Overview

An analysis of the signal paths can yield information about the dynamic system characteristics of a wide range of objects.

The System Analysis Module provides tools for system analysis: Transfer Function, Impulse Response, Coherence (partial and multiple Coherence for MIMO structural analysis), correlation analysis.

Features

- Expansion module of ArtemiS SUITE for the examination of dynamic system characteristics
- Auto Correlation / Auto Correlation vs. Time / Auto Correlation vs. Band
- Auto Spectrum / Auto Spectrum vs. Time
- Coherence / Coherence vs. Time / Coherent Spectrum
- Cross Correlation / Cross Correlation vs. Time / Cross Correlation vs. Band
- Cross Spectrum / Cross Spectrum vs. Time
- Impulse Response / Impulse Response vs. Time
- Multiple Coherence / Multiple Coherent Spectrum
- Partial Coherence / Partial Coherent Spectrum
- Transfer Function / Transfer Function vs. Time

Requirements

- ArtemiS SUITE Basic Framework (Code 5000)
- ArtemiS SUITE Basic Analysis Module (Code 5001)

Scope of Supply

- License file
  - ArtemiS SUITE System Analysis Module (Code 5015)
## Technical Data

### Transfer Function / Transfer Function vs. Time / Impulse Response / Impulse Response vs. Time
- **Reference Measurement:** Reference signal selectable
- **Channel By Channel:** Calculation of the input signal channel and the reference channel
- **Reference Channel Nbr:** Channel containing the reference signal selectable
- **Spectrum Size:** $2^8 - 2^{23}$
- **Window Function:** Rectangle / Hanning / Hamming / Blackman / Bartlet / Kaiser-Bessel
- **Overlap:** Selectable
- **Delay Compensation [ms]:** Selectable
- **Transfer Function Method:** H1 / H2
- **Smoothing:** Off / Octave - 1/24 Octave (Intensity Averaging / dB Averaging)
- **Minimal Coherence [%]:** Selectable
- **Coherence Frequency [Hz]:** Selectable
- **Impulse Response Window:** Off / Rectangle / Hanning / Rectangle / Hanning
- **Window Start [ms]:** Selectable
- **Window Length [ms]:** Selectable
- **Adapt Window Position:** Selectable
- **Averaging Time [s]:** Selectable
- **Max. Nbr of Time Values:** Selectable
- **Step Size [RPM, ...]:** Selectable

### Coherence / Coherence vs. Time / Coherent Spectrum / Multiple Coherence / Multiple Coherent Spectrum / Partial Coherence / Partial Coherent Spectrum
- **Reference Measurement:** Reference file selectable
- **Channel By Channel:** Calculation of the input signal channel and the reference channel
- **Reference Channel Nbr:** Channel containing the reference signal selectable
- **Spectrum Size:** $2^8 - 2^{23}$
- **Window Function:** Rectangle / Hanning / Hamming / Blackman / Bartlet / Kaiser-Bessel
- **Overlap:** Selectable
- **Delay Compensation [ms]:** Selectable
- **Averaging Time [s]:** Selectable
- **Non Coherent:** The non-coherent spectrum is calculated
- **Max. Nbr of Time Values:** Selectable
- **Remove Channels:** Selectable

### Auto Correlation / Auto Correlation vs. Time / Auto Correlation vs. Band
- **Spectrum Size:** $2^8 - 2^{23}$
- **Overlap:** Selectable
- **Circular Correlation:** Periodic signals / Pseudo-Noise
- **Envelope:** The envelope of the function is displayed
- **Normalize:** The signal power is normalized to the value 1
- **Bands:** 1/3 Octave / Octave / Critical Bands
- **Frequency Range [Hz]:** Selectable

### Cross Correlation / Cross Correlation vs. Time / Cross Correlation vs. Band
- **Reference Measurement:** Reference signal selectable
- **Channel By Channel:** Calculation of the input signal channel and the reference channel
- **Reference Channel Nbr:** Channel containing the reference signal selectable
- **Spectrum Size:** $2^8 - 2^{23}$
- **Overlap:** Selectable
- **Bands:** 1/3 Octave / Octave / Critical Bands
- **Frequency Range [Hz]:** Selectable
- **Circular Correlation:** Periodic signals / Pseudo-Noise
- **Envelope:** The envelope of the function is displayed
- **Normalize:** The signal power is normalized to the value 1

### Auto Spectrum / Auto Spectrum vs. Time
- **Spectrum Size:** $2^8 - 2^{23}$
- **Window Function:** Rectangle / Hanning / Hamming / Blackman / Bartlet / Kaiser-Bessel
- **Overlap:** Selectable
- **Phase Calculation:** Selectable
- **Amplitude Scaling:** RMS / Peak
- **Averaging Time [s]:** Selectable
- **Max. Nbr of Time Values:** Selectable

### Cross Spectrum / Cross Spectrum vs. Time
- **Reference Measurement:** Reference signal selectable
- **Channel By Channel:** Calculation of the input signal channel and the reference channel
- **Reference Channel Nbr:** Channel containing the reference signal selectable
- **Spectrum Size:** $2^8 - 2^{23}$
- **Window Function:** Rectangle / Hanning / Hamming / Blackman / Bartlet / Kaiser-Bessel
- **Amplitude Scaling:** RMS / Peak
- **Averaging Time [s]:** Selectable
- **Max. Nbr of Time Values:** Selectable

### Available for all Analyses
- **Representation Settings:** Individual scaling of the axes in the analysis result
- **Add Tolerance Scheme:** Display of tolerance curves with tolerance test of the analysis result
- **Cuts:** Extracting of 2D curves from the three dimensional spectrum (Cut Mode: First Abscissa / Second Abscissa / Free selectable cuts)

### Single Values
- **Available for all 2D analyses as well as for 3D analyses that have been reduced to two-dimensional curves using cuts.
- **Only Single Values as Result:** Selectable
- **Abscissa Range:** Selectable
- **Options:** Average / Sum / Min / Max / Percentile
- **Definition of threshold values for whose compliance the determined single values shall be tested for.
- **Quantity:** Selectable
- **Unit:** Selectable