HEAD System Integration and Extension
(ASX 01 – ASX 08)

Code 5090ff

HEAD System Integration and Extension (ASX)

The ASX programming interfaces (ASX 01 – ASX 08) enable the integration of ArtemiS SUITE into users' software applications and the extension of ArtemiS SUITE with users' software applications. Furthermore, various functionalities, such as recordings, analyses, and operating processes can be (remotely) controlled.

OVERVIEW

HEAD System Integration and Extension (ASX 01 – ASX 08)

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The programming interfaces ASX 01 – ASX 08 can be used to integrate parts of ArtemiS SUITE into customer system solutions or to extend ArtemiS SUITE with self-developed software solutions.

ASX 00 (included in ASX 01 – ASX 08) can be applied as a basis or inspiration for programming. It provides a detailed documentation with various practice-oriented model applications and programming references to the ASX programming interfaces. Due to the detailed documentation, users can start programming immediately.

KEY FEATURES

ASX provides the following programming interfaces:
› ASX 01 (Code 5091)
  Reading, modifying, and writing HDF / HSVX files
› ASX 02 (Code 5092)
  Automated or interactive control of ArtemiS SUITE projects and signal processing tools
› ASX 03 (Code 5093)
  Extending the jury testing software SQala
› ASX 04 (Code 5094)
  Remote control of the Recorder
› ASX 05 (Code 5095)
  Using documentation options
› ASX 06 (Code 5096)
  Integrating user-specific analyses and filters in ArtemiS SUITE projects
› ASX 07 (Code 5097)
  Remote control of Automation Projects without starting ArtemiS SUITE
› ASX 08 (Code 5098)
  (Stand Alone Recorder) Remote control of the Recorder without starting ArtemiS SUITE
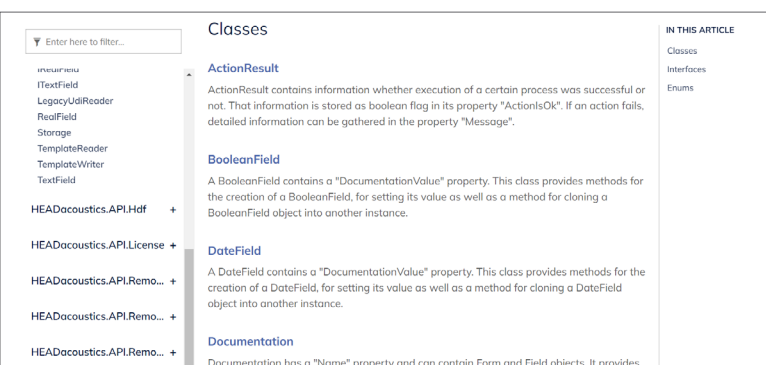
Documentation / Sensor Library
› ASX 00
  System Integration and Extension Guidelines Programming examples, model applications, programming references

Programming platforms
› C#, Python, MATLAB®

APPLICATIONS

Programming individual extensions for ArtemiS SUITE

DETAILS

ASX 00

SYSTEM INTEGRATION AND EXTENSION GUIDELINES

› Documentation / Sensor Library

ASX 00 includes a detailed documentation with various practice-oriented model applications and programming references to the ASX programming interfaces. Due to the detailed documentation, users can start programming immediately.

The model applications and programming references clearly explain, how they can be applied. In addition, the detailed technical information are easy to use for programmers.

The Sensor Library provides an extensive database with more than 1200 sensors (microphones, accelerometers, impulse hammers, etc.). New sensors can be added quickly and conveniently.

ASX 01

DATA ACCESS API

› Processing HDF and HSVX files with user-specific software solutions (HDF Library / HSVX Library)

The HDF Library is used to program custom software solutions for individual processing of HDF files (2D, 3D analysis data and time domain signals). This enables users to process and to store HDF files or pulse channels (using boolean values or events) as well as to get access to single values and their threshold values conveniently.

The HSVX Library is a subset of the HDF Library. It enables convenient access to single values and their threshold values of one or more HSVX files. Individual single values can be read with the HSVX Library, further be processed with user-programmed software solutions, and then be exported. This can be used for for various applications such as creating customized metrics or automated checking of threshold value violations for end-of-line applications.

ASX 02

DATA PROCESSING AND REPRESENTATION API

› Automated or interactive control of ArtemiS SUITE from customer-specific software solutions

For a seamless integration, users can parameterize various functionalities of ArtemiS SUITE from their own custom graphical user interface (GUI) and apply them in a coordinated manner.

The scope processing steps controlled by the programming interface ranges from filling Pool Projects, Automation Projects, and Reports to triggering calculations for displaying and exporting the results.

It is possible to integrate multiple processing options of ArtemiS SUITE in custom workflows. For example, data measured with a recording software or saved in a database can be directly processed (cutting marks, applying various analyses, calculating single value results, applying tolerance checks, for example) in a predefined Pool Project or an Automation Project. The results are made available interactively or automatically in a Report, for example, which can then be exported to PDF or PowerPoint.

ASX 03

SQALA EXTENSION API

› Programming user-specific test steps for the jury testing software SQala

The programming interface enables users to develop (C#) new test steps for the jury testing software SQala, such as Adaptive Paired Comparison or MUSHRA tests (MUltiple Stimuli with Hidden Reference and Anchor), to integrate them into SQala, and to execute them in local mode. The programming examples include sound buttons, attribute controls, navigation elements, or test environments, for example, which can be customized and used with SQala. Furthermore, the Player can be integrated, in order to get direct access to the acoustically correct playback of HDF files.

By means of the API export, the new elements and methods can be seamlessly integrated into the SQala interface and correspond visually to the steps and methods of the SQala standard product.

ASX 04

DATA ACQUISITION API

› Interactive control of the Recorder of ArtemiS SUITE with customer-specific software solutions

Users are able to program their own user interface for controlling the Recorder with little effort. This enables the Recorder to be seamlessly integrated into user-specific software solutions, e.g., in order to perform mobile applications or test bench measurements using the Recorder from a custom software environment.

The programming interface provides several options, such as starting ArtemiS SUITE and the Recorder, selecting and connecting a frontend, as well as triggering, starting, and stopping recordings. Recorder configurations can be loaded partially or completely, so that individual Recorder environment are available when needed.

In addition, users can remote control the Recorder for test bench measurements, for example, by means of the CAN Remote Control using the CAN or CAN FD bus.

ASX 05

DOCUMENTATION AND METADATA API

› Creating and editing User Documentation and Documentation Templates of ArtemiS SUITE with user-specific software solutions

The programming interface enables reading, modifying, and writing external or embedded User Documentation of ArtemiS SUITE. It is also possible to edit and apply Documentation Templates to inventory data.

Users are enabled to extend their software for storing User Documentation on test benches or in mobile operations, for example. The information can be fully used for analyses in ArtemiS SUITE, databases, etc. In addition, User Documentation can also be used to extend data management systems automatically or manually.

Futhermore, User-Defined Information (UDI), known from ArtemiS Classic, can be converted into User Documentation of ArtemiS SUITE, so that UDI can be utilized completely in ArtemiS SUITE.

ASX 06

DATA PROCESSING ADD-IN API

› Programming interface for integrating user-specific analyses or filters into ArtemiS SUITE projects and for transferring data between ArtemiS SUITE and external applications

ASX 06 enables users to implement their own programmed filters and analyses in Pool Projects, Automation Projects, Metric Projects, and Standardized Test Projects and apply them as well as the available filters and analyses.

For example, an input signal can be transferred to an external software such as MATLAB® for filtering, analyzing, or post-processing. The HDF file generated by ASX 06 is then adopted again by ASX 06 and transferred to the normal signal flow of ArtemiS SUITE. All other options of ArtemiS SUITE, such as preprocessing and presentation, can be used as usual.

Various export options are available for data transfer between ArtemiS SUITE and external applications. Several HDF files can also be exported to other data formats at the same time.

Filter Add-In (time signal to time signal)

› Filtering or processing of a multi-channel time signal

› Calculating a time signal from another time signal

Analysis Add-In (time signal to 2D/3D analysis)

› Analyzing (2D/3D analysis) an input signal

› Calculating a 2D/3D analysis from a time signal

Post-Analysis-Add-In (analysis from 2D/3D analysis)

› User-specific post processing of a 2D/3D analysis result, e.g., integrating a user-specific weighting function or an analysis based on an average FFT spectrum

Export Add-In (export into user-specific file formats)

› Exporting the input format from arbitrary time signals and 2D/3D data files

› Processing multiple HDF files of one export file

Export Merge Add-In

› Creating any data formats from several HDF data sets for further processing of data from ArtemiS SUITE in another external software

› Simultaneous transferring any number of HDF data sets to MATLAB®, for example, in order to have them converted there into a foreign format

ASX 06 – Programming platforms
›   MATLAB® (*.m, *.p)
›   All executables (*.exe, *.com), programmed with a language that enables users to import and use the .NET-Assembly-API-HDF (ASX 01):
›   C#, F#, Visual Basic .NET
›   C++/CLI, Python for .NET
›   Powershell Script (*.ps1).Net

ASX 07

LOCAL PROCESSING SERVICE

›   ArtemiSproc.exe for remote control of Automation Projects without starting ArtemiS SUITE

The ArtemiSproc.exe is part of the HEAD System Integration and Extension setup and enables the execution of existing Automation Projects without the need to have ArtemiS SUITE installed. Via a command line, for example, and the ASX 07 license, users can seamlessly integrate Automation Projects into their own workflows including analyses, pre- and post-processing functions, and export operations.

The ArtemiSproc.exe can also be used as a batch processing tool to deploy Automation Projects for end-of-line tests, for example, at the touch of a button.

ASX 08

LOCAL RECORDING SERVICE

›   ArtemiSrec.exe for remote control of the Stand Alone Recorder without starting ArtemiS SUITE

Similar to ASX 07 ArtemiSproc.exe, ASX 08 ArtemiSrec.exe is part of the HEAD System Integration and Extension setup and can be used without the need to have ArtemiS SUITE installed. ASX 08 enables the control of the Recorder, similar to the ASX 04 Remote Recorder Library, but the Recorder functions are used as Stand Alone Recorder for background operation. The graphical user interface is omitted and the user can concentrate on the core of the data recording. A full integration of the Stand Alone Recorder into customer-specific workflows is possible.

In combination with ASX 07, data acquisition, analysis, and export can be performed without ArtemiS SUITE.

Note: The use of the FlowControl and the Tasklist of the Recorder is not supported.

REQUIRED LICENSES

ASX 01

›   ASX 01 (Code 5091)
›   Recommended:
    ›   MATLAB®, Visual Studio, PowerShell, Python

ASX 02

›   ASX 02 (Code 5092)
›   For ArtemiS SUITE applications:
    ›   APR 000 (Code 50000) APR Framework
    ›   All used analyses and functions of ArtemiS SUITE must be licensed

ASX 03

›   ASX 03 (Code 5093)
›   Required for executing the extensions in SQala:
    ›   APR 000 (Code 50000) APR Framework
    ›   APR 500 (Code 50500) Jury Testing - SQala Basic

ASX 04

›   ASX 04 (Code 5094)
›   APR 000 (Code 50000) APR Framework
›   APR 040 (Code 50040) Recorder
›   Using the CAN Remote Control:
    ›   Adapter PCAN-USB or PCAN-USB FD
    ›   Device drivers and tools from PEAK System for Windows 10, 8.1 (32/64 bit)
    ›   Dongle with ASX 04 license
›   Recommended:
    ›   ASX 02 (Code 5092)
    ›   ASX 08 (Code 5098)

ASX 05

›   ASX 05 (Code 5095)
›   Recommended:
    ›   APR 000 (Code 50000) APR Framework

REQUIRED LICENSES

ASX 06

› ASX 06 (Code 5096)
› Recommended:
  › ASX 01 (Code 5091)

ASX 07

› ASX 07 (Code 5097)
› Recommended:
  › ASX 02 (Code 5092)
  › APR 000 (Code 50000)
    APR Framework
  › APR 050 (Code 50050)
    Automation Project
  › All used analyses and functions of ArtemiS SUITE
    must be licensed

ASX 08

› ASX 08 (Code 5098)
› ASX 04 (Code 5094)

SYSTEM REQUIREMENTS

› Windows 11 x64 (Pro, Enterprise, Education; version: 21H2 or newer; languages: US, Western European); or:
  Windows 10 x64 (Pro, Enterprise, Education; version: 1809 or later; languages: US, Western European)

› NET Framework 4.8 (in order to use the libraries)

› HASP Dongle driver (in order to use the libraries)

› Microsoft Edge

In order to install software and drivers from HEAD acoustics, administrator rights are required. To operate the software, only standard user rights are needed.

IMPORTANT NOTES ON LICENSING AND REDISTRIBUTING ASX SOFTWARE SOLUTIONS

Dongles with licenses of the used programming interfaces ASX 01 – ASX 08 are required for:

› Programming of software solutions with ASX 01 – ASX 08
› Executing software solutions developed on the basis of ASX 01 – ASX 08
› Executing (individual) code which uses ASX libraries

All functions of ArtemiS SUITE accessed via ASX 01 – ASX 08 must also be licensed accordingly by the users of the ASX software solutions.

MATLAB is a registered trademark of the MathWorks, Inc.; Visual Studio and PowerShell are registered trademarks of the Microsoft Corporation; Python is a registered trademark of the Python Software Foundation.

HEAD acoustics

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