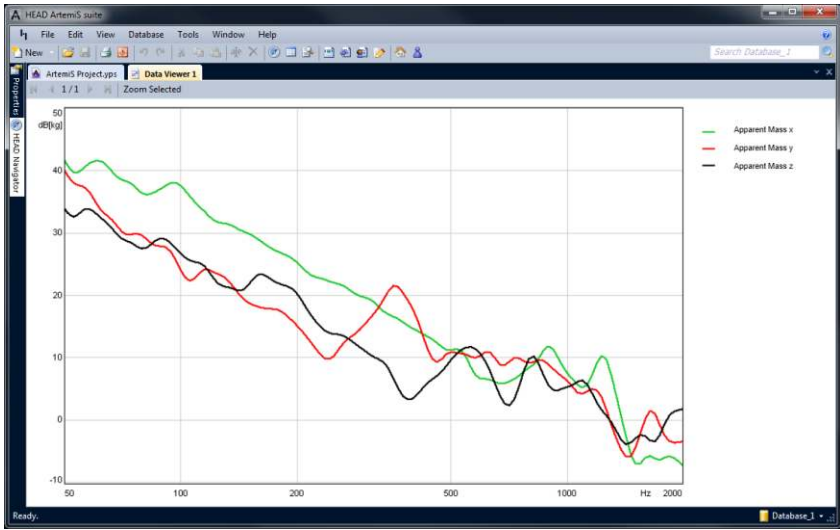


**DATA SHEET**

**ArtemiS SUITE System Analysis Module (Code 5015)**

ArtemiS SUITE Module for the examination of dynamic system characteristics

**Overview**  
The System Analysis Module allows the analysis of the signal paths to yield information about the dynamic system characteristics of objects. Therefore the System Analysis Module provides the analyses transfer function, impulse response and coherence.



**Features**

- The expansion module of the ArtemiS SUITE for the examination of dynamic system characteristics includes the analyses:
  - Transfer Function
  - Impulse Response
  - Coherence
- Calculations between two channels of an input signal or between an input signal and a reference signal
- Examination of system characteristics
- Structural analysis
- Transfer behavior of signal paths
- In addition to the analyses included in the System Analysis Module of the ArtemiS SUITE, ArtemiS 12 provides the analyses of the System Analysis Module (ATP 05)

**Requirements**

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

**Identification**

Transfer Function

Reference Measurement

Channel By Channel

Reference Channel Nbr: 1

Overlap [%]: 0

Delay Compensation [ms]: 0

Spectrum Size: 8192

Window Function: Rectangle

Transfer Function Method: H1

Smoothing: Off

**Frequency Range**

Min Frequency [Hz]: 20

Max Frequency [Hz]: 20000

**Coherence**

Minimal Coherence: 0

Min Coherence Frequency [Hz]: 0

Max Coherence Frequency [Hz]: 20000

**Impulse Response Window**

Imp Rsp Window: Off

Window Start [s]: 0

Window Length [s]: 0.02

Adapt Window Position

Property page of the analysis Transfer Function

## Analysis Pool

### Transfer Function / Impulse Response

Reference Measurement:	The file containing the reference signal is selectable
Channel By Channel:	The result is calculated between each channel of the input signal and the matching channel of the reference signal
Reference Channel Nbr:	The channel containing the reference signal is selectable
Overlap:	Selectable
Delay Compensation (ms):	Selectable
Spectrum Size:	$2^8 - 2^{23}$
Window Function:	Rectangle / Hanning / Hamming / Blackman / Bartlet / Kaiser-Bessel 8 - 16 / Flat-top / Gauss 8, 16, 32
Transfer Function Method:	H1 / H2
Smoothing:	Off / Octave - 24th Octave (Intensity av. / dB averaging)
Min. Frequency (Hz):	Selectable
Max. Frequency (Hz):	Selectable
Min. Coherence:	Selectable
Min. Coherence Freq. (Hz):	Selectable
Max. Coherence Freq. (Hz):	Selectable
Impulse Response Window:	Off / Rectangle / Hanning/Rectangle / Hanning
Window Start (s):	Selectable
Window Length (s):	Length of the window in ms
Adapt. Win. Pos:	Selectable
Envelope	
(Impulse Response):	The envelope of the impulse response is calculated by Hilbert transform

### Coherence

Reference Measurement:	The file containing the reference signal is selectable
Channel By Channel:	The result is calculated between each channel of the input signal and the matching channel of the reference signal
Reference Channel Nbr:	The channel containing the reference signal is selectable
Overlap:	Selectable
Delay Compensation [ms]:	Selectable
Spectrum Size:	$2^8 - 2^{23}$
Window Function:	Rectangle / Hanning / Hamming / Blackman / Bartlet / Kaiser-Bessel 8 - 16 / Flat-top / Gauss 8, 16, 32

**ATP 05 (Code 5015)**

**ArtemiS System Analysis Module**

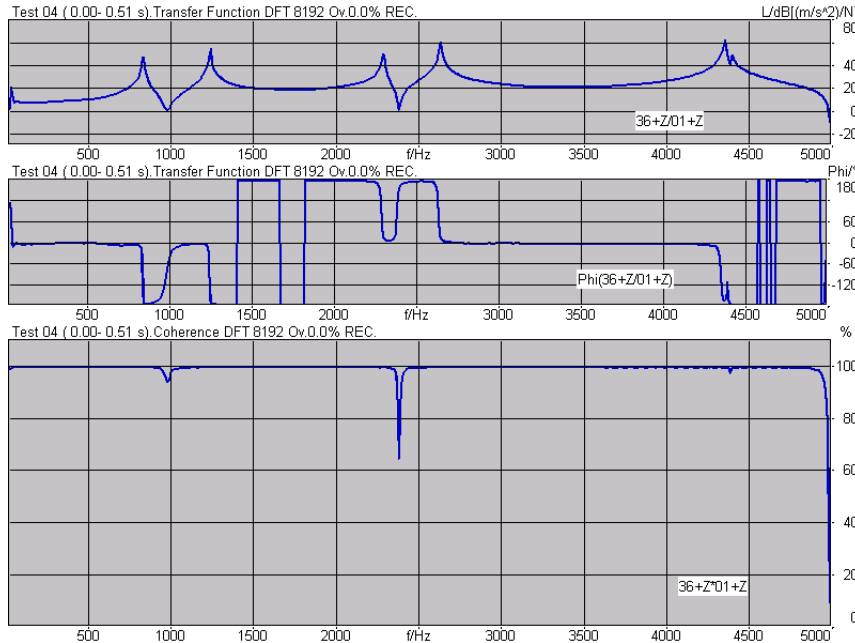
for the examination of dynamic system characteristics

ASM 15 (Code 5015) of the ArtemiS SUITE includes ATP 05.

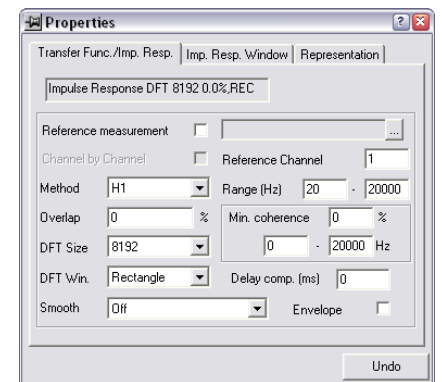
**Overview**

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

ATP 05 provides tools for system analysis: transfer function, impulse response, coherence, and correlation analysis



Transfer function and Coherence



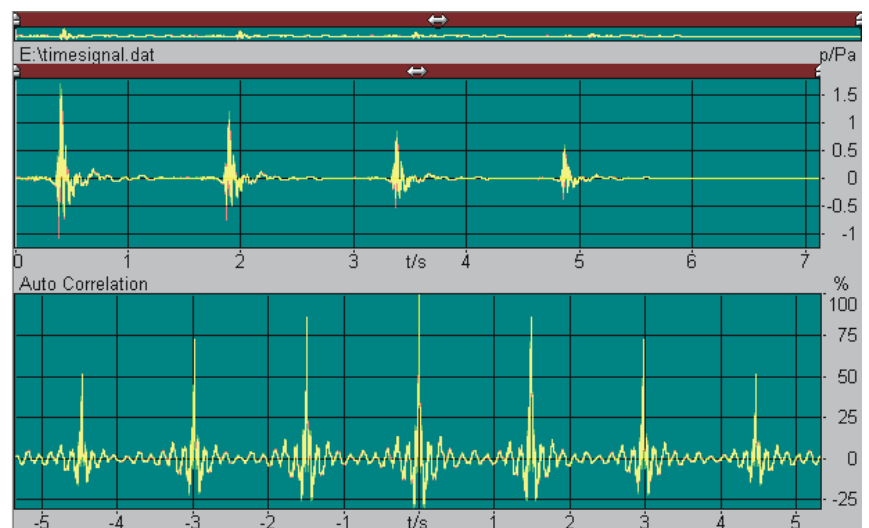
Properties of the transfer function/impulse response analysis

**Features**

- Transfer Function / Transfer Function vs. time
- Impulse Response / Impulse Response vs. time
- Coherence / Coherence vs. time / Coherent Spectrum
- Multiple Coherence / Multiple Coherent Spectrum
- Partial Coherence / Partial Coherent Spectrum
- Auto Spectrum / Auto Spectrum vs. time
- Auto Correlation / Auto Correlation vs. time / Auto Correlation vs. bands
- Cross Spectrum / Cross Spectrum vs. time
- Cross Correlation / Cross Correlation vs. time / Cross Correlation vs. bands

**Applications**

- Examination of system characteristics
- Structural analysis
- Transfer behavior of signal paths
- Partial and multiple Coherence for MIMO structural analysis



Auto correlation of a noise with echo

## Technical data

### *Transfer Function / Transfer Function vs. time / Impulse Response / Impulse Response vs. time*

Method: H 1 / H 2  
Overlap: 1 - 99 %  
DFT Size:  $2^8 - 2^{20}$   
DFT Window: Rectangle / Hanning / Hamming / Blackman / Bartlet / Kaiser-Bessel 8 - 16 / Flat-top / Gauss 8, 16, 32  
Smooth: Off / octave - 24th octave (intensity av. / dB averaging)

Range: 0 - 99999 Hz

Min. Coherence: 0 - 99,99

Reference channel: 1 - 256

Delay compensation (ms): 0 - 1000

### *Transfer Function vs. time / Impulse Response vs. time*

Average time (s): adjustable

### *Impulse Response / Impulse Response vs. time*

Envelope: the function of the envelope is displayed

### *Impulse Response window*

Window: Off / rectangle / Hann. rect. / Hanning

Win. start: 0 - 999,9 ms

Win. Length: 0 - 999,9 ms

### *Coherence DFT / Coherence vs. time / Coherent Spectrum / Multiple Coherence / Multiple Coherent Spectrum / Partial Coherence / Partial Coherent Spectrum*

Overlap: 1 - 99 %

DFT Size:  $2^8 - 2^{20}$

DFT Window: Rectangle / Hanning / Hamming / Blackman / Bartlet / Kaiser-Bessel 8 - 16 / Flat-top / Gauss 8, 16, 32

Ref. channel(s): 1 - 256

### *Coherence*

Delay compensation (ms): 0 - 1000

### *Coherence vs. time*

Average time (s): adjustable

### *Partial Coherence / Partial Coherent Spectrum*

Remove channels: 1 - 255

### *Auto Correlation / Auto Correlation vs. time / Auto Correlation vs. band*

Overlap: 1 - 99 %

DFT Size:  $2^8 - 2^{20}$

Circular Correlation: for periodic signals / pseudo-noise

Envelope: the envelope of the function is displayed

Normalize: to normalize signal power to the value of 1

### *Auto Correlation vs. bands*

Bands: Octave / 3rd octave / critical bands

### *Cross Spectrum / Cross Spectrum vs. time*

Overlap: 1 - 99 %

DFT Size:  $2^8 - 2^{20}$

DFT Window: Rectangle / Hanning / Hamming / Blackman / Bartlet / Kaiser-Bessel 8 - 16 / Flat-top / Gauss 8, 16, 32

Ref. channel(s): 1 - 256

Amplitude scaling: rms / peak

### *Cross Spectrum vs. time*

Average time (s): adjustable

### *Cross Correlation / Cross Correlation vs. time / Cross Correlation vs. band*

Overlap: 1 - 99 %

DFT Size:  $2^8 - 2^{20}$

Circular Correlation: for periodic signals / pseudo-noise

Envelope: the envelope of the function is displayed

Normalize: to normalize signal power to the value of 1

### *Auto Correlation vs. bands*

Bands: Octave / 3rd octave / critical bands

### *Auto Spectrum / Auto Spectrum vs. time*

Overlap: 1 - 99 %

DFT Size:  $2^8 - 2^{20}$

DFT Window: Rectangle / Hanning / Hamming / Blackman / Bartlet / Kaiser-Bessel 8 - 16 / Flat-top / Gauss 8, 16, 32

Amplitude scaling: rms / peak

### *Auto Spectrum vs. time*

Average time (s): adjustable

The phase relating to a reference channel can be displayed.

The functionality of the ArtemiS System Analysis Module (ATP 05) is extended by the ArtemiS Signature Analysis Module (ATP 03). Further information you will find in the data sheet of ATP 03.