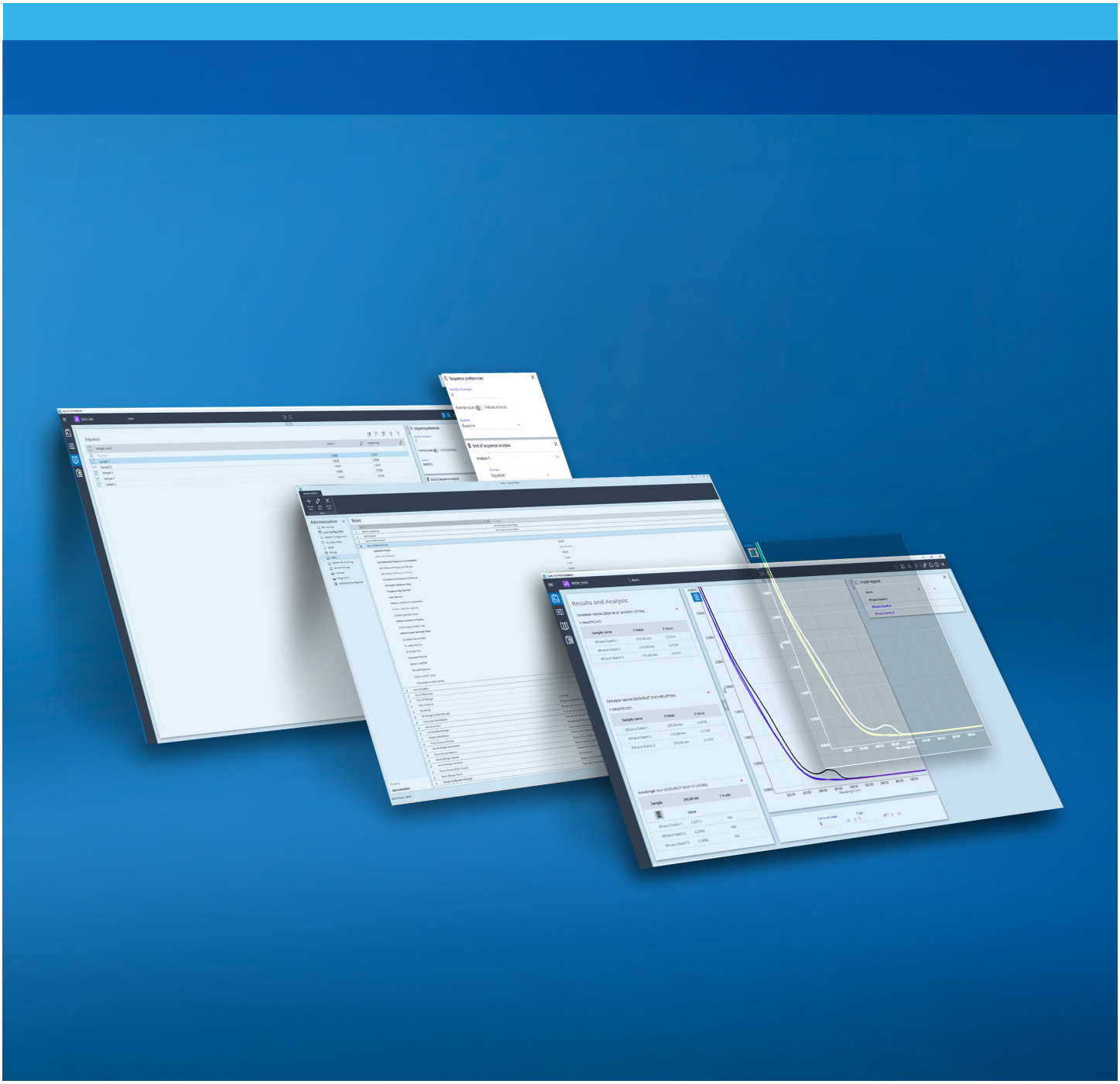
Agilent

Trusted Answers

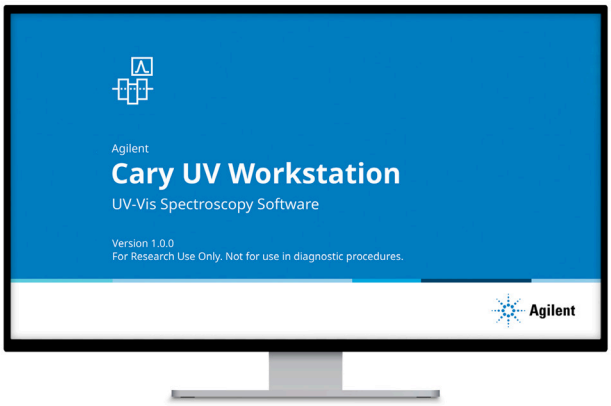
Empower Your UV-Vis Spectroscopy

Agilent Cary UV Workstation software



Turn your scientific data into meaningful results

Agilent Cary UV Workstation software is a powerful, intuitive tool designed to be user friendly and enhance your UV-Vis spectroscopy workflows. Whether you're conducting routine laboratory tasks or advanced scientific research, this software offers seamless integration with the Agilent Cary 3500 UV-Vis spectrophotometer series, providing accurate, reproducible, and reliable results.



Cary 3500 Compact UV-Vis spectrophotometer

Cary 3500 Multicell UV-Vis spectrophotometer

Cary 3500 Flexible UV-Vis spectrophotometer

Simple software and automatic calculations

The software features an intuitive, easy-to-use interface that ensures straightforward navigation, even for first-time users. This simplifies data collection, analysis, and report generation, making your spectroscopy tasks more efficient and less time consuming. By reducing manual data entry with automatic calculations, Cary UV Workstation software minimizes the risk of human error and enhances workflow efficiency. With more than 50 built-in calculations and the ability to create customized ones, you can save time and improve accuracy in your experiments.

Customizable reports

Additionally, the software allows you to generate tailored reports in various formats such as PDF or CSV, which can be automatically exported to a custom location. This feature helps you share results seamlessly with team members or regulatory bodies, ensuring that reports are always formatted according to your specifications.

Confidence in compliance

Furthermore, the software provides technical controls to securely acquire and store data, helping to ensure compliance with FDA 21 CFR Part 11, EU Annex 11, and similar regulations. Features like electronic signatures, audit trails, and user authentication protect your data and ensure its integrity.

Application versatility

Cary UV Workstation software is designed to meet the needs of users across various industries, including chemical, pharmaceutical, and environmental testing. Its versatile applications and powerful modes, such as Scan, Concentration, Kinetic, and Thermal, offer comprehensive solutions for qualitative and quantitative analysis, real-time reaction monitoring, and temperature-controlled measurements.

Where smart software meets smart hardware

Cary UV Workstation software integrates effortlessly with the Agilent Cary 3500 UV-Vis spectrophotometer series. These instruments share a common UV-Vis engine, which produces monochromatic light that is measured by various UV-Vis sample measurement modules (Multicell, Compact, and Flexible). The Cary 3500 modules couple with the engine to provide measurement functionality for target applications, so users can select the most suitable module for their application needs. The Cary 3500 UV-Vis also uses an advanced xenon flash lamp, which shortens warmup time and comes with a 10-year replacement warranty to reduce frequency and cost of lamp replacement.

Sample preparation

Sample measurement

Data processing

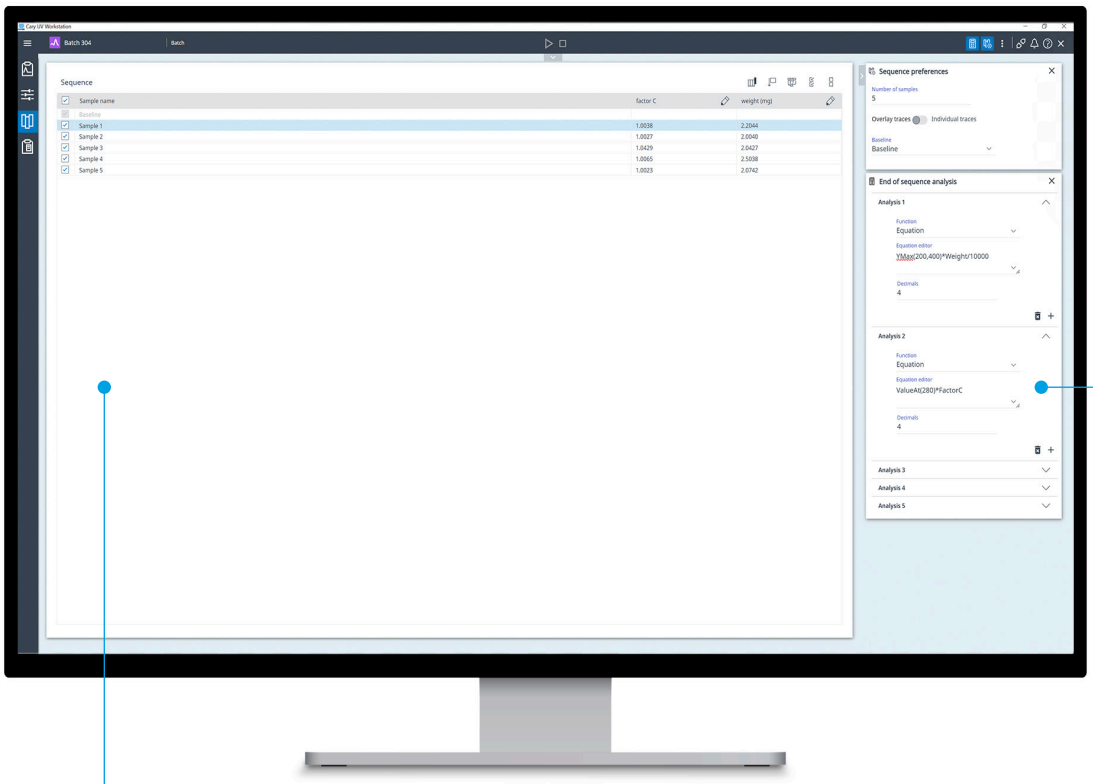
Report generation

Secure data storage

Key features and functionalities

Whether you're collecting data, performing analysis, or generating reports, the simple layout and customizable features of Cary UV Workstation software streamline all aspects of your UV-Vis spectroscopy workflow:

- The intuitive, user-friendly interface ensures easy navigation, even for first-time users.
- Users can incorporate multiple calculations within a method, ensuring that the results are automatically processed at the end of a sample sequence collection.
- Workflow efficiency and accuracy are enhanced by reducing manual data entry and ensuring that calculations are automatically applied and recorded, eliminating the risk of human error.
- More than 50 built-in calculations are provided, along with the ability to create customized calculations. The calculations can be saved in a method, which can reduce experimental time, minimize calculation errors, improve efficiency, and increase the technical control in regulated environments.



The custom parameters are used in the **End of sequence analysis**, which specifies automatic calculations applied at the end of the sequence.

The **Sequence table** in Agilent Cary UV Workstation software displays a list of seven samples, each with two custom parameters: factor C, which is a numerical adjustment factor, and weight (mg), representing the mass of the sample in milligrams.

Cary UV Workstation software enables customizable report generation that can be tailored to meet industry- or research-specific needs. The software allows users to generate reports in a variety of formats, such as PDF or CSV, which can be exported automatically to a custom location. This saves time in data documentation, helps share results seamlessly with team members or regulatory bodies, and ensures that reports are always formatted according to your specifications.

The Report preferences card (Figure 1) allows users to configure export settings and select report contents.

- In the **Auto Export section**, users can select to automatically export reports in PDF or CSV formats.
- In the **Export locations section**, users can specify file paths for exporting reports in PDF and CSV formats.
- The **Report contents section** provides customization options for the generated reports. Users can choose to include or exclude specific components.
    - Selecting the Method Setup check box ensures that the report contains details about the experiment's method configuration.
    - The Graphs drop-down check boxes allow the inclusion of visual representations, such as Graph 1 and Graph 2 in this example. Graph scaling can be defined; for example, to zoom in on a region of interest.
    - The Results and Analysis drop-down check boxes enable the selection of data processing outputs, such as Calculator results and Wavelength scan options
    - The Hidden Traces and E-Signatures check boxes can be selected to display these sections.
    - The Audit Trail check boxes enable users to select or clear all the drop-down check boxes, which each represent an audit trail event category.
    - Selecting the Report Preferences check box ensures that all customized settings are documented in the final report.

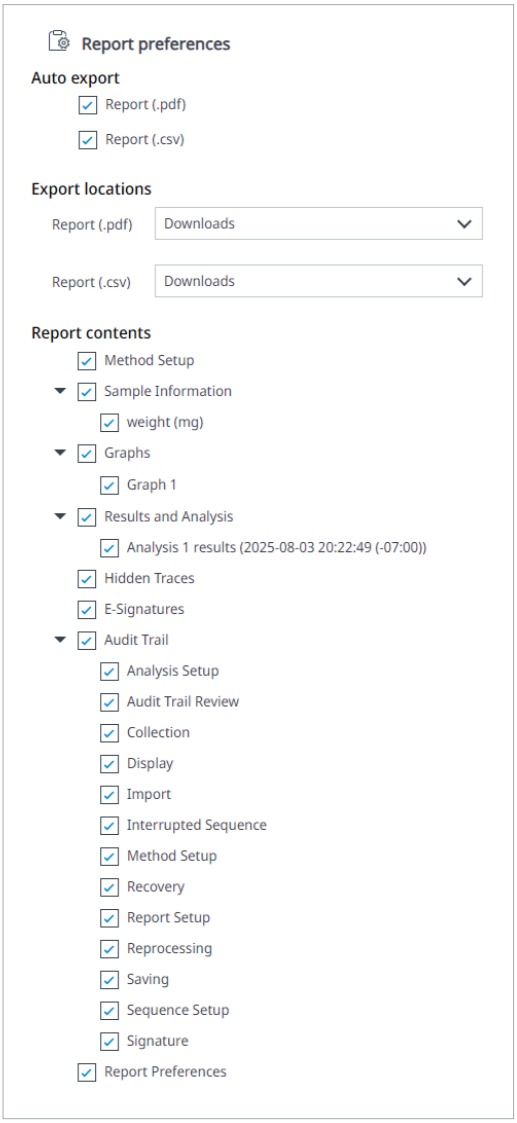


Figure 1. The Report preferences card

Versatile applications and powerful modes

Scan

Cary UV Workstation offers Scan mode (Figure 2), where users can obtain full spectral scans from UV to visible light, capturing the absorption characteristics of samples. This mode is ideal for qualitative and quantitative analysis and determining the wavelength of maximum absorption.

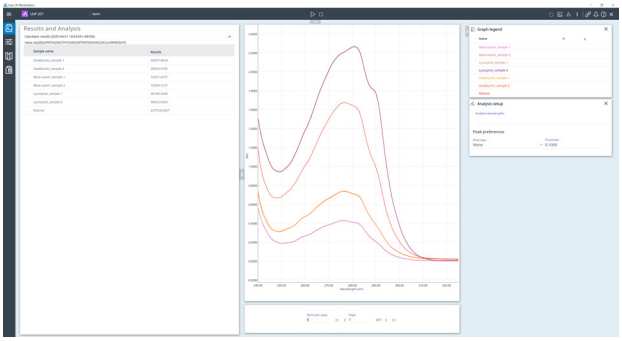


Figure 2.
The absorbance scans and protein extinction coefficient results for different proteins. The protein extinction coefficients were automatically calculated by the Agilent Cary UV Workstation software.

Concentration

The Concentration mode (Figure 3) simplifies quantitative analysis by using the Beer-Lambert Law to calculate the concentration of analytes based on the absorbance at specific wavelengths. Preprogrammed methods and user-defined settings make this tool perfect for applications in chemical, pharmaceutical, and environmental testing.

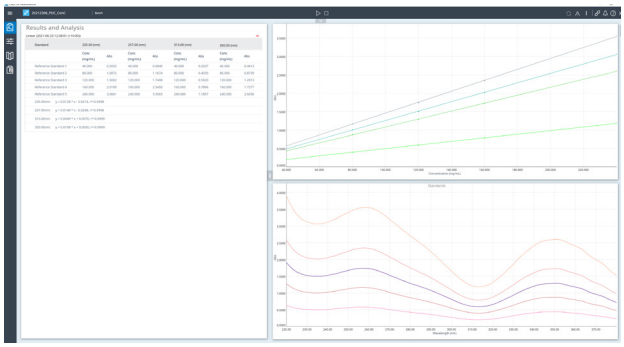


Figure 3.
Potassium dichromate calibration curves (top right) at 235, 257, 313 and 350 nm along with the associated wavelength scans for the standards (bottom right). On the left, the linear equations and the correlation coefficients can be seen along with the raw values at 235, 257, 313 and 350 nm.

Kinetic

With Kinetic mode (Figure 4), the software enables real-time monitoring of reactions, such as enzyme activity or chemical reactions, over time. This mode helps researchers track changes in absorbance over a specified period, offering powerful tools for studying reaction dynamics.

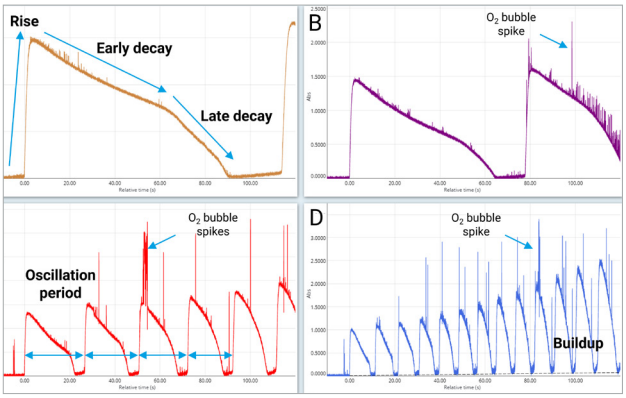


Figure 4.
Kinetic curves acquired at 610 nm measured at 5 °C (A), 10 °C (B), 20 °C (C), and 30 °C (D) by the Agilent Cary 3500 UV-Vis. For easier comparison, all curves were offset relative to their first oscillation.

Thermal

The Thermal mode (Figure 5) allows for temperature-controlled measurements, which are useful for thermal stability studies, denaturation studies, and dissociation experiments. This feature is essential in understanding how temperature affects molecular structures and reactions.

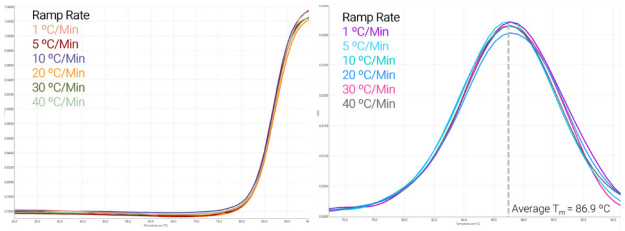


Figure 5.
Herring sperm DNA absorbance versus temperature (A) and the corresponding first derivative (B) as a function of temperature ramp rate.

Multizone software add-on

The Cary 3500 Multizone software add-on can be used to control four independent temperature zones, and Cary temperature probes control the temperature from inside the cuvette (Figure 6).

Figure 6.
Temperature control using the Multizone add-on

Video guidance for new or infrequent users

The built-in Help and Learning Center (Figure 7) reduces training time and effort by providing easy to follow videos and information for all users.

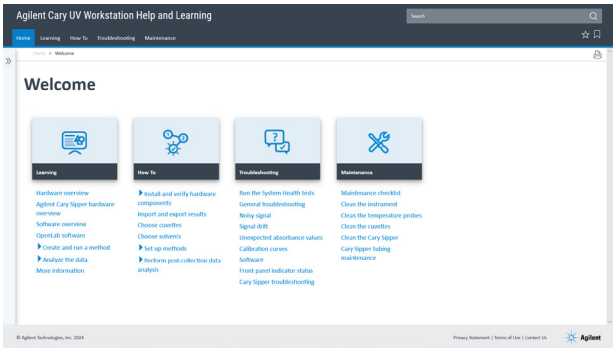


Figure 7.
Help and Learning Center home page in Agilent Cary UV Workstation software.

Technical controls to ensure compliance, security, and data integrity

Cary UV Workstation software is compatible with the Agilent OpenLab software suite of products. OpenLab software provides technical controls to securely acquire and store data in laboratories that must comply with FDA 21 CFR Part 11, EU Annex 11, and similar regulations in other countries. These controls include:

Compliance with 21 CFR Part 11

Protect your data and trace modifications with secure electronic signatures and user authentication, time-stamped audit trails for activity logging, and advanced data protection and integrity controls.

Data integrity and audit trail

Ensure your audit trail is tamper proof, restrict actions based on user roles to protect critical data, and access a clear history of data modifications.

Disaster recovery and secure database

Automatically schedule regular data backups to ensure safety. Manage and safeguard your data across Agilent platforms with seamless OpenLab integration. As shown in Figure 8, the Agilent OpenLab software solution can be tailored to suit the size of your organization.

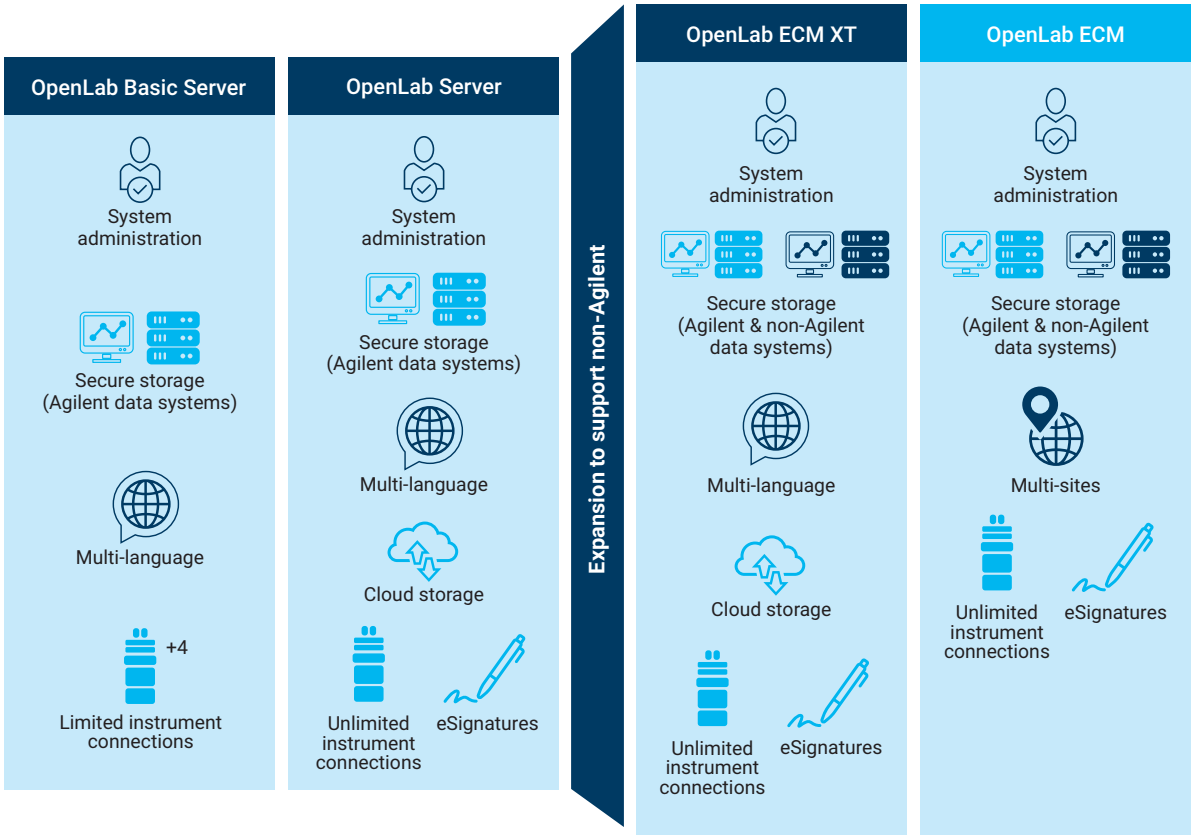


Figure 8. Overview of Agilent OpenLab software solution.

Be confident in system performance and meeting regulatory requirements with built-in tools

To ensure your Cary 3500 UV-Vis spectrophotometer operates at peak performance and meets regulatory standards, Cary UV Workstation software provides a suite of built-in tools for performance monitoring and compliance. These features help maintain instrument health, minimize downtime, and simplify regulatory adherence.

Self-tests for instrument health

Cary UV Workstation includes automated self-tests that ensure your Cary 3500 is operating at peak performance. These self-tests check critical components, including lamp health, optical alignment, detector performance, and optical path integrity.

Self-tests are performed to reduce the risk of downtime and ensure accurate and reliable results.

System health dashboard

The System health dashboard (Figure 9) provides a real-time overview of the instrument's status. It allows users to easily monitor lamp usage and system status, including temperature and alarm. This proactive monitoring ensures that the instrument remains in top condition, providing optimal results every time and minimizing disruptions to your workflow.

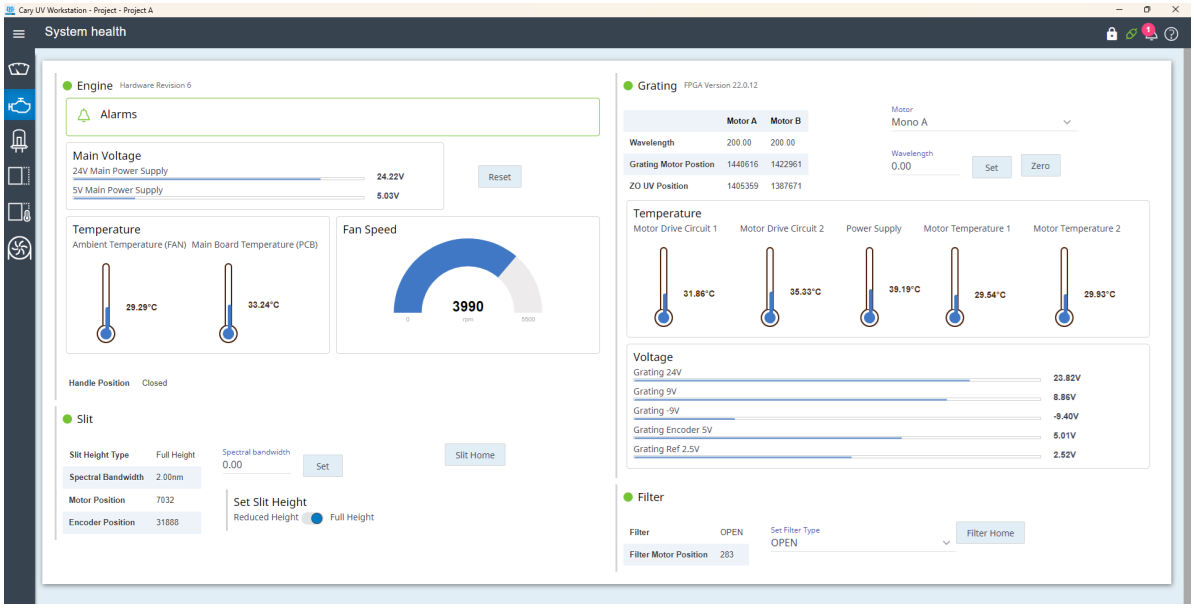
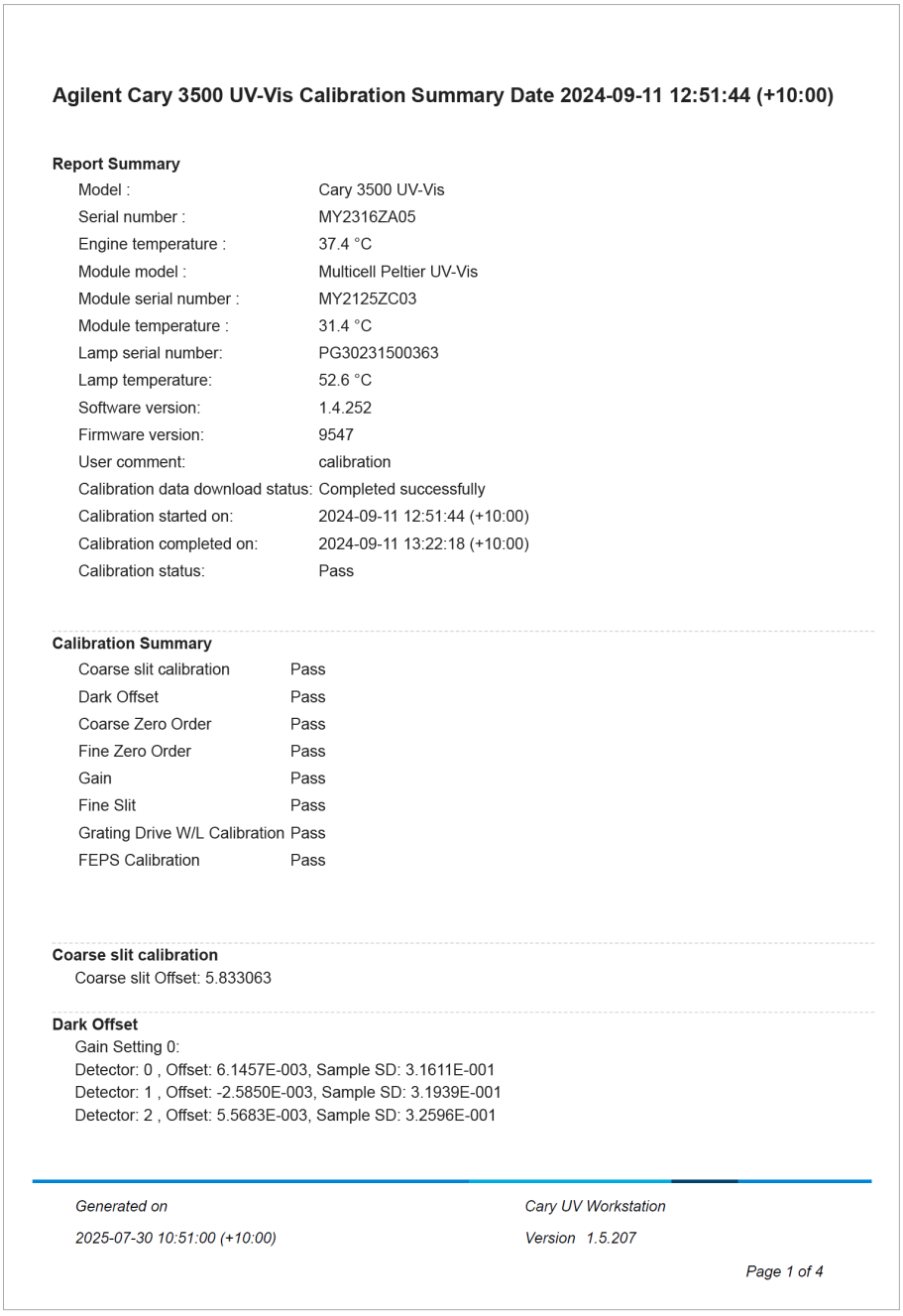


Figure 9. System health dashboard showing the xenon flash lamp usage.

Instrument calibration

The Cary 3500 UV-Vis includes automated calibration routines designed to ensure that the instrument operates at peak accuracy with minimal user intervention.

With these easy-to-use calibration protocols, users can perform calibration in a few simple steps, saving valuable time while ensuring consistent results. Calibration data is stored within the software for quick access and future reference (Figure 10).



Agilent Cary 3500 UV-Vis Calibration Summary Date 2024-09-11 12:51:44 (+10:00)

Report Summary

Model :	Cary 3500 UV-Vis
Serial number :	MY2316ZA05
Engine temperature :	37.4 °C
Module model :	Multicell Peltier UV-Vis
Module serial number :	MY2125ZC03
Module temperature :	31.4 °C
Lamp serial number:	PG30231500363
Lamp temperature:	52.6 °C
Software version:	1.4.252
Firmware version:	9547
User comment:	calibration
Calibration data download status:	Completed successfully
Calibration started on:	2024-09-11 12:51:44 (+10:00)
Calibration completed on:	2024-09-11 13:22:18 (+10:00)
Calibration status:	Pass

Calibration Summary

Coarse slit calibration	Pass
Dark Offset	Pass
Coarse Zero Order	Pass
Fine Zero Order	Pass
Gain	Pass
Fine Slit	Pass
Grating Drive W/L Calibration	Pass
FEPS Calibration	Pass

Coarse slit calibration

Coarse slit Offset: 5.833063

Dark Offset

Gain Setting 0:
Detector: 0 , Offset: 6.1457E-003, Sample SD: 3.1611E-001
Detector: 1 , Offset: -2.5850E-003, Sample SD: 3.1939E-001
Detector: 2 , Offset: 5.5683E-003, Sample SD: 3.2596E-001

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Figure 10. Calibration routine report.

Automated tests for pharmacopeia compliance

Cary UV Workstation software includes automated test protocols for compliance with major pharmacopeias, including the U.S., European, and Japanese pharmacopoeias (Figure 11). By automating these tests, the software streamlines the process, supporting organizations to meet full regulatory compliance while saving time and resources in the lab.

Test type/name	Standard Serial Number	Start Time	Pass/Fail
Stray Light		2024-08-14 09:25:25 (+10:00)	Passed
KCl at 198 nm	33190	2024-08-14 09:25:25 (+10:00)	Passed
NaI at 220 nm	33190	2024-08-14 09:34:16 (+10:00)	Passed
$NaNO_2$ at 340 nm	33190	2024-08-14 09:45:07 (+10:00)	Passed
Acetone at 300 nm	30575	2024-08-14 10:01:38 (+10:00)	Passed
Stray Light (Ratio)		2024-08-14 10:16:35 (+10:00)	Passed
KCl	27566	2024-08-14 10:16:35 (+10:00)	Passed
NaI	27566	2024-08-14 10:24:10 (+10:00)	Passed
$NaNO_2$	27566	2024-08-14 10:48:07 (+10:00)	Passed
Acetone	30575	2024-08-14 11:04:03 (+10:00)	Passed
Resolution		2024-08-14 11:11:46 (+10:00)	Passed
Toluene/Hexane	34974	2024-08-14 11:11:46 (+10:00)	Passed
Wavelength Accuracy and Precision		2024-08-14 11:15:11 (+10:00)	Passed
Xenon emission line	-	2024-08-14 11:15:11 (+10:00)	Passed
Holmium Oxide in perchloric acid	33190	2024-08-14 11:19:32 (+10:00)	Passed
Holmium Oxide glass filter	27565	2024-08-14 11:28:35 (+10:00)	Passed
Didymium	19905	2024-08-14 11:39:00 (+10:00)	Passed
Cerium Sulfate	30576	2024-08-14 11:47:16 (+10:00)	Passed
Photometric Accuracy and Precision		2024-08-14 11:56:56 (+10:00)	Passed
NIST glass filters	18294	2024-08-14 11:56:56 (+10:00)	Passed
Potassium Dichromate	33190	2024-08-14 12:01:37 (+10:00)	Passed
Potassium Dichromate 600 mg/L	33190	2024-08-14 12:04:35 (+10:00)	Passed
Wavelength Accuracy and Precision (Japanese Pharmacopeia)		2024-08-14 12:05:57 (+10:00)	Passed
Holmium optical filter	51997	2024-08-14 12:05:57 (+10:00)	Passed
Neodymium optical filter	50031	2024-08-14 13:23:48 (+10:00)	Passed
Photometric Accuracy and Precision (Japanese Pharmacopeia)		2024-08-14 13:48:30 (+10:00)	Passed

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Figure 11. U.S., European, and Japanese Pharmacopeia automated test report.

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