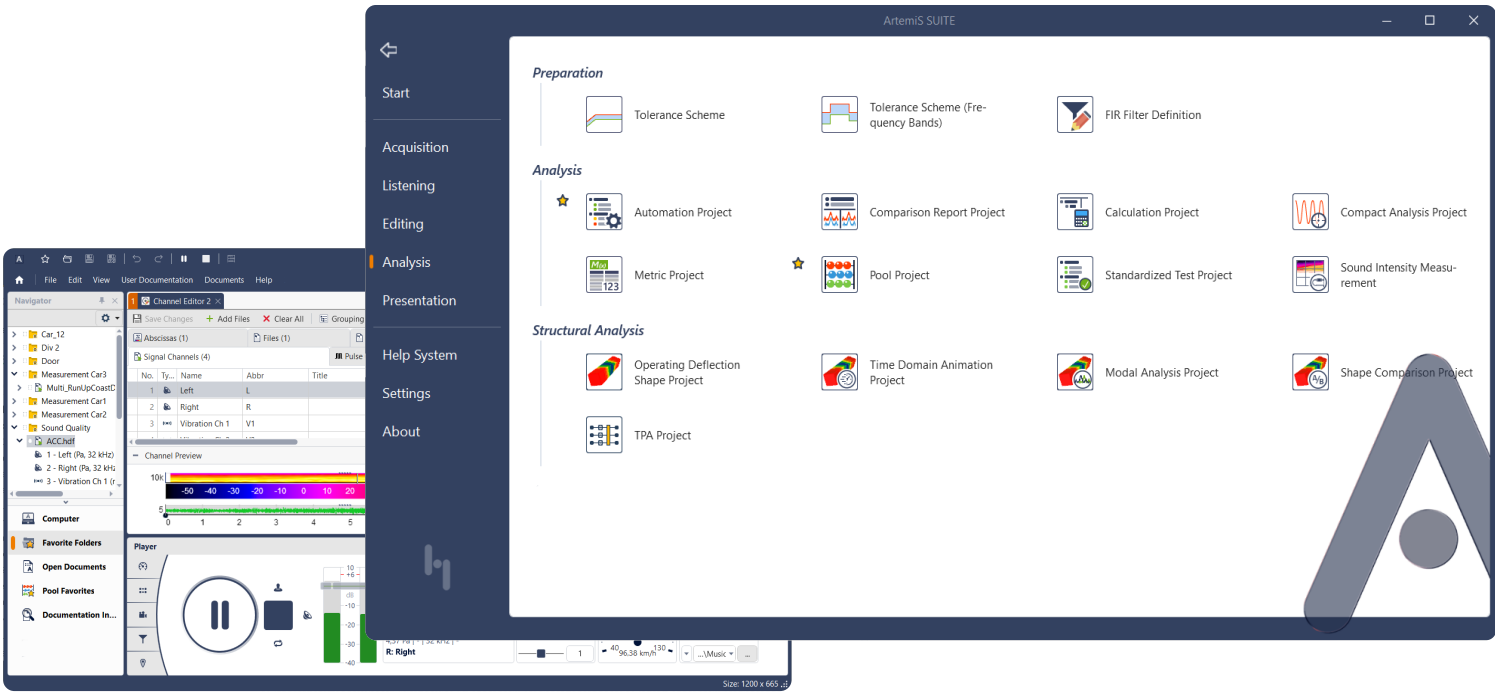
HEAD acoustics

DATA SHEET



Foundation of
ArtemiS SUITE

Code 50000

APR 000
APR Framework

APR Framework is the foundation of ArtemiS SUITE and is required for all custom configurations of projects (APRs) and signal processing tools (ASPs). In addition, it provides essential functions and processes.

OVERVIEW

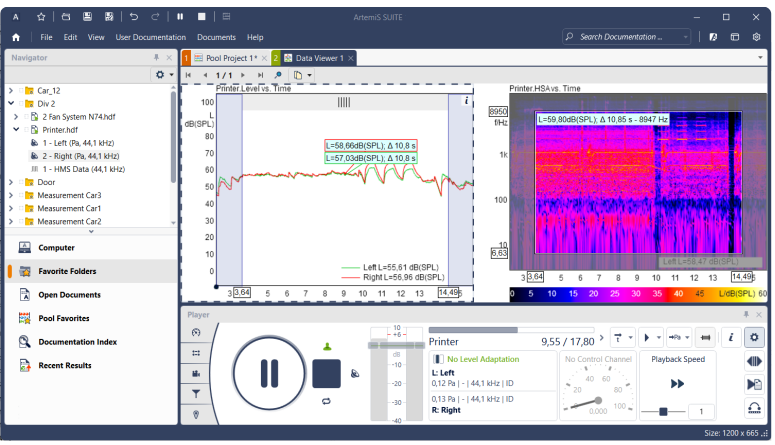
APR 000
APR Framework

Code 50000

APR Framework is the foundation of ArtemiS SUITE and a prerequisite for its use. It integrates projects (APRs), analyses, tools, and other signal processing functions (ASPs) into powerful solutions.

APR Framework comprises numerous core functions and processes, including the Navigator, Player, Data Viewer, User Documentation, fundamental import and export capabilities, and additional features.

Additional APR and ASP components can be added and combined to acquire, play back, edit, analyze, evaluate, and present data and results.



KEY FEATURES

Basic functions and processes:

- Navigator
- Data Viewer
- Player
- User and System Documentation
- Sensor Library
- Measurement Point Library
- Channel Editor
- Video
- Map
- Tolerance Scheme
- Tolerance Scheme (Frequency Bands)
- Calculation Project
- Native ATFX support (ATF-XML)
- Fundamental import and export capabilities
- Physical quantities and formats
- Pulse Sensor Geometry Editor
- Additional processes

APPLICATIONS

- Foundation and prerequisite for flexible ArtemiS SUITE configurations

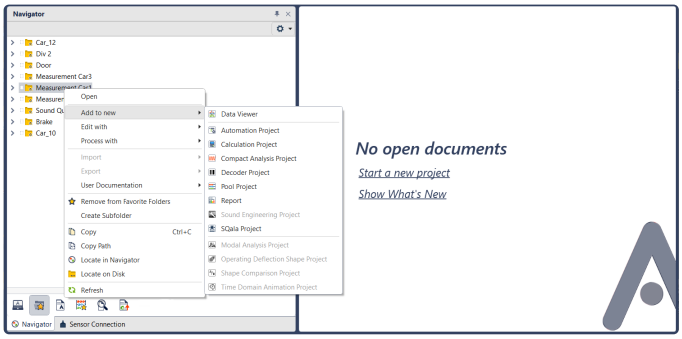
DETAILS

APR Framework provides the fundamental components of ArtemiS SUITE and enables intuitive operation and interactive control of the software. Windows can be docked anywhere on the screen (or on a separate monitor), shown or hidden as needed, and positioned independently of the main window. Custom layouts enable quick switching between multiple work environments.

BASIC FUNCTIONS AND PROCESSES

Navigator

The Navigator is one of the core tools of ArtemiS SUITE. It enables direct import and playback of files, visualization in the Data Viewer, and transfer to a central project, such as a Pool Project or Automation Project (APR 010 or APR 050 is required), for further processing.

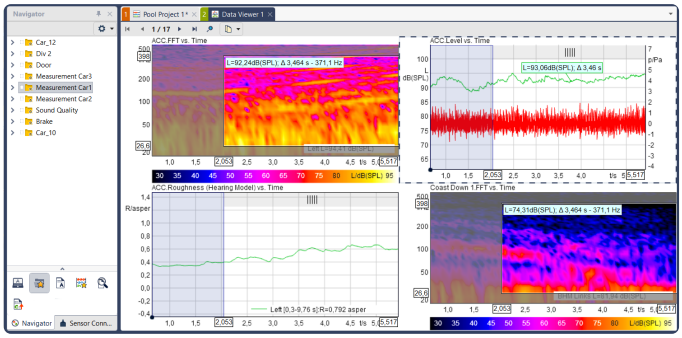


Navigator

Data Viewer

The Data Viewer visualizes time-domain signals, two- and three-dimensional analysis results, and other information in freely configurable diagrams and display fields.

Analysis results can be individually distributed across the desired diagrams with ease. For quick comparison, additional signals or channels can be added to a Data Viewer using drag-and-drop. Various cursor functions support detailed analysis.

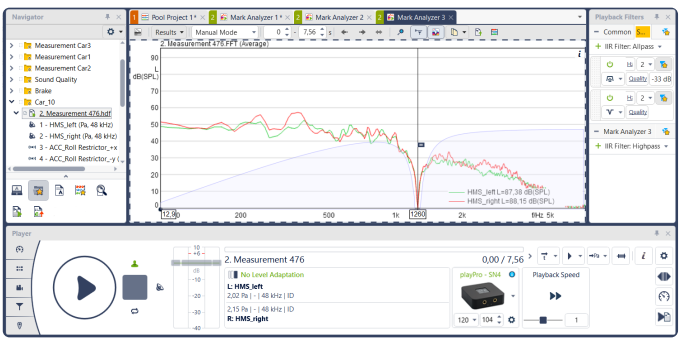


Data Viewer

Player

The Player enables interactive playback of recorded measurements. Integration with our playback frontends (e.g., playBasic, playPro, or playStudio) also enables aurally-accurate reproduction of binaural signals.

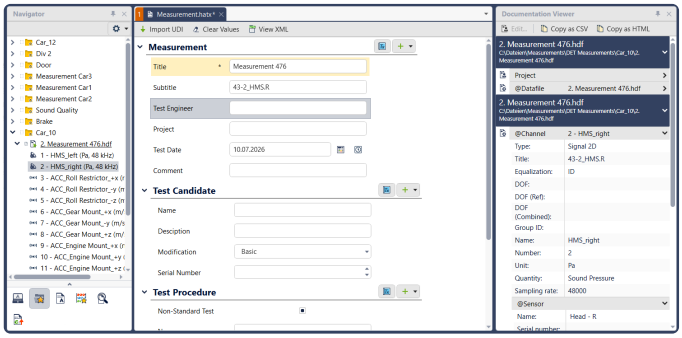
In addition to basic playback options, additional functions and information (e.g., Tachometer and Time Stretching) are available in movable tiles.



Player with real-time filtering (APR 110 is required)

User Documentation

The User Documentation supports the structured documentation of files and folders and contributes to efficient data and information management. Using templates, documentation can be created efficiently and directly linked to recordings made by the Recorder (APR 040 is required).

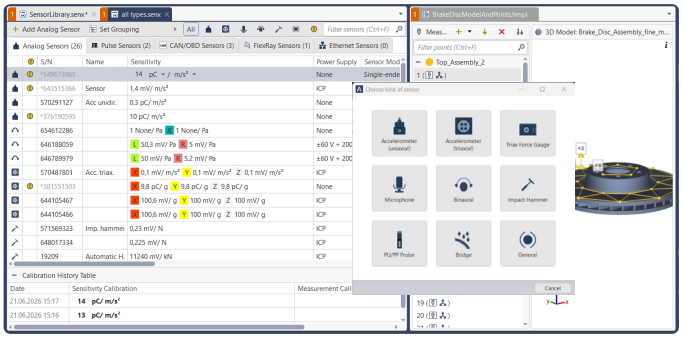


User Documentation

Sensor Library

The supplied Sensor Library provides a database of approximately 1200 sensor templates, including microphones, accelerometers, and impact hammers. New sensors can be easily created, edited, and saved, enabling efficient management of custom sensors. These sensors are subsequently available for applications such as real-time filtering, impact measurements (APR 110 or APR 430 is required), or the Recorder.

In addition, the pulse sensors stored in a Sensor Library can be used when creating a new pulse channel in a Channel Editor.



Sensor Library

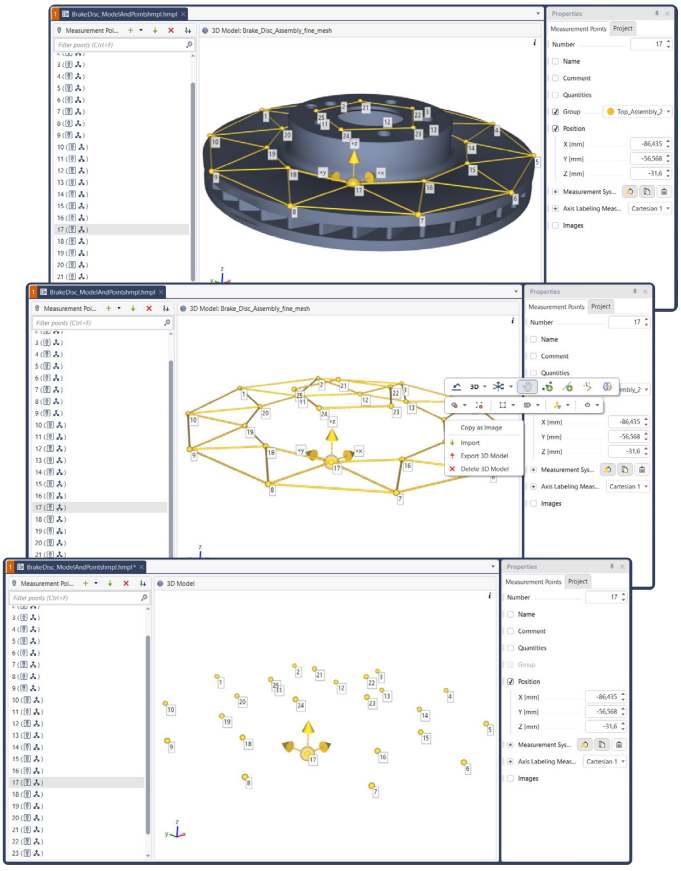
Measurement Point Library

Measurement points define locations on measurement objects where quantities are to be recorded using triaxial accelerometers or other sensors. To simplify this process, the Measurement Point Library allows measurement points to be predefined and positioned in 2D or 3D grid models. This makes the measurement setup more reliable and efficient.

Creating the grid models is straightforward: models can be created directly by entering coordinates or imported from Excel. Measurement points can be individually labeled, specified, and supplemented with images. In addition, comprehensive display functions such as zooming, rotating, and tilting are available.

Even large numbers of measurement points remain easy to manage, since they can be grouped and shown or hidden together. This enables single or multiple groups to be used for the joint interpolation of measurement points.

CAD models of various formats can be imported and linked to measurement points. Large data sets can be reduced as needed. The completed models are available for the Recorder and other modules. 3D models can also be reused in other applications outside ArtemiS SUITE using export functions.



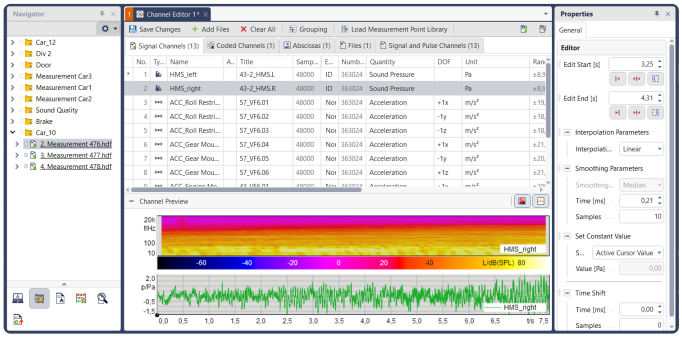
Measurement Point Library

Channel Editor

The Channel Editor enables easy editing of signals and channel properties in HDF files and displays all relevant information, such as the channel name and the associated physical quantity, in tabular form. For improved clarity, different channel types, as well as information on the abscissas and the files themselves, are automatically organized into dedicated tabs. The sorting functions and multiple-selection feature also enable highly efficient editing.

If defective HDF files are detected, the Channel Editor automatically identifies and repairs the file header information, allowing the files to be normally used again.

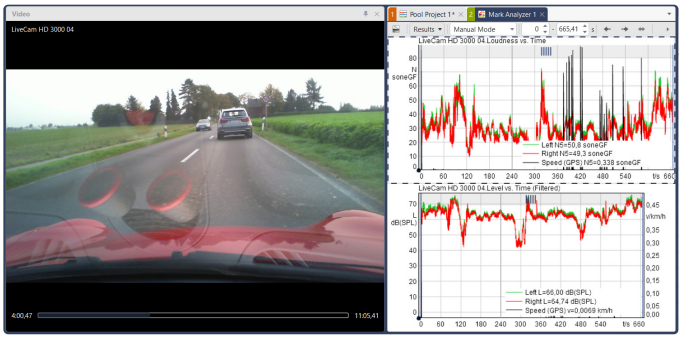
The degrees-of-freedom information of Measurement Point Libraries can also be edited, with the associated 2D or 3D model displayed graphically.



Channel Editor

Video

Videos recorded on our SQobold or SQuadriga III mobile frontends can be played back synchronously with the audio. This enables the visual documentation of measurement setups and operating and environmental conditions, for example during test drives, facilitating the correlation of noise events with specific operating or driving situations. Changes to the playback position or playback speed are applied automatically.



Video

Map

Position data recorded by navigation satellite systems can be displayed as a route on an interactive OpenStreetMap map. During audio and video playback, the position display follows the route synchronously. This enables precise localization of noise events and their correlation with specific road surfaces.

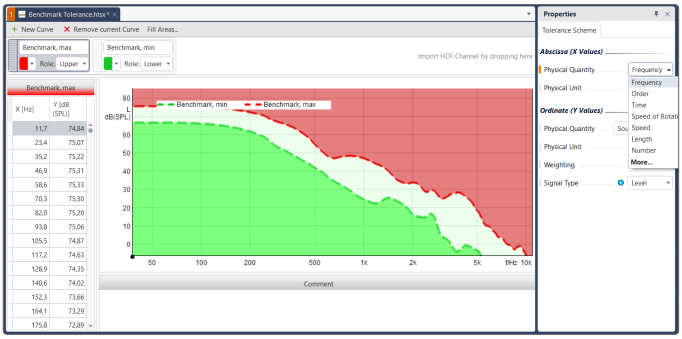
In addition, time-dependent analysis results (2D) can be displayed along the route in a color-coded format. An Internet connection is required to retrieve data from the OpenStreetMap.

Map

Tolerance Scheme and Tolerance Scheme (Frequency Bands)

The Tolerance Scheme enables reference curves to be defined and automatically displayed in analysis results. Existing 2D analysis results can be dragged and dropped from the Navigator.

The Tolerance Scheme (Frequency Bands) enables the creation and editing of limit and target curves based on frequency bands.

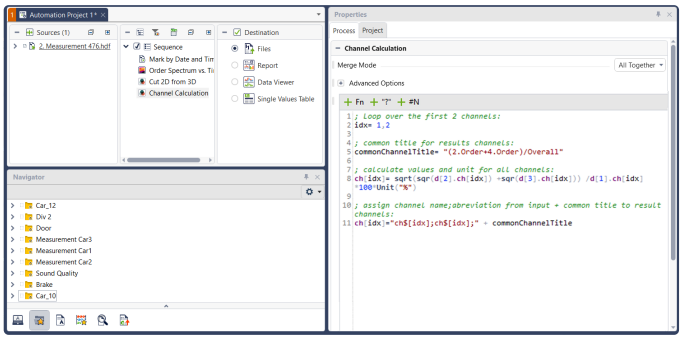


Tolerance Scheme

Calculation Project

The Calculation Project is a prerequisite for statistical evaluation and channel-wise processing of analysis results.

› The Statistics module (ASP 303 is required) enables statistical calculations.
› A configurable smoothing function (ASP 303 and ASP 302 are required) is also available and can be used, for example, to generate scatter bands.
› In combination with Channel Calculation (ASP 305 is required), the Calculation Project enables script-based processing of individual channels.



Calculation Project

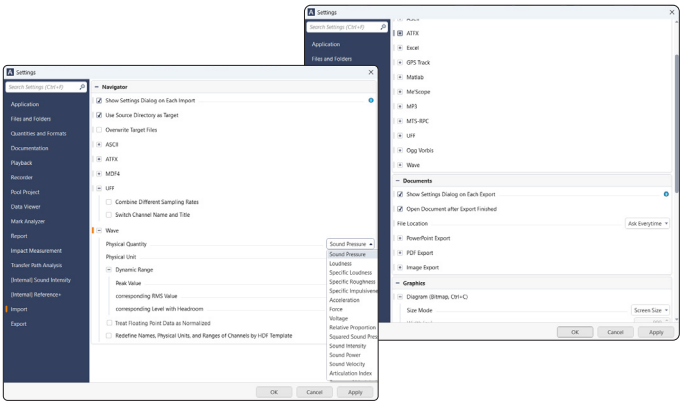
Native ATFX Support

APR Framework natively supports ATFX files. The Navigator allows seamless switching between the original ASAM structure and the more intuitive HEAD View representation. The files themselves remain unchanged.

Fundamental Import and Export Options

APR Framework supports import and export functions for numerous file formats, including ASCII, ATFX, MP3, and WAV. Excel data can be imported via CSV files, and the file header can be configured as needed. No Excel installation is required for export to XLSX or XLS.

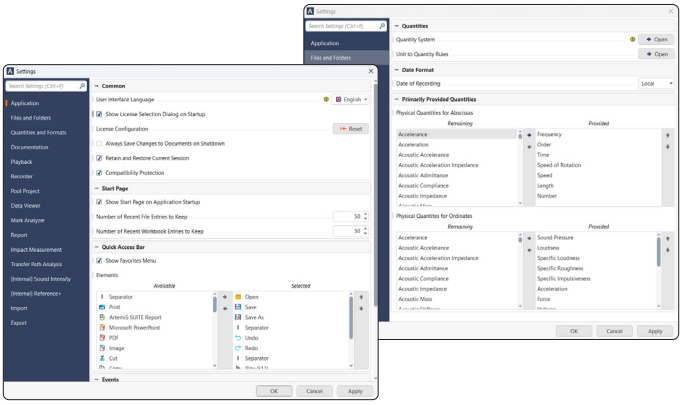
Diagrams or complex Data Viewer pages can be exported as PPTX, PDF, or image files (e.g., PNG, TIFF, JPEG, or GIF). Neither PowerPoint nor Adobe Acrobat are required for these export operations.



Fundamental import and export options

Additional Options

Additional APR Framework features include intelligent cache management, extensive customization options for physical quantities, language settings, and other advanced functions.

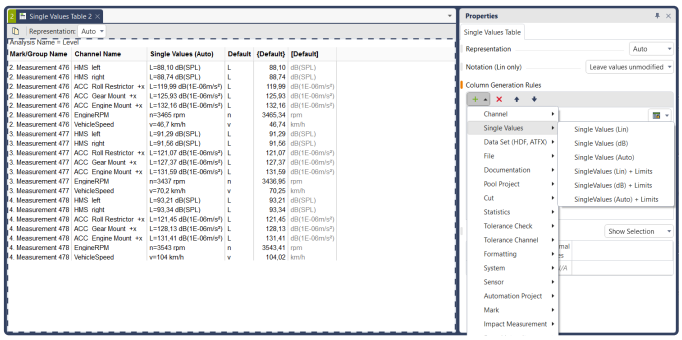


Additional options: physical quantities and format settings

Single Values Table

The Single Values Table provides a tabular view of the single values of input signals (filtered, analyzed, and statistically processed), for example from the Destination Pool of a Pool Project.

Results are displayed in a clear, organized manner and can be easily sorted, including multi-level sorting. Redundant information is automatically consolidated.



Single Values Table

FIR Filter Definition

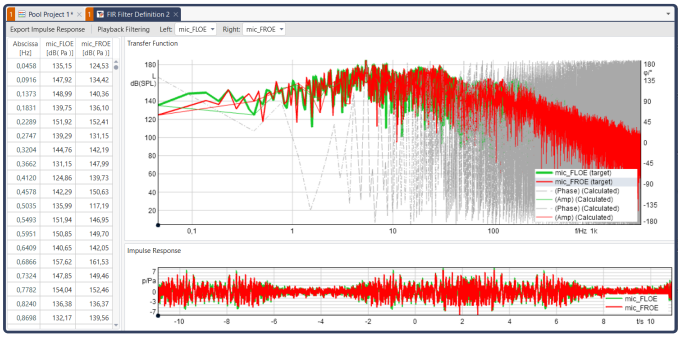
An FIR Filter Definition contains transfer functions and parameters used to generate the impulse responses required for filtering time signals.

Workbook

The Workbook enables the current session to be saved and restored later.

File Viewer

The File Viewer enables the display of numerous data formats, including HDF, DAT, BMP, JPG, PNG, HTML, XML, and PDF.



FIR Filter Definition

SPECIFICATIONS

Sensor Library

Sensor	Specification
Analog	Sensor Type: › Microphone › Artificial head measurement system › Artificial head microphone › Headset microphone › Accelerometer › Triaxial force gauge › Impact hammer › Sound pressure › Sound pressure and particle velocity › Measuring bridge › Other
Pulses	› Equidistant › Zebra Tape › Non-Equidistant
CAN/OBD	› CAN incl. UDS (ISO 14229-3) › CAN FD › OBD (11-bit/29-bit) › WWH-OBD (11-bit/29-bit)
FlexRay	
Ethernet	

Measurement Point Library

Application	Formats	
Import	CAD › *.brep › *.brp › *.jt › *.iges › *.igs › *.step › *.stp › *.stl Excel › *.xlsx › *.xls	UFF › *.uff › *.unv Nastran Punch › *.pch ANSYS › *.out Abaqus › *.dat PERMAS › *.dato.gz
Export	CAD › *.jt › *.iges › *.igs	› *.step › *.stp › *.stl

ADDITIONAL PROCESSES

The following processes, which can be used with ArtemiS SUITE and ASX solutions (HEAD System Integration and Extension), are included in APR Framework and do not require separate licensing. They can be used in Pool Projects and Automation Projects and, in some cases, in Standardized Test Projects (APR 220 is required) and Metric Projects (APR 570 is required):

- Apply ATFX Documentation Template
- Delete Documentation
- Calculate Documentation Field
- Set Documentation Field
- Apply Documentation Template
- Export 16 Bit HDF
- Import/Export ASCII Text (ASC)
- Import/Export ASAM Transport Format (ATFX)
- Export Excel Workbook (XLSX)
- Import/Export MPEG Layer3 (MP3)
- Import/Export Wave (WAV)
- Single Values (Metrics, Vibration Dose)
- Single Values 3D
- Single Value Tolerance Check
- Mark by Time / Mark by RPM
- Mark by Single Trigger
- Mark by Start/Stop Trigger
- Adjust Mark Limits
- Fragment Mark
- Select Channels
- Remove Channels
- Find Files in Directory
- Select Subset
- Find Data Sets in ATFX
- Select by Documentation
- Select by Name
- Apply HDF Template
- Representation Settings 2D/3D
- Representation Settings Sampled
- Linear Smoothing (Abs./Rel, 2D/3D)
- Data Reduction (2D/3D)
- Spectral Smoothing (2D/3D)
- Tolerance Check
- Cut 2D from 3D
- DOF Normalization
- Reset Abscissa

REQUIREMENTS

- Windows 11 x64 (Pro, Enterprise, Education; version: 21H2 or later; languages: US, Western European)
- Xeon E5-1680, Core i7-7700, Core i5-8250U, Ryzen 5 1500X, Ryzen 5 2500U (recommended: Core i7-9700KF, Core i9-9980HK, Ryzen 5 3600, Ryzen 9 4900HS)
- 8 GB memory (recommended: 16 GB)
- DirectX 9.0c-capable graphics card 512 MB (recommended: 2 GB)
- Display with WXGA resolution (1366x768) (recommended: FHD resolution (1920x1080))
- .NET Framework 4.8
- HEAD USB Driver (optional)
- Microsoft 365, Microsoft Office 2024, Microsoft Office 2021, Microsoft Office 2019 (optional)

- A license for APR Framework (Code 50000), version 18, is required.
- Additional licenses are required for additional functions and modules (APRs and ASPs).

Administrator privileges are required to install the HEAD acoustics software and drivers. Operating the software requires standard user privileges.

POWERPOINT ADD-IN: HEAD INTERACTIVE DIAGRAM

HEAD Interactive Diagram is a PowerPoint add-in that enables diagrams from ArtemiS SUITE to be inserted into PowerPoint while preserving familiar ArtemiS SUITE functionality, including zooming, scaling, and cursor functions.

PowerPoint presentations with interactive diagrams are generated using the PowerPoint export function in ArtemiS SUITE. Cut, copy, and past operations within a presentation are supported. The export function of ArtemiS SUITE can also be used to insert additional slides into existing presentations.

Viewing the PowerPoint presentation requires only PowerPoint with the HEAD Interactive Diagram add-in installed.

Installation requirements for HEAD Interactive Diagram:

› .NET Framework
› Microsoft 365, Microsoft Office 2024, Microsoft Office 2021, Microsoft Office 2019 (optional)

HEAD acoustics

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