



Overview of ARTeMIS Modal
Versions and Features

ARTeMIS Modal is a powerful and versatile tool designed for the following analysis types:

- Operational Modal Analysis (OMA)
- Experimental Modal Analysis (EMA)
- Operating Deflection Shapes (ODS)
- Structural Health Monitoring (SHM)

The major features are listed here, along with their availability in each of the three different versions of ARTeMIS Modal: **Basic, Standard and Pro.**

ARTEMIS Modal Features	Basic	Standard	Pro
Setup Task - Prepare Geometry			
- Create test geometry from scratch	▪	▪	▪
- Import/modify existing geometry	▪	▪	▪
Setup Task - Manage Measurements			
- Import measurement files	▪	▪	▪
- Merge measurement files	▪	▪	▪
- Integrate/differentiate measurements	▪	▪	▪
- View raw time series	▪	▪	▪
- Connect/disconnect channels and Test Setups	▪	▪	▪
Setup Task - Assign DOF Information			
- Link channels with geometry nodes and directions	▪	▪	▪
- Link using Drag & Drop or by direct editing	▪	▪	▪
- Automatic identification of reference channels	▪	▪	▪
- Easy replication of a Test Setup and its reference channels	▪	▪	▪
Analysis Task - Prepare Data			
- Configure all preprocessing of measurements	▪	▪	▪
- View processed data of channels and Test Setups	▪	▪	▪
- Option for automatic selection of projection channels	▪	▪	▪
- Compare processed data of reference channels	▪	▪	▪
- Harmonics Detection using fast and extended kurtosis analysis		▪	▪
- Harmonics Reduction using orthogonal projection or non-linear optimization			▪
- Outlier detection and signal repair		▪	▪
Analysis Task - Operating Deflection Shapes			
- Frequency and Time Domain Operating Deflection Shapes	▪	▪	▪
- Animate physical behavior at user-selectable frequencies	▪	▪	▪
- Animate physical behavior as displacements, velocities or accelerations in time		▪	▪
- Store specific ODS shapes in frequency domain	▪	▪	▪
Analysis Task - Modal Estimation (OMA)			
- Estimation of natural frequencies	▪	▪	▪
- Estimation of damping ratios		▪	▪
- Estimation and animation of mode shapes	▪	▪	▪
- Estimation of normal mode shapes	▪	▪	▪
- Estimation of uncertainties of modal parameters			▪
- Frequency Domain Decomposition (FDD)	▪	▪	▪
- Enhanced Frequency Domain Decomposition (EFDD)		▪	▪
- Curve-fit Frequency Domain Decomposition (CFDD)		▪	▪
- Crystal Clear SSI® Stochastic Subspace Identification (SSI-UPC)			▪
- Crystal Clear SSI® Stochastic Subspace Identification (SSI-PC)			▪
- Crystal Clear SSI® Stochastic Subspace Identification (SSI-CVA)			▪
- Crystal Clear SSI® Stochastic Subspace Identification (SSI-UPC Merged Test Setups)			▪
- Crystal Clear SSI® Stochastic Subspace Identification (SSI-UPCX)			▪
Analysis Task - Modal Estimation (EMA plugin required)			
- Complex Mode Indicator Function (CMIF)	▪	▪	▪
- Rational Fraction Polynomial in Z Domain (RFP-Z)	▪	▪	▪
Analysis Task - Validation			
- Mode shapes animation, overlaid, side-by-side or top-bottom		▪	▪
- Mode shapes difference animation		▪	▪
- Modal Assurance Criterion with uncertainty bounds for SSI-UPCX		▪	▪
- Comparison of Mode Complexity with confidence ellipsoids for SSI-UPCX		▪	▪
- Comparison between estimated and imported modes		▪	▪
- Frequency versus Damping diagrams with confidence ellipsoids for SSI-UPCX		▪	▪
Report Task			
- Easy selection of graphics and tables	▪	▪	▪
- Seamless integration with Microsoft® Office 32bit/64bit	▪	▪	▪
- Generate Word documents and Power Point presentations	▪	▪	▪
- Predefined standard templates	▪	▪	▪
- Exporting mode shapes animations in AVI or GIF formats	▪	▪	▪
Plugin Modules			
- Data Manager Base Module including Historical Measurement Statistics			▪
- Damage Detection, Classic and Robust methods as well as unifying Control Chart			▪
- Modal Parameter History including automatic mode tracking and tracked modes export			▪
- Interstory Drift Analysis			▪
- Data Acquisition - Automatic File Upload			▪
- Data Acquisition - Direct control of National Instruments Data Acquisition Modules	▪	▪	▪
- Data Acquisition - Direct control of SINUS Messtechnik Data Acquisition Modules	▪	▪	▪
- Data Acquisition - Direct control of HGL Dynamics Data Acquisition Modules	▪	▪	▪
- Data Acquisition - Direct control of HBM Data Acquisition Modules	▪	▪	▪
- Experimental Modal Analysis – EMA	▪	▪	▪

