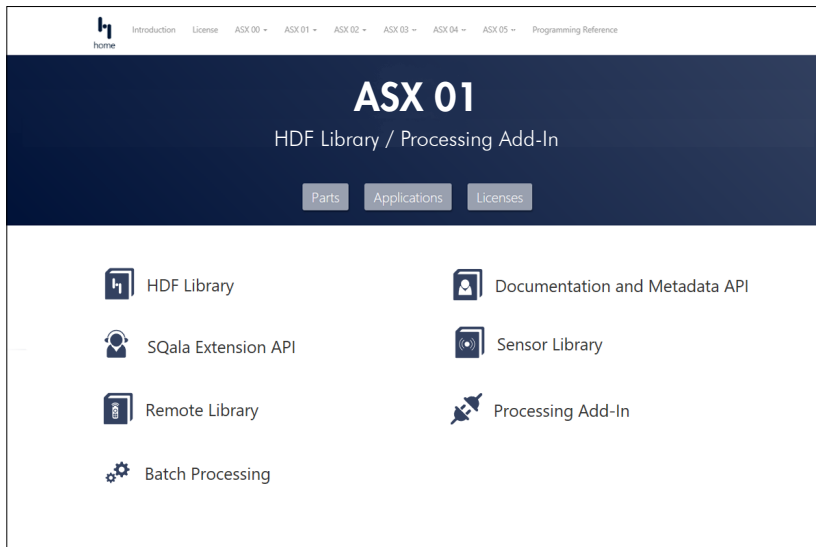


Data Access API

System integration interfaces for integrating applications of HEAD acoustics in customer-specific software solutions



Overview

ASX 01 provides system integration interfaces allowing users to access the functionality of ArtemiS SUITE and to seamlessly embed it into their software solutions.

One of the interfaces – the HDF Library – is a .NET DLL for reading and saving HDF files, allowing users to write their own programs for custom processing of HDF files, e.g. with MATLAB®.

Furthermore, the Processing Add-In allows users to intervene into the signal flow of ArtemiS SUITE. This allows them, for example, to implement their own filters or analyses in MATLAB® and use them in a Pool, Automation, Metric and Standardized Test Project just like the built-in filters and analyses.

The results can be presented e.g. in a report or exported to PDF or PowerPoint.

Features

- Interfaces for seamless integration of applications from HEAD acoustics in customer-specific software solutions

Interfaces

HDF Library (HEADacoustics.API.Hdf.dll)

- .NET interface for user-programmed processing of HDF files
 - Processing of HDF files (2D and 3D analysis data and time domain signals)
 - Reading of HDF files, e.g. from HEAD Recorder recordings or analysis results of ArtemiS SUITE
 - Saving of processed files in HDF format
 - Processing of HDF files e.g. in MATLAB®, Visual Studio Express 2012, and others
 - Reading and writing pulse channels
 - using boolean values
 - using events
 - Converting legacy sensor parameters automatically to equidistant sensor parameters

Processing Add-In

- (ArtemiS SUITE Calculation Module)
- Embedding of custom filters and analyses in a Pool, Automation, Metrics, or Standardized Test Project, and export of results
 - Add-in for filtering
 - Add-in for analysis calculation
 - Add-in for post-processing 2D and 3D analyses
 - Add-in for export (Automation and Standardized Test Project)
 - Requirements for Processing Add-In: ArtemiS SUITE Calculation Module, ASM 27 for filtering and analyzing with MATLAB®, Visual Studio Express 2012 etc.

Future-proof

ASX will be extended with more interfaces from HEAD acoustics in future releases.

The interfaces are based on state-of-the-art technologies and offer reliability, investment protection, compatibility, and stability for all users - also in future versions.

Scope of Supply

- License file:
ASX 01 (Code 5091)
Data Access API

Requirements and recommendations

- ASX 01
 - Required
 - ASX 00 (Code 5090)
System Integration and Extension Guidelines
With ASX 00, users are provided with comprehensive documentation including a number of practical application examples and programming references for all ASX interfaces.
The documentation is enhanced with programming examples that clearly explain how the interfaces can be used.
 - Optional, e.g.
 - MATLAB® R2016b
 - Visual Studio Express 2012
 - PowerShell
- Processing Add-In
 - Required
 - ASM 27 (Code 5027)
ArtemiS SUITE Calculation Module
- ArtemiS SUITE
 - Required
 - All functions of ArtemiS SUITE accessed via HDF Library and Processing Add-In must be licensed accordingly.

Examples

• Processing of recordings or analysis results (post-processing tools)

Example: After reading the HDF file using the HDF Library (recordings from HEAD Recorder or analyses from ArtemiS SUITE), custom processing steps can be programmed by the user in MATLAB®. Afterwards, the results can be saved as HDF files and displayed in ArtemiS SUITE, e.g. in a report or a Data Viewer.

• Programming example: MATLAB® processing of an analysis from ArtemiS SUITE

```
NET.addAssembly('C:\Program Files\HEAD System Integration and Extension (ASX)\HEADacoustics.API.Hdf.dll');
import HEADacoustics.API.Hdf.*

license = License.Create();
path = 'C:\Temp\API.Hdf\FFTAverage.hdf';
readerResult = Reader.Read2D(path);
channels = readerResult.RealChannels;
numberOfChannels = channels.Length;
numberOfSamples = double(channels(1).GetRealData.Length);

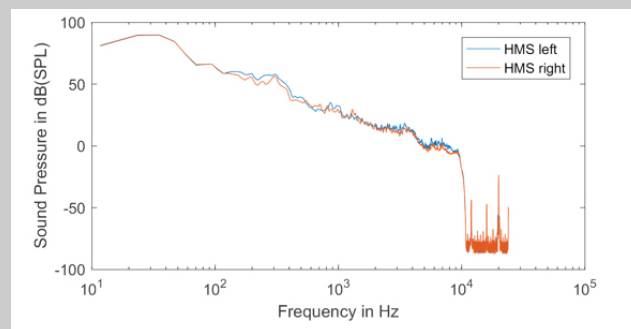
valuesIndB = zeros(numberOfSamples,numberOfChannels);
for i = 1:numberOfChannels
    dBReference = 0.000020;
    realValues = single(channels(i).GetRealData());
    valuesIndB(:,i) = 20*log10(realValues/dBReference);
    legends{i} = char(channels(i).ChannelInfo.Name);
end

axisCh1 = channels(1).Abscissa;
firstValue = double(axisCh1.FirstValue);
delta = double(axisCh1.DeltaValue);
frequencies = firstValue : delta : firstValue + delta*(numberOfSamples-1);

figure(1);
semilogx(frequencies,valuesIndB);
box on; pbspect([2 1 1]);
legend(legends);

xlabelName = char(channels(1).Abscissa.Quantity.Name);
xlabelUnit = char(channels(1).Abscissa.Quantity.Unit);
ylabelName = char(channels(1).Ordinate.Quantity.Name);
xlabel([xlabelName ' in ' xlabelUnit]);
ylabel([ylabelName ' in dB(SPL)']);
license.Dispose();
```

Result



System Requirements

- 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)
- Internet Explorer 11

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

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