

# Ease meets expertise

## ZEISS software solutions for any and every task



**ZEISS Software solutions**



Seeing beyond

[www.zeiss.com/spectroscopy-software](http://www.zeiss.com/spectroscopy-software)

# The right software makes a measurable difference

## ZEISS spectrometers work best with ZEISS software

Combine the performance of your ZEISS hardware with our advanced software for seamless operation and data management. Our solutions go beyond basic spectrometer control, offering powerful tools for calibration development, classification modelling and chemometric identification. Effortlessly handle large datasets and transfer information in the required format, regardless of whether it's for in-depth analysis or direct integration into production control systems. With ZEISS software, you can streamline workflows, simplify complex processes and maximize the value of your data.

### ZEISS SensoLogic (SL) product family

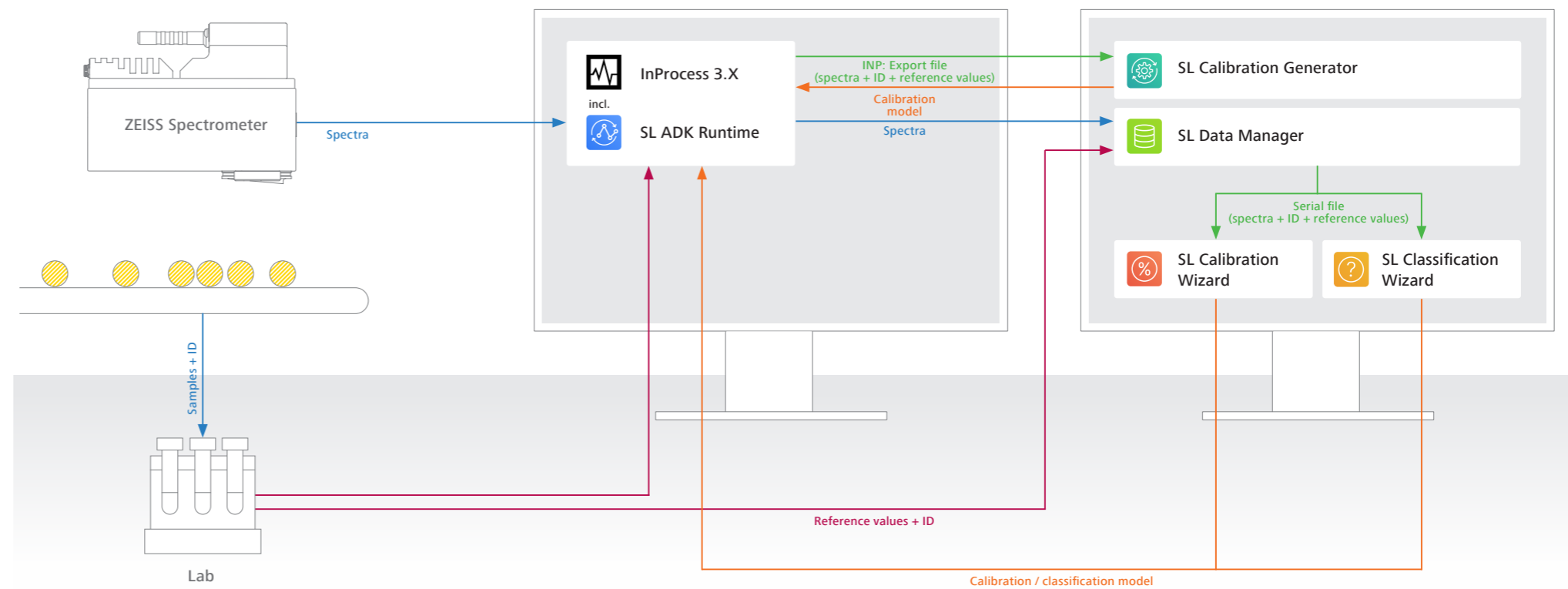
Modern spectroscopy provides a tremendous amount of measurement information. Yet, the key to extracting meaningful information lies in efficient data analysis. This is where chemometric methods come into play, acting as guides to transform raw data into valuable insights.

By employing techniques like multi-variate linear regression and principal component analysis, these methods establish relations between spectral data and chemical properties. They unravel intricate correlations, from concentrations to identifying unknown substances.

The cornerstone of these methods is training algorithms with measurement data and chemical reference analysis. This collaborative process empowers algorithms to generate crucial process variables, seamlessly integrating into your production environment.

This is where ZEISS intuitive software solutions can create substantial added value. Our software not only captures data and spectra but also aligns them with reference values. It simplifies the creation of algorithms and chemometric models, enabling the prediction of desired quality parameters.

Whether you're a newcomer or an expert, our software caters to all levels of expertise. ZEISS continues to expand its software range, making spectral data more accessible and user-friendly. This autonomy not only results in cost savings but also increases efficiency, placing you firmly in control.



### Software benefits at a glance

- Everything you need from a single source
- All software products are perfectly coordinated
- Easy to use for anyone, regardless of skill level
- Simple and effective guidance enables even novices to get started quickly and create their own calibrations
- Professionals are also catered for, as the multitude of transformations and statistical evaluations can make the models more robust or even more precise
- ASTM test criteria running in the background ensures that only valid models can be created
- The models simply work and can be created individually to keep development costs low



# Turn complexity into clarity

## Know how to optimize your process with InProcess software

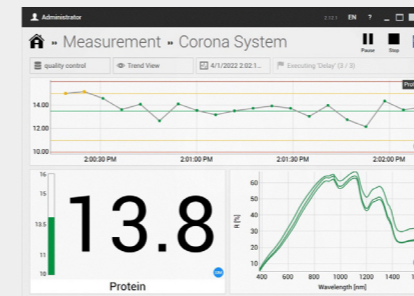


Good software should be as powerful and versatile as it is intuitive and easy to use. Our InProcess software is designed not just to provide you with all the information you need quickly and easily, but also to fit around your specific needs, thanks to a range of customization options.



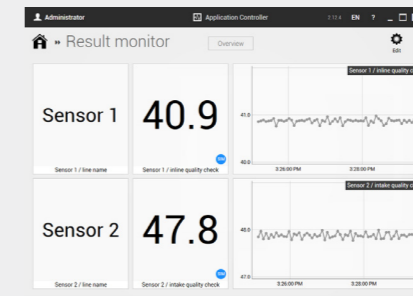
### With InProcess you can:

- Use predefined templates for the creation of measurement sequences
- Adapt measuring sequences to specific requirements, such as the view, duration or starting conditions
- Ensure transparency, traceability and efficiency thanks to automatic ID generation and label printing for samples on site
- Merge spectra and reference values that is easily readable for chemometric software packages
- Mark and collectively display sample spectra and export these in the desired format to create or adapt to a calibration
- Quickly establish connections with customer networks thanks to predefined templates
- Monitor multiple systems and customize the parameters displayed
- Define threshold and limit values to quickly detect and react to possible deviations using a traffic light system
- Filter unwanted spectra
- Freely configure displays and views
- Use the software in various languages and add multiple users with different levels of access



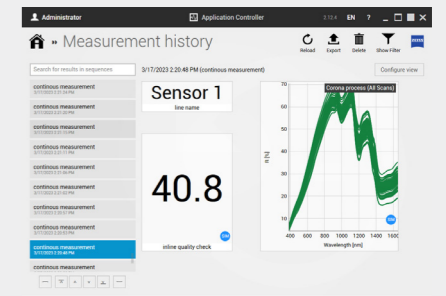
### 1 Measurement

Results can be displayed as a spectrum, value, or trend. For more automation, you can set up automatic measurement starts, alerts for when limit values are exceeded and the elimination of implausible spectra.



### 2 Results Monitor

The "Results Monitor" element enables real-time display of measurement results from several instrument groups in one view and displays results from various different products.



### 3 Measurement History

The "Measurement History" element provides access to data from previous measurements. The data is arranged by sequences, which contain all the results that were measured during its execution or calculated from its spectra.

Sample ID	Timestamp	Username	Comment	Parameter 1	Parameter 2
801-008-0001	4/18/2022 10:41:42 A.	Administrator		39.9	14.1
801-008-0002	4/18/2022 10:41:42 A.	Administrator		39.9	14.1
801-008-0003	4/18/2022 10:41:42 A.	Administrator		39.2	15.3
801-008-0004	4/18/2022 10:41:42 A.	Administrator		39.2	15.3
801-008-0005	4/18/2022 10:41:42 A.	Administrator		39.2	15.3

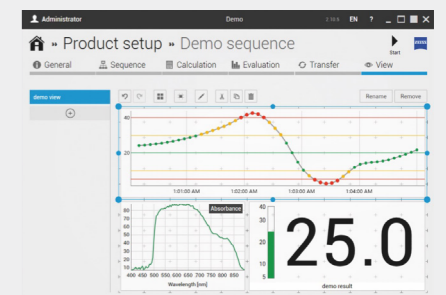
### 4 Sample Management

Unique IDs are assigned to the sample spectra and stored in the sample management. After sample analysis, it is possible to apply reference values to the desired parameters and export data sets to create a calibration. Barcode labels for sample bags can be also printed to avoid assignment errors.

Timestamp	Event Name	Details
5/11/2022 8:34:24 AM	Corona System	Profile of device Corona process has been changed from "Spine lamp" to "Default lamp".
5/11/2022 8:34:10 AM	Corona System	Automatic profile change of device Corona process will be executed.
5/11/2022 8:34:10 AM	Corona System	Lamp of device Corona process has failed. LampSwitchCurrentState: LampCurrentToLow.
5/5/2022 8:31:47 PM	Measurement System	The component "Device with profile" could not be installed. Error: Device connection of MSCONNECTOR_MSP_MSC001_V10 with CL4007. IP address 192.168.0.100 not reachable (ping failed).
5/4/2022 11:23:48 AM	Measurement System	The component "Device with profile" could not be installed. Error: Device connection of MSCONNECTOR_MSP_MSC001_V10 with CL4007. IP address 192.168.0.100 not reachable (ping failed).

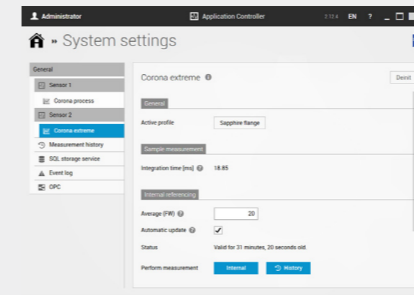
### 5 Event log

The "Event Log" element contains a list of events and information that occurred during the application of InProcess. The list can be filtered by search text, level and acknowledgement status. All entries can be exported, so that advanced error information can be sent to ZEISS customer service to ensure appropriate support.



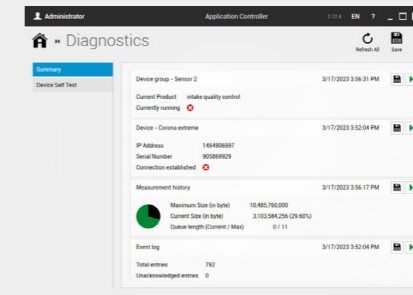
### 6 Product Setup

InProcess allows you to individually configure measurement behavior, calculation results and representation graphs and tailor these to your specific needs. Calibration can be performed with the support of common chemometrics software, such as our SL Calibration and SL Classification Wizard, GRAMS IQ, Aspen Unscrambler or UCal.



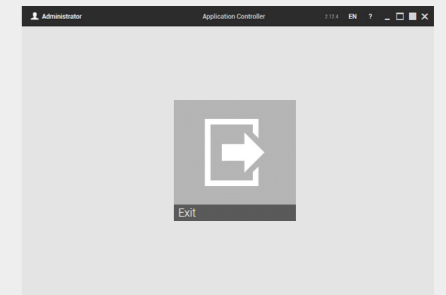
### 7 System Settings

The system settings section allows for customer-specific configuration and management. It provides an overview of connected devices and essential software settings, including memory allocation, measurement history behavior and result log preferences. Users can also define how data and results are stored in an SQL database and configure communication with external computing units, such as PLCs.



### 8 Diagnostics

The "Diagnostics" element can be used to collect and export diagnostic information from the software and can also perform diagnostic tests for the existing hardware.



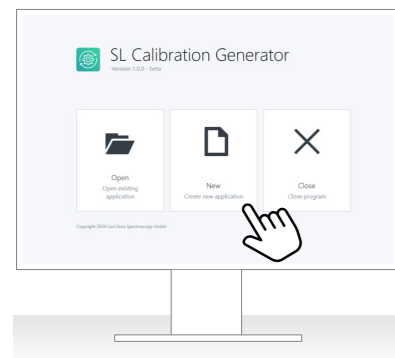
### 9 Exit

Software can be shut down when performing revision or maintenance work as well as during planned downtimes to conserve energy and resources.

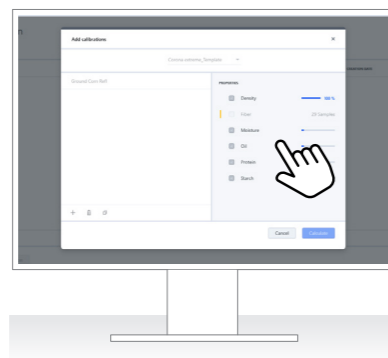
# SL Calibration Generator

Create calibrations in just a few clicks

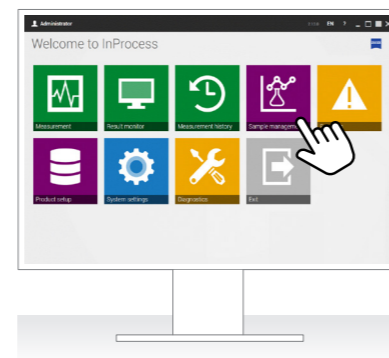
SL Calibration Generator is ideal for creating your own calibrations easily and quickly. All it takes a few clicks and you can have a working model in place. This tool is aimed at beginners who are just starting out with chemometric software. That doesn't mean it isn't powerful, however, as SL Calibration Generator can provide accurate, reliable results to optimize a wide variety of processes.



1 Add new calibration



2 Add desired series, select template and start calculation



3 Load application into InProcess



## With SL Calibration Generator you can:

- Create your own calibration easily and quickly
- Create models with one or more parameters
- Store calibrations and import them into InProcess easily and quickly
- Import and use spectra recorded with InProcess for calibration development with no additional preparation
- Rely on verified calibrations
- Gain an overview of all applied pre-treatments/ transformations, outliers and quality parameters summarized in a report that can be saved or printed

# SL Calibration Wizard

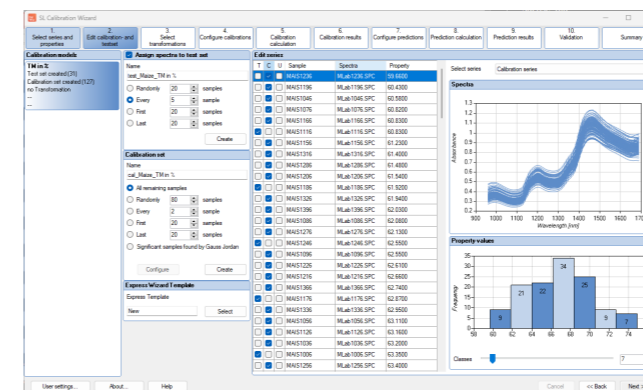
Calibrate at a higher level

For both advanced users and experts alike, SL Calibration Wizard creates quantitative calibrations quickly and easily thanks to simple user guidance with clear interfaces and informative charts and graphics. Step-by-step instructions make it easy to learn the software and save you time when developing calibrations. The parallel processing of up to 50 calibration models makes SL Calibration Wizard a powerful and efficient solution.

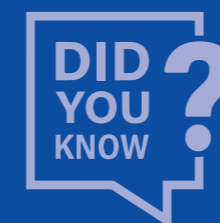
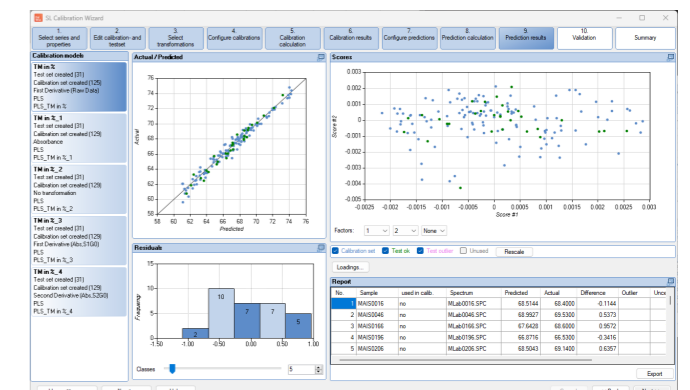


## With Calibration Wizard you can:

- Develop guided qualitative models thanks to easy user guidance through clear interfaces and informative charts and graphics
- Display calibration and prediction results with interactive score-plots in 2D and 3D and loading graphs
- Use color differentiators for calibrations and test series scores, outliers and other spectra not used in calibration
- Display correlation coefficients for all wavelengths of the calibration model
- Full traceability and documentation with automated generation of reports
- Perform multiplicative Scatter Correction (MSC)
- Perform Savitzky-Golay smoothing and derivations
- Store the final calibration series for post-processing of the calibration models.



SL Calibration Wizard, calibration results with 3D scores plot



## Enhancing spectroscopic analysis

The SensoLogic (SL) product family for chemometric spectroscopy offers a comprehensive solution for quantitative and qualitative analysis, featuring streamlined workflows and clear user instructions. With over 20 years of continuous development, SensoLogic products enhance data acquisition, management, and modeling, significantly improving the accuracy of spectral data analysis. Their integration into the ZEISS ecosystem benefits all users reliant on precise spectroscopic measurements.

# SL Classification Wizard

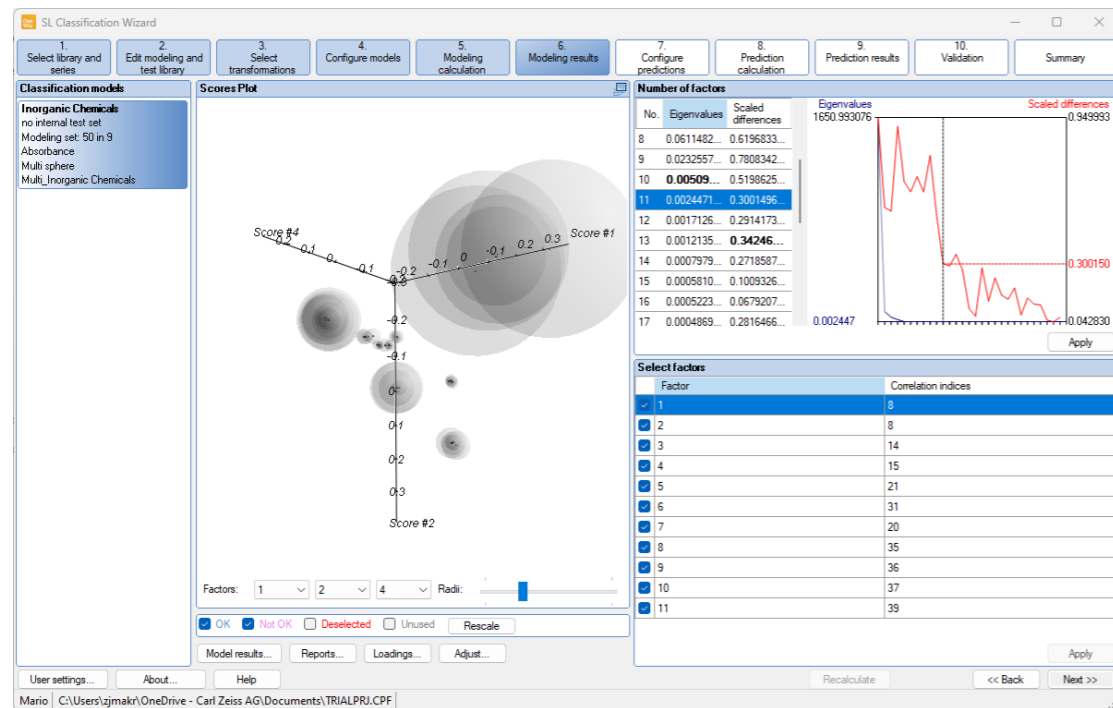
Identify products securely and quickly

For the fast and easy creation of qualitative models in ready-to-use applications for routine analysis. The clear user guidance in simple steps, the possibility of parallel processing of several models at the same time as well as diverse user options make this software package the ideal tool for both beginners and experienced users.



## With SL Classification Wizard you can:

- Take advantage of proven, step-by-step guidance that's safe and easy to use
- Perform multiple transformations for spectra pre-treatment libraries, including Multiplicative Scatter Correction, Savitzky-Golay, Kubelka-Munk and others
- Select relevant wavelength ranges based on variance contributions essential to the modeling process
- Display calibration and prediction results with interactive score-plots in 2D and 3D and loading graphs
- Color code scores of correctly identified and incorrectly identified spectra, as well as spectra that were removed or not used
- Evaluate modeling results by calculation and tabular output of meaningful parameters explained in short comments (tooltips)

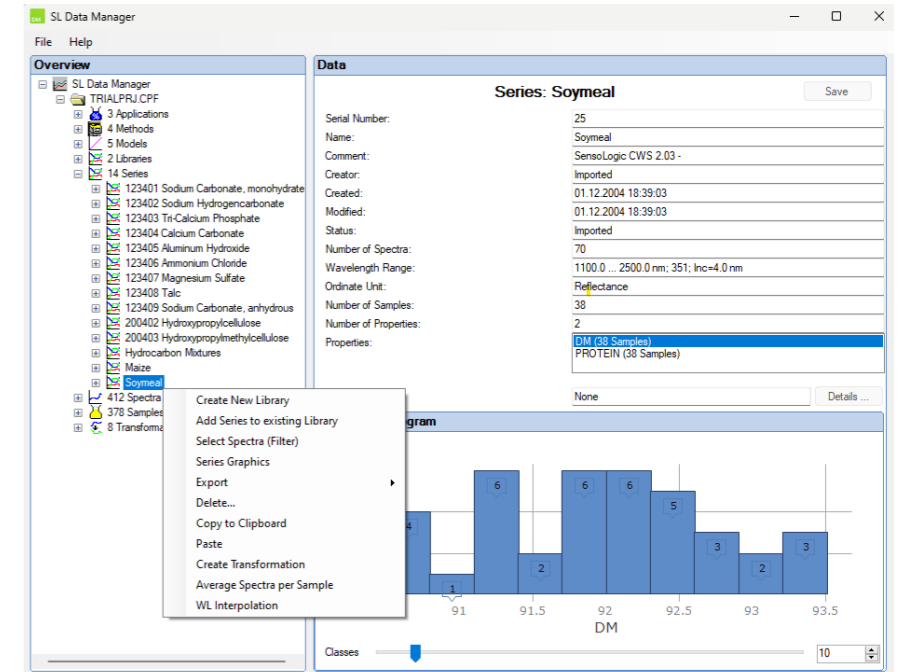


SL Classification Wizard, Graphical display of variances

# SL Data Manager

Bring data together

SL Data Manager is a database where recorded spectra can be assigned to reference values determined in the laboratory. Desired data sets can be created and prepared for use in SL Calibration or SL Classification Wizard in the most optimal way. SL Data Manager has a versatile user interface with a clear tree structure of entries.



SL Data Manager, overview of data series



## With SL Data Manager you can:

- Predict new, unknown spectra quickly offline
- Import feature values as well as series of spectra from Excel, JCAMP-DX or from an ISI file
- Export series and model information to Excel or export data into a binary format for use on embedded systems
- Export calibrations to XML
- Zoom into spectra graphs and use a filter function for spectra collection
- Create diffuse reflectance filter models to remove irregular spectra from a series using retrieval spectra before calculating a mean spectrum
- Compile data sets and prepare for model generation
- Adjust for bias and skew by fitting a quantitative calibration model to a series with associated property values to eliminate systematic offsets or linear shifts
- Adjust spectral series to other spectral abscissae
- Compare and filter statistical evaluation of data sets with a histogram of the measured value distribution
- See single spectra, series and libraries as well as the application of transformations in graphs

# Run your data the way you want to

## Seamless runtime integration

The software tools we offer are ideal for recording spectra, aligning them with reference values and creating calibration methods. However, to make these models predict or classify parameters in your spectrometer software, you need a runtime. ZEISS has a solution for this too.



### SL ADK Runtime

#### For Windows-based systems

SL ADK Runtime is incredibly versatile and can seamlessly integrate into any spectrometer control software system. It allows real-time execution of prediction and classification models created using SL Calibration Wizard or SL Classification Wizard, including outlier diagnosis. Furthermore, it supports PLS and MLR models created with them and enables qualitative predictions through PCA Mahalanobis spheres, whether single or multispheres. You can also directly access

and manipulate spectra series and other CPF database entries. Plus, it offers a full range of transformation algorithms for spectrum preprocessing, mirroring those available in SL Calibration Wizard and SL Classification Wizard, such as automatic data preprocessing and support for all pretreatments. Developers will find a comprehensive documentation package, complete with example programs in Visual Basic and C++.

# Intelligent integration into your production

## Connect with ZEISS spectrometer systems to optimize your process

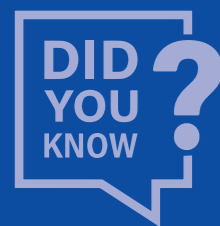
ZEISS spectrometers are perfect for production lines that require real-time monitoring of ingredients and color. They optimize food production by assessing protein, moisture, sugar, seasonings, and fat for quality and yield. Additionally, ZEISS spectrometers provide various connectivity options for your networks and systems.

### Direct connection via InProcess

InProcess facilitates seamless connection with facility control systems via OPC UA, utilizing ZEISS's dedicated OPC server to ensure efficient data exchange between our spectrometers and your plant control software. This streamlined communication enhances efficiency and connectivity without the need for extra software, optimizing the integration of our spectrometers into your production line.

#### Key features and benefits include:

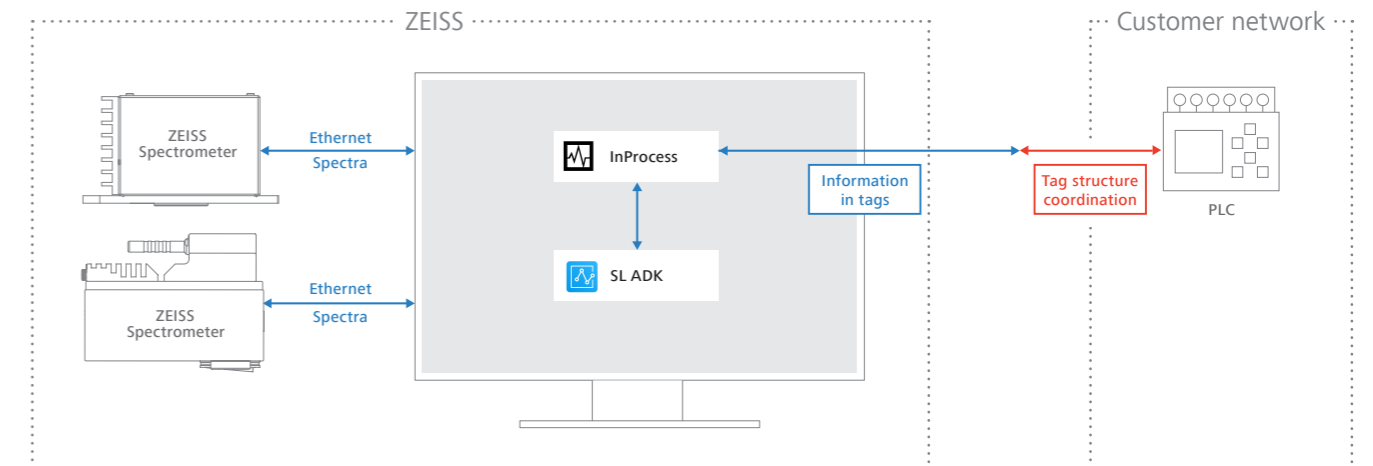
- **PLC Control:** You can control the spectrometer, select products and initiate or halt measurement jobs.
- **Predictive Data:** You can access prediction values and metadata from the spectrometer or InProcess, tailored to your specific requirements.
- **Alerts and Monitoring:** InProcess enables the transfer of limit values, error messages, Watchdog and Staying Alive information, ensuring robust monitoring.
- **Easy setup:** Preconfigured communication channels enable quick customization, allowing you to define data transmission settings with just a few clicks – no additional software required.
- **OPC UA:** InProcess uses modern OPC UA technology for the transfer of predictive values and metadata in both numerical and text format.



#### Security is everybody's business

Did you know that InProcess has functions that enable the encryption of InProcess products or calibrations you create? Both can be sent and only decrypted by customers or systems that also own InProcess and meet the decryption criteria.

#### Connection of ZEISS spectrometers via OPC UA





## Connection via ProcessLinker and a Gateway

When no OPC client is available on the customer's end, ZEISS ProcessLinker offers a solution. This tool simplifies the integration of ZEISS spectrometer solutions into existing or new production lines by linking them to fieldbuses within the facility network.

### Key features and benefits include:

- **Connection Client:** Links two OPC servers for cyclic synchronization of OPC tag content between the ZEISS OPC server (with dynamic tag structure) and another OPC server (with static tag structure).
- **Data Visualization:** Results are presented in a clear and user-friendly way, enhancing visibility into the process.

- **Protocol Support:** Supports OPC UA and DA client/server, as well as various fieldbuses like EtherNet/IP, Modbus (RTU, TCP), PROFIBUS, PROFINET, and SECS/GEM PV02.

- **Custom Scripting:** You can develop custom scripts to trigger specific actions based on predefined results.

- **On-the-Fly Data Conversion and Transformation:** Real-time data conversion, combination, merging, modification and re-output.

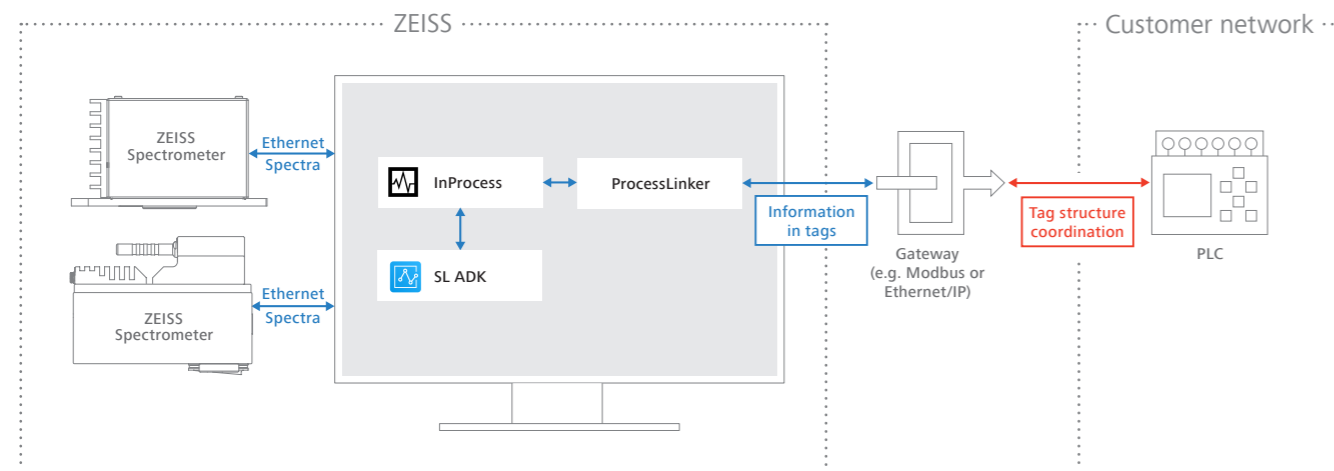
- **Flexible Tag Mapping:** ProcessLinker allows the creation of variable names and mapping of tags, enabling easy alignment between ZEISS schema and customer schema, including type conversion if necessary and feasible (like double to string, big endian to little endian, etc.).

- **Data Mirroring:** Ability to replicate data between different servers.

- **Manual Input:** Allows for manual input, facilitating interface testing.

ZEISS ProcessLinker offers a comprehensive solution for easy and seamless integration and efficient data communication within your production environment.

### Connection of ZEISS spectrometers via Ethernet/IP (gateway)



## More detail from data

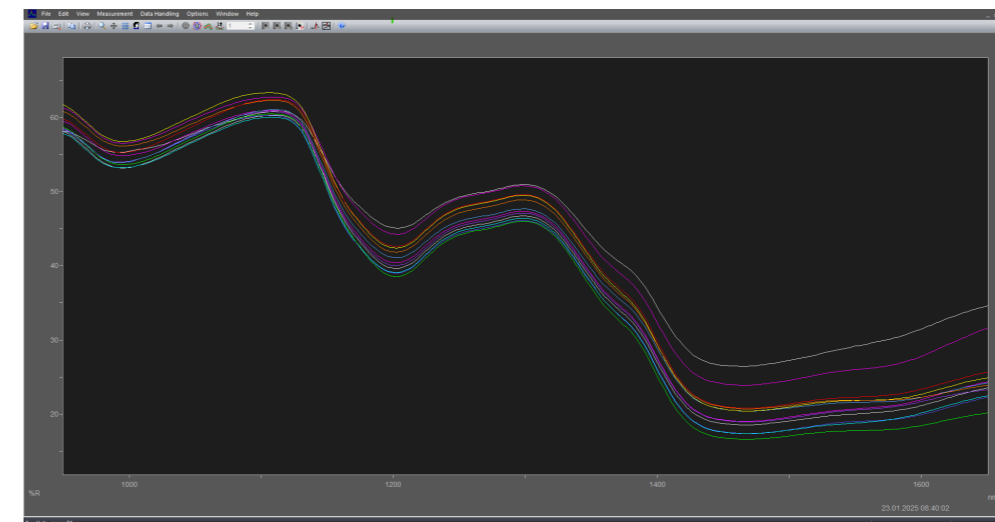
Get more insight or create your own software

### Aspect Plus

Delve deeper into your spectra

ZEISS provides different software tools to meet spectroscopic analysis and automation needs. A convenient solution is provided by the ready-to-use Aspect Plus software package. Running under MS Windows, it easily enables the acquisition and analysis of spectral data.

The Aspect Plus software for acquisition and analysis of spectra with clear graphical interface runs on the latest Windows versions and controls ZEISS spectrometers. Functions as spectra display, data handling routines, kinetics or color and film-thickness evaluation modules are implemented.



### OSIS SDK

Write your own software for ZEISS spectrometer systems

OSIS SDK is a software development kit to support development of software applications for ZEISS spectrometers. There are several ways to create an application from scratch using one of the provided templates. It is also possible to add OSIS SDK to your existing projects using NuGet packages.

The 32/64 bit SDK and the underlying OSIS Framework are based on .NET Standard 2.0 and are not limited to a specific platform or architecture. Furthermore, our Software Development Kit (SDK) consists of programming libraries that offer maximum flexibility for user-specific applications.

# Service makes a difference in software

## Our solutions to unlock your full potential

We provide comprehensive services to ensure your success with our spectrometer solutions. This includes tailored hardware and software support, expert advice and training. Our aim is to help you achieve your targets and optimize your production processes.

### We offer you

- **Training and Support:** Our team provides expert advice, training, and ongoing support to help you achieve your desired outcomes and make the most of our products.
- **Installation Advice:** We provide guidance on selecting the most suitable installation location for hardware setups.
- **Optimal Installation:** We'll assess your facility and collaborate with you to determine the ideal installation location for our sensor solutions, ensuring you can profit from a range of benefits, such as enhanced production line control through precise measurement data.
- **Integration Support:** Our team assists in integrating our solutions into your existing networks.
- **Software Training:** We offer both online and on-site training for all our software products, focussing on practical lessons and high levels of functionality.
- **Calibration Services:** We can supply the necessary calibrations for ingredient prediction, or we can empower you to create your own calibration with our training programs, including for SensoLogic products.
- **Feasibility Studies:** We conduct studies to assess the suitability of our solutions for your specific requirements.
- **Annual Calibration Maintenance:** We ensure the ongoing accuracy and reliability of your calibrations through annual maintenance.
- **Calibration Enhancement:** Our expert team can help optimize and improve your calibration models.





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