imc FAMOS

Analysis and Evaluation of Measurement Results

imc FAMOS is an application for analyzing, evaluating and documenting measurement results.

For the purpose of analysis and evaluation, a wide range of display styles are available for the measurement data. The display styles include simple function plots, display of multiple waveforms with either a common or with separate, individually set scaling, texts, tables, as well as 3D-displays as Waterfall or color maps.

For the purposes of analysis and evaluation, a great variety of mathematics functions are available. Besides standard math operations, these functions also include special functions for signal analysis such as digital filters, FFT etc.

Along with step-by-step manual analysis, all procedures can easily be automated with macros. For the purpose of this automation, there is a dialog editor in addition to the analysis functions, which provides the ability to develop one's own user interface for automated analysis procedures.

The analysis and evaluation results can be documented totally automatically in measurement reports. These can be generated in a variety of formats – including automatic composition of PDF-documents.

A built-in Data Browser is included, which helps to quickly and efficiently find, display and print out the right data from vast stocks.

Special advantages and applications:

- Hundreds of integrated functions from all areas of measurement engineering analyses
- Formula Assistant for aid in entering and parametrizing functions
- Color-coded syntax and integrated formula-writing help
- Hierarchical Favorites-list
- Variables list with configurable columns for display of data set properties, complex filtering options and hierarchical display
- Variables can be organized in groups, for instance for the purpose of joint processing or for comparisons
- Data sets in graphical or tabular form are available at the click of a button.
- The measured results can be composed in freely-designed professional-grade lab reports with the built-in Report Generator. Using report templates, it is possible to partially or fully automate report composition.
- Panels and Data Browser for easily accomplished analysis, display and reports of measurement series.
- Integrated Dialog Editor for creating one's own personal user interfaces
- Extensive library for importing and exporting data formats
- imc FAMOS comes with an open interface for creating one's own personal special functions
- Read- and write-protection for sequences and dialogs
- Multiple instances of imc FAMOS in one PC

Editions

Edition and required licenses	Order code	Article number
imc FAMOS Reader	FA-READER	1010083
imc FAMOS Standard	FA-STD	1010084
imc FAMOS Professional	FA-PRO	1010087
imc FAMOS Enterprise	FA-ENT	1010089
imc FAMOS Runtime*	FA-RUN	1010090

● : included   ○ : optional   - : not available

	imc FAMOS Edition				
	Reader	Standard	Professional	Enterprise	Runtime*
Visualization (curve window) Import and presentation of measured data	●	●	●	●	●*
Analysis Editing and analysis of measured data, storage/export of the results, math. based and static based function library	-	●	●	●	●*
Expandability Expansion of the standard functional scope with additional expansions with their own user interface (PlugIns) and furthermore native DLL-calls	-	●	●	●	●*
Remote control DDE, COM-Automation-Server [11]	-	-	●	●	●*
Project management Organization of files needed for a particular purpose (data, reports, sequences) in a project, including pack & go for easy transfer	-	-	●	●	●*
Dialog-editor	-	-	●	●	●*
imc VideoPlayer [15]	-	-	●	●	●
imc Spectrum Analysis [13]	-	-	●	●	●
Calculation of measurement uncertainty [14]	-	-	●	●	●
imc FAMOS R-Kit [14]	-	-	●	●	●
imc FAMOS PowerPoint-Kit [14]	-	-	●	●	●
imc FAMOS Python-Kit [15]	-	-	●	●	●
imc FAMOS Class Counting Kit [12]	-	-	-	●	●
imc FAMOS Order Tracking Kit [12]	-	-	-	●	●
imc ASAM-ODS Browser [16]	-	-	-	●	●
imc FAMOS Runtime [11] for testing purposes	-	-	-	●	-
imc FAMOS Database-Kit [13]	-	○	○	○	○
imc FILTER [16]	-	-	○	○	○
imc FAMOS Railway Comfort Kit [16]	-	○	○	○	○

* imc FAMOS Runtime does not come with a user interface, not possess the ability to edit sequences, dialogs or panels.

Basic functions

Flexible user interface layout

- Drag & Drop of interface elements
- Windows freely positionable
- Freely configurable toolbars
- Automatic adjustment of toolbars for high-resolution monitors
- Visual display in a variety of Skins

Data display – the imc Curve Window

- Curve window assistant
- Various display styles available:
  - Measurement curve display y/t, X/Y multiple y-axes stacked or side-by-side
  - Data representation as a surface (segmented data set or combination of x-, y-, z-components). Colors correspond to amplitude.
  - 3-D display as a waterfall diagram, wire grid representation, scatter plots, volume-filling grid, space curve, 3D-bars
  - 4D (3D + color)
  - Color map with ISO-lines
  - Vertical sections, sections parallel to the axes, shifting of section plane by mouse
  - Tabular, numerical displays
  - Report display
  - Bar graph
  - Polar diagram
  - Boxplot
  - Bubble pot
  - Numerical values formatted as *Floating point*, in *Hex*-format, or as *Date/Time*
  - Segmented data sets as RGB-images
- Time data scaled in relative, absolute time automatically or via place holder; third/octave labeling
- Free navigation with zoom and measurement functions
- Graphical shifting of data horizontally and vertically
- Adaptable legend
- Freely placed texts
- Units with Greek letters also
- User-defined axis labeling with "Custom Ticks"
- Marker
  - Freely definable markers for event marking
  - Time-linked curve windows and tables
  - Moving of the marker and its textbox directly by mouse
  - Automatic updating of the marker text
  - Harmonic markers
  - Order lines and hyperbola functions
- Synchronization of curve window to table

- Transfer of diagrams via the Windows Clipboard
- Visual event isolation and signal processing possible
- Overview window
- Quickview display
- Incorporation of pictures and maps
- Superimposing of data over maps which are automatically redrawn by means of an Internet server.
- Filled areas below graph curves
- Temporary hiding of lines
- Full support of drag&drop
- Adaptable menu and toolbar
- Changeable amplitude of measured points: editing of the data set itself
- Arrangement of coordinate systems in stacked display changeable by mouse
- Export as graphic
- Embedding in Microsoft WORD with the full range of features (Enterprise Edition only)
- Preview of data in imc format in Microsoft Explorer
- Event for automatic sequence execution
- Sound output:
  - Sound-Toolbar
  - A window's first curve can be played back on the computer's sound card
  - Selectable playback region (one-time, fixed, cyclical, all), size and position adjustable by mouse
  - Playback position displayed as a cursor, positionable by mouse even during playback
- Operation:
  - Multi-stage Undo with "backwards and forwards"-function
  - Selection mode: visual distinction of selected element (axis, line, marker, …)
  - Flyby marking: selectable elements indicated when brushed over with mouse
  - Multi-selection
  - Context menu dependent on elements selected
  - Toolbar also available for embedded curve windows and for high-resolution monitors with large symbols
  - Measurement cursor also freely movable alongside the curves
  - Support of touchscreen displays

Extensive mathematics and calculation methods: [Standard Edition]

- Basic calculation functions
- Synchronized computation even of measurements sampled at separate intervals
- Basic mathematical functions (trigonometry, logarithms etc.)
- Logic and comparison functions
- Digital filters: ready-made low-pass, high-pass and band-pass filters, freely defined digital filters (FIR, IIR), smoothing filters, slope-limiting, hysteresis filters, median filters
- Numerical differentiation and integration
- Functions for solving differential equations **[Professional Edition]**
- Statistics functions (mean value, sum, standard deviation etc.)
- Approximation, regressions
- Interpolation, also splines
- FFT, correlation, 1/3-octave analysis
- Measurement engineering functions such as characteristic line correction, envelope curve calculation
- Conversion of units
- Functions for statistical evaluation of intervals **[Professional Edition]**
- Minor functions such as: search for values, substitution, cut and paste…

Macro language – imc FAMOS sequences [Standard Edition]

- All functions (over 500) automatable in a sequence
- Called from Favorites
- Loops (While, For), conditions (If, Else, Switch, Case) and nesting
- User-defined **sequence functions** which are listed in the Functions library along with input assistance, a brief description and a Functions Assistant
- Calls of sequences with up to 20 parameters even from external applications
- Debugging, e.g. with holdoff points and single steps
- Ready-made text building blocks, automated formatting
- Color-coded syntax and auto-completion
- Automated report composition
- Integrated dialog editor for creating personal user's interfaces
- Local variables
- Embedded sub-sequences
- Export of sequence text as HTML
- Convolution of code blocks
- Search with Regular Expressions
- Sequences and sequence functions can be password-protected.

Multithreading [Professional Edition]

- imc FAMOS supports the execution of **sequence functions** in separate threads.

Documentation – imc Report Generator

- Multi-page reports
- Curve plots positioned by drag&drop
- Graphical design elements: lines, rectangles, arrows etc.)
- Text elements freely formatted
- Extensive table functions
- Each cell can be freely formatted individually or in combinations (orientation, frames etc.)
- Numerical formats and orientation adjustable
- Texts, graphics and tables can be oriented freely
- Formatting aid by means of grids, and orientation of objects relative to each other
- Arbitrary scaling by means of Vector graphics
- Export in WMF, JPG, BMP, PNG and PDF formats
- Automation capability by means of macro languages **[Standard Edition]**

Dialog – Editor [Professional Edition]

- User-defined dialog
- Graphics editor
- All common control element and dialog components provided
- Reaction to menu items and buttons by sequence
- Object inspector for editing control element properties
- Extensive image and icon library

Panels

- The Panel is a tool for quick and easy visualization of measured data.
- List of measurements complements the curve window functions with flexible assignment of measurement channels.
- Elements to select folders, measurements and channels
- Panel configurations for data presentation purposes
- The panels combine the properties of dialogs and reports.
- Panels (file extension: *.panel) can be opened later during a data capture run and can be "filled" either automatically or manually with the current measured data.
- Controls (widgets) such as input boxes, buttons, lists and comboboxes are available
- HTML-formatting of texts and frames via context menu or instruction
- Table cells with input capability during runtime
- Data linkage of texts, text arrays, data sets and numerical variables with widgets
- Formatting of placeholders by context menu
- The presentation of data can be either printed out or exported to a variety of formats such as Adobe Acrobat PDF, PNG, or BMP.
- Comparison of measured data and channels
- Video player as control
- Automation via macros **[Standard Edition]**
- Panels can be protected by a password.
- Panels can be used as dialogs.

Project Administration [Professional Edition]

- Management of sequences, dialogs, reports, curve configurations and default settings of projects
- Saving and retrieval of a session
- Project Browser
- Automatic starting of projects
- Grip projects for an easy transfer
- It is possible to specify various configurations as additional features of the project:
  - ASCII/Excel-import-configurations (*.ascimp) created with the ASCII/Excel-Import Assistant
  - ASCII/Excel-export templates (*.aet)
  - File Assistant import filters (*.fas)
  - DLL-declaration files for the external DLL-interface (*.def)
  - Definitions for data sources
  - Definitions for derivative import filters

Channels

- Unlimited channel count
- Equidistant channels
- Time-stamped channels (XY)
- Matrices, segmented datasets
- Complex data sets, locus diagram
- Multi-triggered (event-based) datasets, characteristic curve plots
- Single values
- Text / Textarrays
- Protocols

Voice output

- Voice output of the specified text via the default audio output device.

Interfaces

- DLL-interface for user-created enhancements **[Standard Edition]**
- DDE **[Professional Edition]**
- Remote control via COM-automation **[Professional Edition]**

Compatibility

- Reads all predecessor files

Data Export [Standard Edition]

- imc FAMOS-format version 2 (imc2) and version 3 (imc3) for faster display of large files in particular when using 64-bit.
- Export to Excel files. Excel must be installed. Supported Excel versions, see System requirements 10.
- ASCII export freely configurable
- Export to Matlab 4 and 5
- Various formats: BLF, DIAdem, FlexPro, Google Earth, HBM, HBM PNRF, Knorr SD, MDF (2,3,4), nSoft-DAC, RPC-3, TEAC, Universal File Format UFF58, Binary-blob
- Arbitrary export formats supported by means of documented DLL-interface
- Excel-Kit: Functions for targeted writing to cells and remote control (printing, create/delete worksheets, running Excel macros)

Data Import

- imc FAMOS-format version 2 (imc2) and version 3 (imc3)
- Administration for import filters
  - Excel files. Excel must be installed. Supported Excel versions, see <u>System requirements</u> 10 .
  - Matlab 4.0 / 5.x / 6.x / 7 / 7.3
  - DIAdem
  - Yokogawa: XL100,DL750, DL850, SL1000, SL1400, DL1600, DL1700, DL9000, DLM2000, DLM4000, DLM6000, GP/GX, MV/DX/1000/2000, DL708, DL1540, DL2700, DL4080
  - Le Croy, Hioki, , Gould-Nicolet, Nicolet TEAM, Oros (Wave)
  - Tektronix: TDS 5000(B)/6000(B)/7000(B), DS-700A/TDS-500B/TDS-600B/TDS-640A/TDS-400A, DPO7000, DPO70000, DSA70000, TDS 744, TDS744A, DPO 3034 BSP
  - Binary-blob
  - Hioki Recordscope z.B. 8825/8840/8826/8835/8841/8842/8807/8808 ,MR-8847
  - TEAC e.g. RD135,RD145
  - Various formats: HITACHI VC5810, Euroterm, FADYS, Laserline, Mestron, RPC3, Sigview GageScope, Fluke, Flossy BMC-Format, Kelsey, Krenz, Paron5, Wavework (K&S Elektronik), MEGADAC ASCII, PK2, Kipp&Zonen BD 300, HBM Catman, COMTRADE, TurboLab-DAFF, DATRON, Digistar III, Gould Datasys 720, Digiscope, Fahrzeugtechnik Ebern GmbH, Memobox 686, Flex4, Spektralys GDF, GKR, NEC OMNIACE, Sulzer Innotec, GIN (FCD-CAN), INCA ASCII, CATS
  - ADF (Kistler), Agilent, Alborn Almemo, Anovis, ATFX, B&S Multidata, BLF, Caesar Remus Datasystems, DASYLab, Dewetron, Digitek DataView, DSP Development Corporation, DTS, ETAS/Bosch, FlexPro, G.i.N., Google Earth, Grabau Schallleistung, Graphtec, Haag, HBM, HBM PNRF, HDF5, HEAD acoustics, HERF4, HIOKI Messgeräte, Hi-Techniques, Horiba, HYDAC, Hydrotechnik, iba, IEEE Standard Common Format, imc Bus Filter, imc STUDIO Metadaten, Instron, IRIG106, K&S Elektronik, Kipp & Zonen, Knorr SD, LabVIEW, LeCroy Oszilloskope, LEM TOPAS, LMS Skalar, Bosch MDF, MDF4, MKT CAN Logger, MTS System Corporation, nSoft-DAC, Ono Sokki, OROS, Remes DIGISKOP, RPC-3, SigView, Siemens SIREC, SoMat, Sony PC200A, Spider Measurement System, Stabicontrol SMF, Stähle, MicroEdition Stiegele Datensysteme, Telsonic, TurboLab, Universal File Format UFF58, Vestas INT, Vispiron, WAV
- ASCII Import assistant (optionally with automatic presets without dialog)
- High-speed, predefined import filters also available as DLL's
- Arbitrary import formats supported by means of documented DLL-interface
- File Assistant for creating personal import filters for files (both binary and ASCII):
  - Tool for creating personal import filters
  - Clearly organized display in a structure chart
  - Also for complex file formats
- Direct support of all imc STUDIO software formats and of the imc systems:
  imc CRONOS-PL/-SL, imc CRONOS*compact*, imc CRONOS*flex*, imc CRONOS-XT, imc BUSDAQ, imc BUSDAQ*flex*, imc POLARES, imc C1, imc C-SERIES, imc SPARTAN, imc MUSYCS, imc μ-MUSYCS
- Simply structured ASCII formats
- Kit/Functions for targeted data export from Excel cells **[Standard Edition]**
- Data source browser with Microsoft Explorer functionality

Dataset Editor

- Tabular display and processing of multiple datasets
- Synchronized visualization
- Easy location of specific data regions by means of linking tables to curve windows
- Search function

Import and export of imc FAMOS configurations

Providing customized and efficient installation of imc FAMOS with:

- Import/export for global imc FAMOS options, menu layouts
- Favorites, data sources and Panel-templates
- Data filters, ready-made sequences and libraries
- All kinds of templates for projects, curve configurations, sequences, reports, logos, etc.
- Import to the target system also possible directly by means of command line

System requirements

Supported operating systems
Windows 10*/11* (64 bit)
Windows 2016/2019/2022 Server (64 bit)
*released in conformance with the version of Windows 10 / Windows 11 applicable at build date of imc software
For the purpose of assigning imc FAMOS network licenses by means of the License Manager, support of Windows 2003 Server continues.

Minimum requirements for the PC
Processor with 1 GHz
2 GB RAM
1 GB free hard disk drive (NTFS format)

Languages:

German, English for programming. GUI also supports Japanese , French, Chinese, Korean partially.

Microsoft ® Excel:

In order to be able to import or export files in Microsoft ® Excel format (*.xls,*.xlsx), Excel must be installed on the same computer. The following versions are supported:

- Excel 2010, 2013, 2016, 2019, 2021 (except "*Starter Edition*"), Microsoft 365*
*released in conformance with the version of Microsoft 365 applicable at build date of imc software

Other operating system components

The following components are installed with the imc FAMOS setup if they are not already present:

Component	Version	Folder in "OSUpdate" directory
Microsoft .NET Framework	4.8.3761.0	ndp48-x86-x64-allos-deu.exe
	4.8.4115.0	ndp48-x86-x64-allos-enu.exe
Microsoft VC 2022	14.31.31103	VC2022

Licensing and Documentation

Licensing:

- Software based, computer-bound product activation for single user or network licenses. The license key can be generated via Internet.
- Alternatively computer-independent copy protection with optional **imc Dongle nano** via USB (article number 10100180, order code imc-DONGLE nano).
- A license activation can be generated with the imc LICENSE Manager.

Documentation:

- Extensive documentation and functions reference in PDF format
- Context-sensitive online help in German, English and Japanese.

Enhancements

imc FAMOS Runtime (article number 10100090, order code FA-RUN)**:**

- Enables the execution of sequences, dialogs, panels and projects
- Class Counting Kit, Spectrum Analysis Kit, Order Tracking Kit, ASAM-ODS Kit: Commands can be executed
- No imc FAMOS user interface GUI
- No editing of sequences, dialogs, panels, projects
- No storage
- Activation necessary
- One license included with imc FAMOS Enterprise
- With imc FAMOS Enterprise it is possible to run imc FAMOS Runtime on a trial basis. A separate Runtime license for this purpose is not included with imc FAMOS Enterprise.

imc COM-products:

- Basis package with FAMOS function library (order number 10100040, order code COM/GP-E)
- Class Counting (order number 10100041, order code COM/KLAS-E)
- Spektral Analysis (order number 10100042, order codeCOM/SPEC-E)

imc FAMOS Class Counting

The kit is part of **imc FAMOS Edition Enterprise** or higher.

This expansion kit for imc FAMOS contains not only familiar functions for durability and fatigue analysis but also some very practical new ones. Diverse counting and classification procedures, particularly Rainflow analysis, are available.

Functions	Description
Rainflow	The Rainflow matrix and the Residue are calculated on the basis of a loading time function. Numerous options are provided in order to be able to adapt the algorithm to the user's needs. Along with the basic functions there is a stock of special functions for working with the Rainflow matrix, for example superpositioning, addition of extra load spectra, extraction of single load spectra from the matrix, and determining of other counting results such as range-pairs in the Rainflow matrix.
Fatigue calculation	From the Rainflow count and the tested material's Wöhler line, a linear fatigue accumulation measurement is conducted. Thus, an entire fatigue calculation can be performed by imc FAMOS by means of just a few function calls.
Standard class-counting procedure	All class-counting procedures conforming to DIN 45667 (such as level-crossing, range-pair) are available. Particularly helpful are functions for determining one- and two-dimensional histograms. Even one- and two-dimensional revolution class counts can be calculated.
TrueMax procedure	Even in a correctly sampled signal, extreme values do not always coincide with samples. However, for a Rainflow analysis, correct capture of these extremes value is crucial. Simply use the procedure specially designed for this application.

imc FAMOS Order Tracking

The kit is part of **imc FAMOS Edition Enterprise** or higher.

Wherever vibrations of rotating machinery parts are to be analyzed, the special order-tracking analysis procedures are needed. This expansion kit for imc FAMOS provides the necessary functions, as well as a number of valuable utility functions.

Functions	Description
Order-tracking analysis	The order spectrum is calculated, as well as individual order lines plotted over the rotation speed. Precise and correspondingly complex algorithms with tracking filters are used. Resampling can be performed in order to correlate data over the rotation speed or over the angle from time-referenced data.
Filters	The typical tracking filters low-pass, high-pass, band-pass and band-stop are effectively implemented. Alternatively available even as filters without phase shift.
Spectra	Rotation-speed-dependent FFT spectra and 1/3-octave spectra can be calculated. The functions are optimized for calculation time. Numerous options are available.

imc FAMOS Spectrum Analysis

The kit is part of **imc FAMOS Edition Professional** or higher.

This expansion kit for imc FAMOS contains a large supply of functions for spectral analysis of measured data. The usual transformations and filters are available.

Functions	Description
Spectral analysis	Moving spectrum, Cepstrum, power density spectrum, cross-power density, coherence, transfer functions and much more can be determined. Numerous window functions, averaging types, overlapping and other options are available. Fast 1/3-octave spectra can be calculated.
Filters	Vibration filters e.g. conforming to ISO-2631-1, DIN 45671, ISO 7505, ISO 5349 are available, CFC-filters in accordance with SAE J211/1. The basic filters low-pass, high-pass, band-pass and band-stop can be calculated without phase shift.
Acoustics	Loudness and volume level are determined in accordance with DIN 45631 and ISO 532-1:2017, as well as the loudness ratio over Barks.
Special	The Shock Response Spectrum (SRS) is determined in acceleration and displacement models. This allows impact and collision processes to be evaluated realistically.

imc FAMOS Database-Kit

This Kit provides functions for accessing databases. The data can be transferred either from the database to imc FAMOS, or vice-versa from imc FAMOS to the database.

The Kit provides access to:

- Oracle 10g, 11g, 12c
- MS SQL Server 2005, 2008, 2012, 2016, 2019
- MySQL 5.5, 5.6, 8.0
- Microsoft SQL Server Compact Edition 4.0
- Database systems about ODBC

Prerequisite

The prerequisite is imc FAMOS 7.0 or a higher version.

Delivery

- per download

Licensing

- A license activation can be generated with the imc LICENSE Manager.

Determining the measurement uncertainty

With FAMOS, for almost every algorithm written as a FAMOS sequence, the effects of measurement uncertainty can be analyzed and the measurement uncertainty of results can be calculated:

- Calculation of the Standard measurement uncertainty, Expanded uncertainty
- Calculation of the propagation of measurement uncertainty
- Monte Carlo method (MCM)
- Probability density, Derivative of the distribution function, PDF
- Coverage probability, Coverage interval, Coverage factor
- Relative standard measurement uncertainty
- Determining the measurement uncertainties of results of a mathematical analysis
- Signals biased by interference
- Analysis of the effects of interference on existing algorithms
- Testing the resilience of algorithms

Applicable standards

GUM Evaluation of measurement data – **G**uide to the expression of **u**ncertainty in **m**easurement

JCGM 100:2008

JCGM 101:2008

JCGM 104:2009

JCGM 200:2012

imc FAMOS R-Kit

The kit is part of **imc FAMOS Edition Professional** or higher.

The **R-Kit** enables incorporation of the open source software "R" for **statistical** analysis. This Kit provides a bridge to an existing installation of R on the computer. For this reason, it is possible to run any R-functions and -scripts from within imc FAMOS. Furthermore, it provides special functions for t-tests and chi²-tests.

All **R-versions up to 3.4.2** are supported.

imc FAMOS PowerPoint Kit

The kit is part of **imc FAMOS Edition Professional** or higher.

This expansion kit for imc FAMOS enables remote controlling of **Microsoft PowerPoint**. It allows existing presentations to be opened and enhanced from within sequences, Panels and dialogs. Text boxes and placeholders for pictures and curve window can be set.

imc FAMOS Python Kit

The kit is part of **imc FAMOS Edition Professional** or higher.

The Python-Kit supplies functions which provide a bridge to the **Python** programming language.

imc FAMOS generates an embedded instance of the **Python** runtime environment, which provides an interpreter for the **Python** programming language.

Python is an all-purpose object-oriented programming language which enjoys widespread prevalence especially in education and science/technology due to its accessibility for beginners, its platform independence, expandability and its free availability (Open Source). A large number of libraries are available, e.g. for numerical calculations, visualization of data, image analysis and all the way to machine learning. Familiar expansion libraries for the field of science and technology include **NumPy**, **SciPy** and **TensorFlow**.

There are functions for reading and writing **Python**-variables, as well as for executing **Python**-functions and code lines, or even whole **Python** programs.

System requirements:

Software	Compatible version	Installation	Notes
Python 64-bit	3.12, 3.11, 3.10, 3.9, 3.8	required	Support is provided exclusively for the Python reference implementation from the "*Python Software Foundation*" (CPython) in one of the versions listed below; these can be downloaded and installed from https://www.python.org/.
NumPy 64-bit	2.1, 2.0, 1.23, 1.20, 1.19	optional	The Python bridge provides special support for data types defined in the expansion library "NumPy" (https://numpy.org).

imc FAMOS VideoPlayer

The kit is part of **imc FAMOS Edition Professional** or higher.

With this expansion for imc FAMOS, videos can be played back in imc FAMOS. Videos which can be recorded in parallel with other analog and digital measurement data are displayed in synchronization with the time-based data. Correlating measured values to video footage becomes child's play. Time lapse recording and slow motion support the visual evaluation. For automated analysis by imc FAMOS, a wide variety of functions are available in imc FAMOS as kits.

The VideoPlayer plugin is also able to play *back **any formats** which can be played back by the **Windows Media Player***. If any format is not supported, it can be added by installing the corresponding Direct Show-compatible codec. For info on other limitations, see the description of the VideoPlayer plugin, chapter ***System requirements, installation, video codecs***.

imc FAMOS ASAM-ODS Browser

The kit is part of **imc FAMOS Edition Enterprise** or higher.

This browser built into the imc FAMOS user interface enables access to the ASAM ODS-server. The entire ODS database can be searched for measured data and the associated descriptive data.

An extensive kit is available which provides access to the ASAM ODS server in automated evaluations.

The browser includes very helpful filter functions for the purpose of better navigating through large stores of data. A practical Preview window also simplifies regular database operations. Measured data and extra properties can be downloaded from the server. It is also possible to upload measurement channels from imc FAMOS to the server.

These capabilities make imc FAMOS a very powerful client of an ASAM ODS server.

The ODS server used must provide an interface in accordance with **ASAM ODS specification version 5.x.** ODS servers of versions up to 3.2 and from 6.0 are not supported.

Optional

The following extensions for imc FAMOS can be added optionally. The technical data are listed in separate data sheets.

imc FAMOS Railway Comfort Kit

Order code	Article number
RAILWAY-COMFORT	1010110

The **imc FAMOS Railway Comfort Kit** is a package of library functions for imc FAMOS for the filtering and evaluation of railway vibrations in accordance to approved standards targeting railway industry environments. Filtering comprises specific frequency-weighting and subsequently RMS providing respective data reduction.

imc FILTER

Order code	Article number
imc FILTER	1010215

imc FILTER is a program for computer-aided designing of digital filters. To do this, the user selects the desired filter type and specifies a tolerance scheme for the magnitude frequency response. The calculated filter's magnitude frequency response, step response and impulse response, among other things, can be displayed graphically. A variety of file formats are available for saving the filter coefficients.

Contact imc

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E-Mail:	info@imc-tm.de	
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Tech support

If you have problems or questions, please contact our tech support:

Phone:	(Germany):	+49 30 467090-26
E-Mail:	hotline@imc-tm.de	
Internet:	https://www.imc-tm.com/service-training/	

imc ACADEMY - Training center

The safe handling of measurement devices requires a good knowledge of the system. At our training center, experienced specialists are here to share their knowledge.

E-Mail:	schulung@imc-tm.de
Internet:	https://www.imc-tm.com/service-training/imc-academy

International partners

You will find the contact person responsible for you in our overview list of imc partners:

Internet:	https://www.imc-tm.com/imc-worldwide/

imc @ Social Media

https://www.facebook.com/imcTestMeasurement
https://www.youtube.com/c/imcTestMeasurementGmbH
https://x.com/imc_de
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