels and Overall vs Time/RPM
- Level vs Time
- 1/1 and 1/3 Octave Spectrum with digital filters
- 1/1 and 1/3 Octave Band vs time
- Auto-correlation
- Cross-correlation
- Frequency Response Function
- Coherence
- Impulse Response
- Envelope

