




Laboratory

# Alpha UV-Vis Spectrophotometer

Double-beam UV-Vis Spectrophotometer for Enhanced Accuracy  
and Measurement Stability





**Alpha is a UV-Vis spectroscopic analysis solution that delivers precise analytical performance and stable repeatability based on accumulated technological expertise and rigorous quality control.**

Alpha accurately measures the transmittance and absorbance of samples by wavelength in the ultraviolet (UV) and visible (Vis) regions, providing reliable quantitative data such as concentration and purity.

This versatile instrument is widely applicable from general analytical experiments to specialized research, providing validated results across various fields including environmental science, biotechnology, and chemistry.

The system offers four distinct measurement modes—Photometric, Quantitation, Spectrum, and Kinetics—supporting for easy operation via embedded software and an intuitive touchscreen interface.

Furthermore, it ensures stable and accurate measurements based on precise optical path design and micro-stepping control technology.

### **Quality and Reliability**

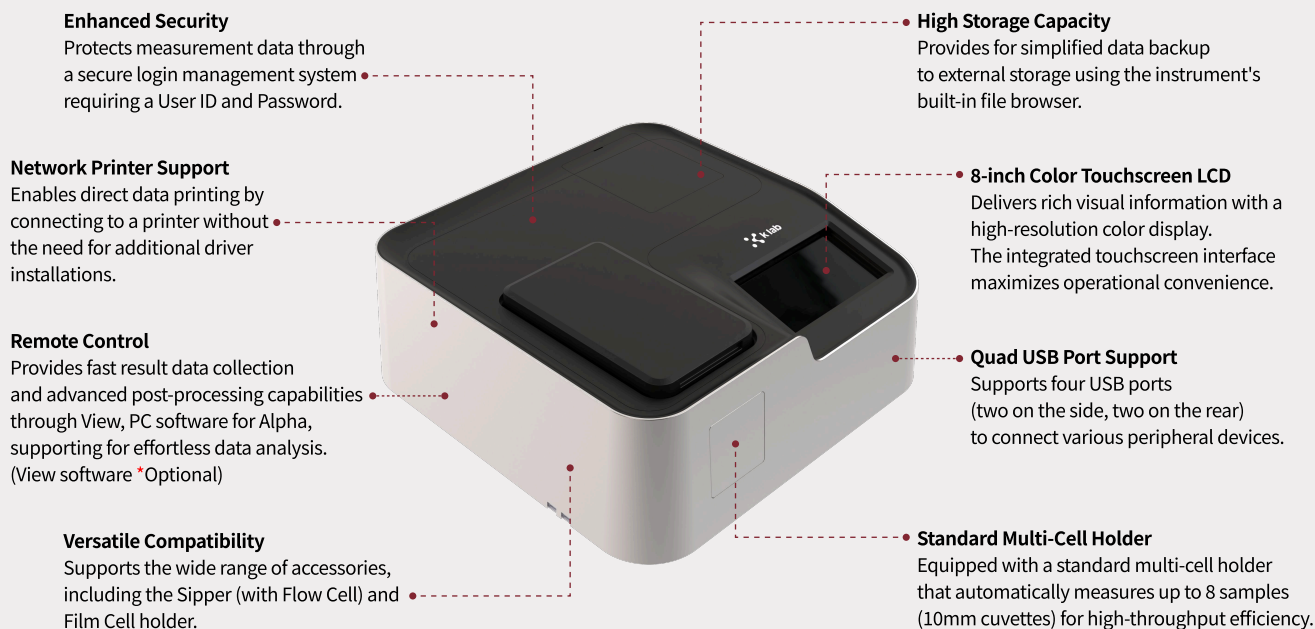
At K LAB Co., Ltd., rapid service and quality are our core priorities. Every stage of the process, from product design and R&D to production and testing, is strictly monitored at our headquarters in Daejeon, South Korea. K LAB operates under the ISO 9001:2015 Quality Management System and holds CE certification for compliance with EU regulations and safety standards, KC certification for product safety in South Korea, and RoHS certification for environmental compliance. Through these standards, we remain committed to delivering eco-friendly and safe products as our top priority.

This page is intentionally left blank.

Specifications	
Photometrics System	Double-beam type
Light Source(s)	Tungsten Lamp / Deuterium Lamp
Detector	Silicon Photodiode
Spectral Bandwidth	Fixed - 1.0 nm (190 to 1,100 nm) (Optional) Variable - 0.5, 1, 1.5, 2, 4 nm
Wavelength Range	190 to 1,100 nm
Wavelength Display (setting)	0.05 nm
Wavelength Accuracy	± 0.3 nm (For entire range) ± 0.1 nm (656.1 nm)
Wavelength Repeatability	± 0.1 nm
Wavelength Slew Rate	Approx. 25,000 nm/min
Scanning Speed(Max)	6,000 nm/min
Lamp interchange Wavelength	340 to 410 nm (Default 370 nm)
Photometric Range	Absorbance: -4 A to 4 A Transmittance: 0% to 400%
Photometric Accuracy	± 0.002 Abs at 0.5 Abs ± 0.004 Abs at 1.0 Abs ± 0.006 Abs at 2.0 Abs (NIST930D/NIST1930 or equivalent)
Environmental requirements	Temperature: 15 °C to 35 °C Humidity: 30 % to 80 %
Baseline Stability	Less than 0.0003 Abs/hr (700 nm, one hour after light source turned ON)
Baseline Flatness	< ± 0.0005 A (190 to 1,100 nm, one hour after light source turned ON)
Photometric Repeatability	Less than ± 0.0002 Abs at 0.5 Abs Less than ± 0.0006 Abs at 1.0 Abs Less than ± 0.0010 Abs at 2.0 Abs
Stray Light	Less than 1.00 % (198 nm KCl) Less than 0.05 % (220 nm NaI) Less than 0.05 % (340 nm NaNO <sub>2</sub> )
RMS noise	Less than 0.00005 Abs (700 nm)
Monochromator	Czerny-Turner type with 1,200 lines/nm blazed grating
Standard Cell Holder	Automatic Rotary type 8-position Multi-Cell Holder
Operating System (OS)	Windows 10 (Embedded PC)
Display	8 inch color LCD with touch screen
Control Options	Onboard with built-in touchscreen PC Software (View)
Dimensions(W*D*H)	520 mm * 500 mm * 200 mm
Power Requirement	AC 100-240 V, 50/60 Hz, 140 VA
Weight	14 kg
PC Software	(Optional) FDA 21 CFR Part 11 compliance S/W (Secure)

\* The detailed product specifications above are subject to change without prior notice.

## Alpha Hardware Overview

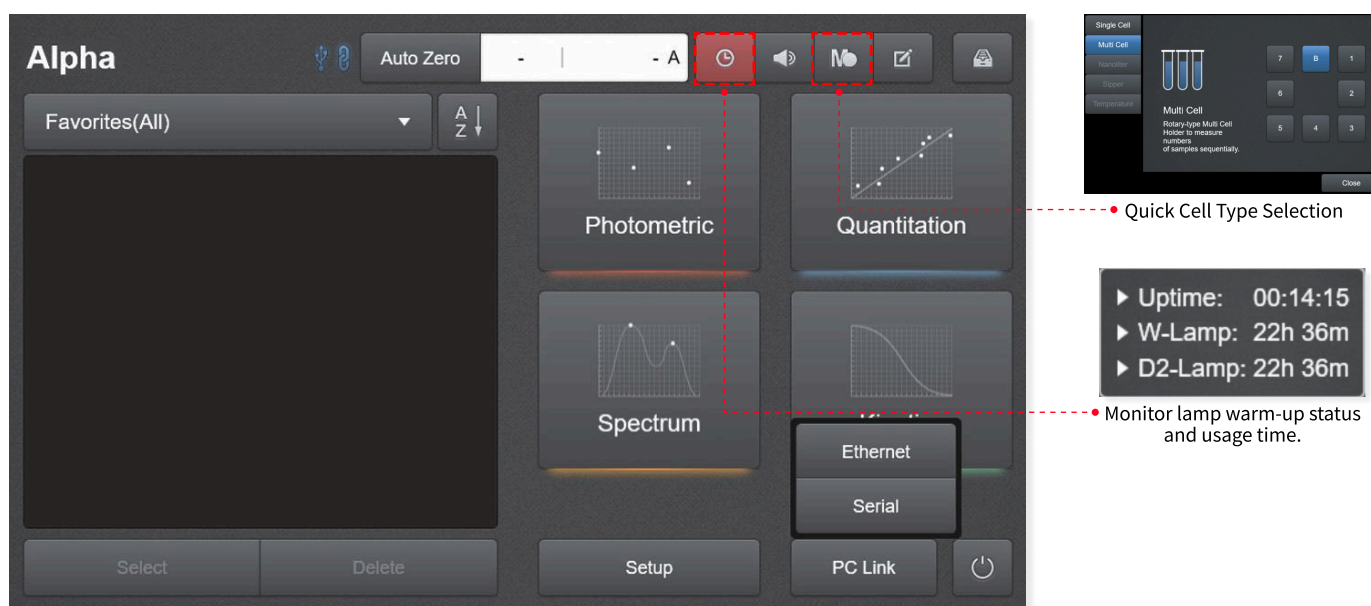


## Product Features

- **User Convenience:** Equipped with embedded PC functionality, the instrument enables faster and more intuitive operation without the need for additional equipment.
- **Exceptional Analytical Speed:** Based on fast and flexible software, the system achieves analytical speeds more than 1.5 times faster than conventional products, ensuring swift and accurate results.
- **Compact Design:** The space-efficient, compact design helps for a more effective configuration of the laboratory environment.
- **Rapid Technical Support:** As the entire process—from design to manufacturing—is conducted domestically based on proprietary technology, we provide fast and stable service support.
- **Broad Scalability:** Capable of high-precision and high-resolution measurement across a broad spectrum from ultraviolet (UV) to visible (Vis) regions, supporting for flexible use in various application fields.

Alpha provides accurate measurement and analysis with a single touch through an intuitive interface designed with user convenience at its core. Measurement results can be easily edited and exported, and the instrument supports various functions optimized for the laboratory environment.

## Interface



- **Auto Zero:** Provides real-time monitoring of wavelength changes and measurement values, with a quick [Auto Zero] button for rapid baseline calibration.
- **Volume Control:** Enables quick adjustment of the instrument's notification sounds to suit the specific laboratory environment.
- **Integrated Help:** Provides immediate on-screen access to detailed descriptions, features, and precautions for each measurement mode.
- **Favorites Function:** helps users save analysis conditions and results as favorites, enabling quick and easy recall for future tasks.
- **Quick Cell Type Selection:** Enables cell type selection and measurement monitoring without entering the M mode. Quick menu icons update automatically based on the status and position of the cell type for intuitive monitoring. (Mb, M7–M1: Cell position indicators / m, u, n, s: Current cell type status indicators)
- **Remote Mode Setting:** Supports the instrument to be switched to remote mode for synchronized operation with a PC through View software.
- **Lamp Warm-up and Usage Monitoring:** Monitors instrument runtime, lamp warm-up status, and cumulative usage in real time, ensuring optimal measurement conditions.  
Before warm-up: Red indicator. / Warm-up complete (approx. 30 min): Green indicator.  
[\*] Note: Measurements and operation are possible regardless of warm-up status.]
- **PC Connectivity:** Provides efficient PC-based management of various functions, including basic instrument information, network settings, event logs, system configuration changes, calibration, and more.

### Enhanced Data Security

Measurement data is stored in the expansion memory by default to prevent data loss due to instrument damage. In addition, the backup function enables measurement data to be securely saved to external devices.

### Touch-based Graph Zoom

A drag-select method helps users easily zoom in on desired sections, and the auto-scale function is supported for intuitive data analysis.

### Flexible Control Modes

Supports direct operation on the instrument or remote control with a PC. In a networked environment, users can review analysis results on a PC without workspace constraints.

### Efficient Data Management

Measurement conditions and data can be stored using the internal storage (32GB) or USB. Using View software, various data management tasks such as data conversion, application of specialized conversion formulas, and Excel export can be performed.

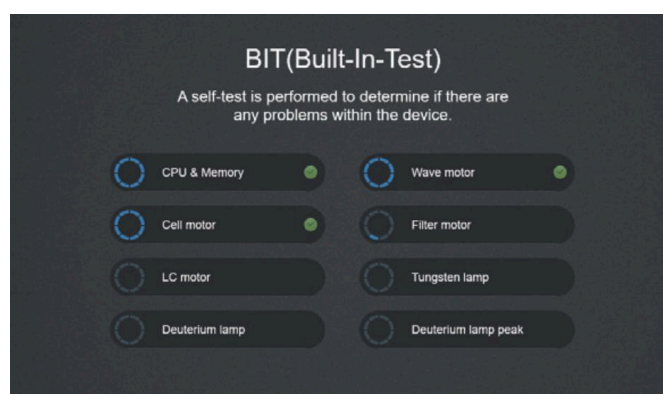
## Modes for Measurement

Intuitive measurement modes designed for efficient analysis.

### Built-In-Test, BIT

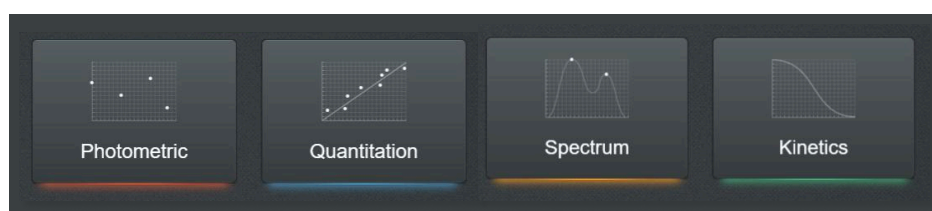
The instrument automatically checks the CPU, memory, motors, lamps, and calibration status upon power-on to verify normal operation. It displays inspection results for each item, supporting the maintenance of optimal instrument conditions at all times.

BIT Items: CPU & Memory, Wavelength Motor, Cell Motor, Filter Motor, Lamp Motor, Tungsten Lamp, Deuterium Lamp



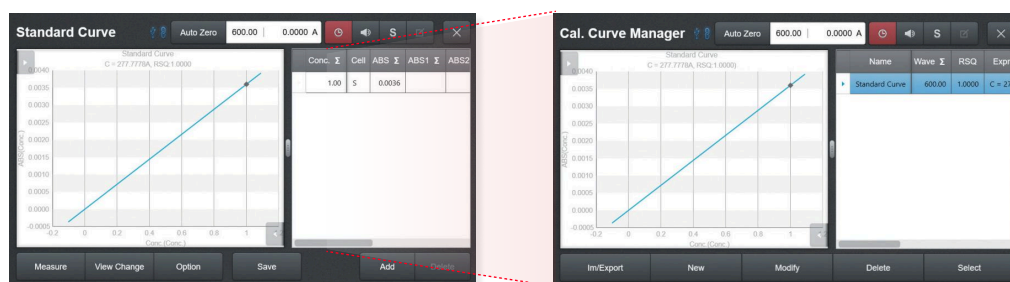
## Measurement Modes

- **Photometric Mode:** Enables easy measurement of absorbance (Abs) or transmittance (%T) at specific wavelengths.
- **Quantitation Mode:** An analysis mode for creating standard curves and performing quantitative calculations of sample concentrations based on those curves.
- **Spectrum Mode:** Enables users to scan and analyze absorbance spectra across a desired wavelength range.
- **Kinetics Mode:** Monitors changes in absorbance or transmittance over time at a specific wavelength.



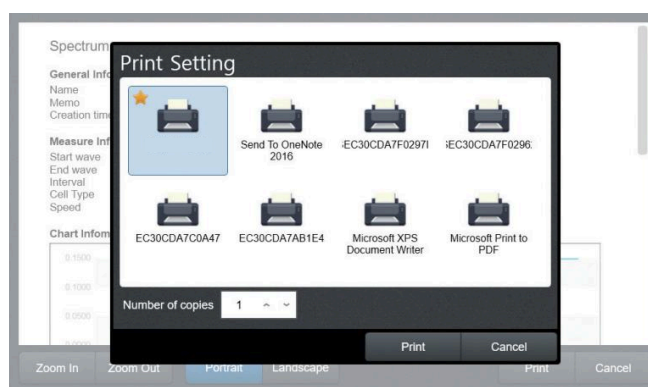
## Calibration Curve Manager

Enables users to select, create, edit, and delete standard curves, as well as import from and export to external storage.



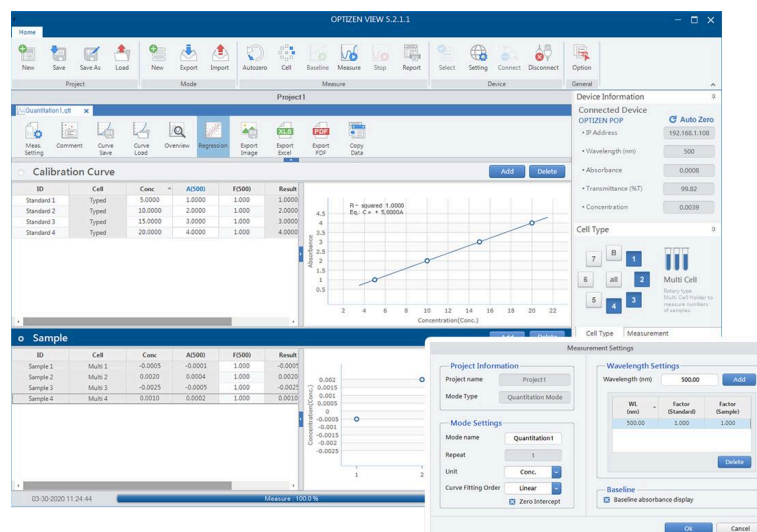
## Report & Print

Users can review or print measurement results from each mode in a report format. The layout is adjustable to both portrait and landscape orientations, with a preview function available before printing.



## View 5.0 (\*Optional)

View 5.0 is a Windows-based PC software application for with Alpha. It enables efficient instrument control and measurement data management in a standard PC environment. It supports your work from reviewing experimental results to post-processing and making reports in one simple workflow.



- **4 Core Measurement Modes:** Supports a wide range of applications from simple absorbance readings to standard curve-based quantitative analysis and time-course monitoring through Photometric, Quantitation, Spectrum, and Kinetics modes.
- **Quantitative Analysis and Data Interpretation:** Provides essential functions for qualitative and quantitative analysis, including calibration curve generation and management, unknown sample concentration calculation, and spectrum verification.
- **Efficient Data Management:** Supports project-based data saving and loading, along with export in various formats such as Excel and PDF
- **Intuitive user interface:** Offers real-time measurement monitoring and a graph-based analysis environment, with multilingual UI support for enhanced usability

Minimum Specifications	Recommended Specifications
Windows® 7, 8, 10, 11	Windows® 8, 10, 11
Intel® Pentium® D or AMD Athlon 64 X2	Intel® Core 2 Duo E6600(2.4 GHz) or AMD Athlon 64 X2 5000+ (2.6 GHz) or more
NVIDIA® GeForce; 6800(256 MB) or ATI Radeon X1600 Pro(256 MB) or more	NVIDIA® GeForce; 8800 GT(512 MB) or ATI Radeon HD 4850(512 MB) or more
2 GB RAM	4 GB RAM
1 GB or more free hard drive space	1 GB or more free hard drive space
Minimum 1920 * 1080 display resolution	Minimum 1920 * 1080 display resolution

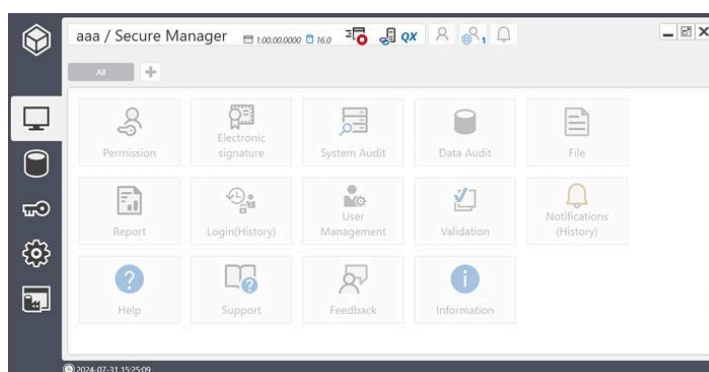
## Secure (\*Optional)

Secure provides a simple and efficient way to track and monitor all user activities of the Alpha series via View 5.0 through automatic, time-stamped logs.

Secure incorporates the U.S. FDA 21 CFR Part 11 guidelines for electronic record storage, protection, and electronic signatures. This ensures that critical data (such as analysis information, reports, and instrument operation logs) is tracked and safely stored to prevent unauthorized manipulation, ultimately guaranteeing record integrity and data reliability.

### What is 21 CFR Part 11?

Pharmaceutical companies must comply with GMP (Good Manufacturing Practice), which sets the standards for manufacturing and shipping high-quality medicines. Within the GMP framework, electronic records and signatures are of critical importance. To manage this, the U.S. Food and Drug Administration (FDA) established 21 CFR Part 11, a federal regulation that specifies the requirements for electronic records and electronic signatures



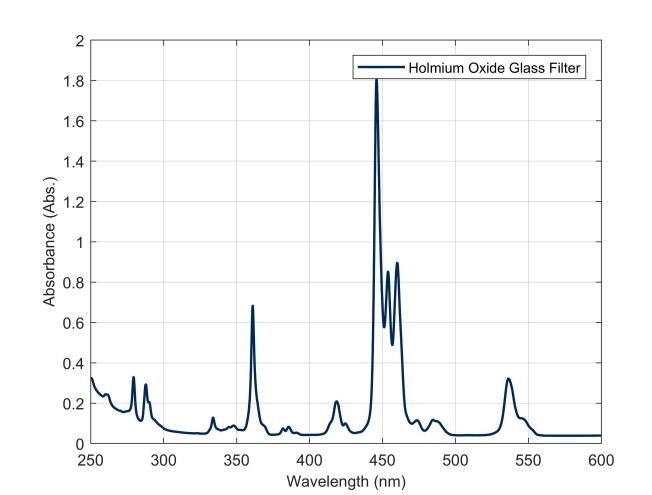
- Supports system validation, record generation, and record protection. It enables monitoring of access control and a detailed Audit Trail covering registration, modifications, events, operator actions, login/logout, and electronic signatures. It also includes operational checks, authority verification, and document encryption.
- Electronic signatures are uniquely assigned to specific individuals, with identity verification required prior to registration. To prevent unauthorized use of accounts, signatures are executed based on a secure combination of ID codes and passwords.
- The essential login/logout function supports for a complete Audit Trail of all user actions within View software, including logins, measurements, data saving, and report generation.
- Checksum function to detect data corruption or unauthorized modification.  
[(\*Secure software must be purchased separately)]
- Provides user management, group categorization, and role-based access control.  
[(\*To ensure proper functionality, Secure operated only on PCs where View(CFR Mode) software is installed.)]

## Performance Verified by Measured Data

Validated for accuracy and repeatability.

### Wavelength accuracy & repeatability

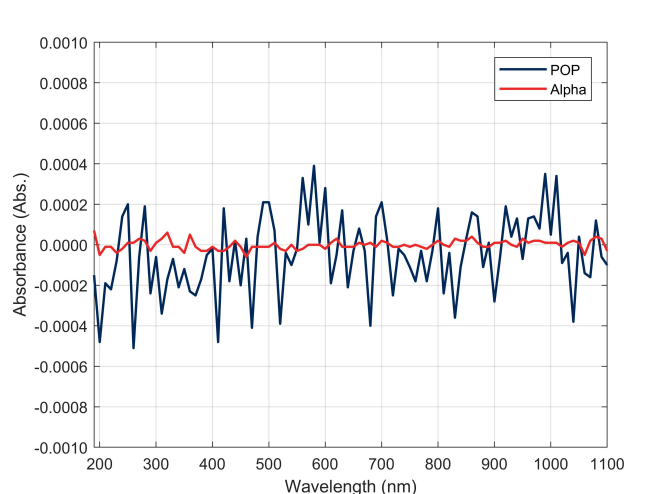
Achieves wavelength accuracy within  $\pm 0.3\text{nm}$  and wavelength repeatability within  $\pm 0.1\text{nm}$  across the 190 to 1,100nm range. Spectrum and peak results have been verified using a Holmium Oxide Glass filter traceable to NIST.g



Specified Value (nm)	279.35	360.85	453.60	536.40
Measured value (nm)	279.45	361.05	453.75	536.30
Judgement	PASS	PASS	PASS	PASS

### Baseline Flatness

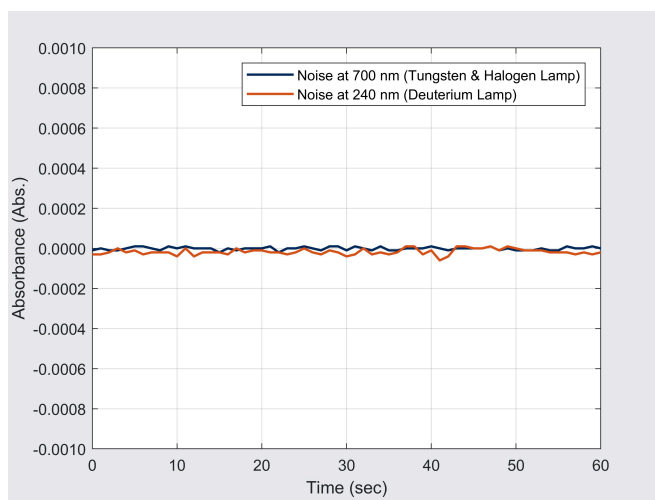
The baseline flatness is maintained within  $\pm 0.00025\text{ Abs}$  across the 200 to 1,100nm range.



Measured value	Tolerance
P-P: 0.00002 Abs	$< \pm 0.0005\text{ Abs}$

### Noise

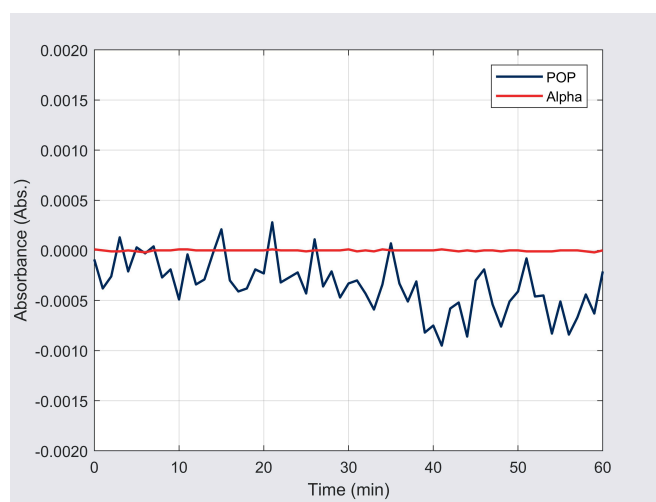
The noise level satisfies the standards of  $RMS \leq 0.05$  mAbs at 700nm and  $RMS \leq 0.4$  mAbs at 240nm.



Wavelength	Measured Value	Tolerance
700 nm (Tungsten & Halogen lamp)	P-P: 0.03 mAbs RMS: 0.008 mAbs	P-P: $<\pm 0.30$ mAbs RMS: $<\pm 0.05$ mAbs
240 nm (Deuterium lamp)	P-P: 0.07 mAbs RMS: 0.022 mAbs	P-P: $<\pm 2.4$ mAbs RMS: $<\pm 0.4$ mAbs

### Baseline stability

A warm-up period at least one hour is recommended for light source stabilization. Following the warm-up, the baseline drift at 700nm was confirmed to be within 0.3 mAbs/hr.



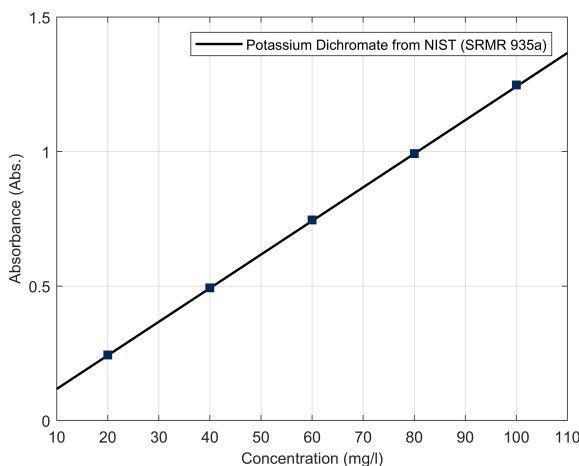
Baseline stability measurement

Wavelength	Measured Value	Tolerance
700 nm (Tungsten & Halogen lamp)	0.05 mAbs/hr	Within 0.3 mAbs/hr

## Photometric accuracy & repeatability

Photometric accuracy was verified using Potassium Dichromate (NIST SRM 935a), meeting the accuracy standard of within  $\pm 0.005$  Abs at the 1.0 Abs level. Photometric repeatability has been confirmed to be within  $\pm 0.0006$  Abs through multiple repetitive measurements.

Absorbance measurement (at 235 nm) with Potassium dichromate solution (NIST SRMR 935a)



Photometric reproducibility measurement with blank solution at 273.00 nm

No.	Absorbance of blank solution (Abs)
1	0.00000
2	0.00000
3	-0.00002
4	-0.00002
5	-0.00001
6	-0.00001
7	0.00000
8	-0.00001
9	0.00001
10	-0.00001
Standard Deviation $\sigma$	0.000009

## After Sales Support Policy

We provide systematic, expert-led technical services to meet the diverse needs of our customers.









### • Warranty Service

- We offer free repair services for products within 25 months from the date of purchase. (Note: Consumables are excluded from the warranty.)
- For lamps, free replacement is supported only for failures that occur within the guaranteed lifespan.

Through systematic and continuous technical support, we remain committed to ensuring the stable performance and longevity of our instruments.

## Accessories

Alpha comes standard with a Multi Cell Holder, while various functional accessories, such as the Long Path Cell Holder and other compatible cell types, are available as options.

	<p><b>Multi Cell Holder</b></p> <p>As a standard initially installed accessory, it offers you to mount up to eight 10mm square cuvettes simultaneously, enabling efficient measurement of multiple samples.</p>
	<p><b>Single Cell Holder</b></p> <p>This dedicated holder for 10mm square cuvettes supports the stable and precise measurement of individual samples.</p>
	<p><b>Long Path Cell Holder</b></p> <p>This cell holder is designed to increase the optical path length for analyzing low-concentration samples.</p> <p>Optical Path Length: 20, 50, 100 mm</p>
	<p><b>Film Cell Holder</b></p> <p>This film cell holder is designed to measure solid-state samples that allow light transmission, such as optical films or slides glasses.</p> <p>Sample Size: max. 60 mm(H) x 90 mm(W) Sample Thickness: max. 8 mm</p>
	<p><b>All-in-One Cell Holder</b></p> <p>A universal cell holder that compatible with round cell (16mm and 25mm), 10mm square cuvette, and 1inch square cell within a single unit.</p>
	<p><b>Round Cell Holder</b></p> <p>A round cell holder specifically used for analysis using round cells.</p> <p>Test Tube Diameter: 16 mm / 25 mm Test Tube Height: max. 100 mm</p>
	<p><b>Temperature Cell Holder</b></p> <p>A cell holder designed to control the temperature of the cell holder using a water or oil circulator.</p> <p>Tubing Size: 6 mm</p>
	<p><b>Sipper</b></p> <p>A sipper enables the automatic suction and measurement of liquid samples. The device includes an integrated suction volume calibration function, ensuring accurate and stable sample processing.</p> <p>Flow rate range: 0.035~570 Speed range: 0.5~150 rpm Speed resolution: 0.1 rpm (0~100 rpm), 1 rpm (100~600 rpm)</p>

This page is intentionally left blank.

K LAB Co., Ltd., a leading company in the domestic analytical instrument industry, is the only specialized research and manufacturing enterprise in Korea that manages the entire process—from R&D to production—under one roof.

Address: 94-23, Techno 2-ro, Yuseong-gu, Daejeon, 34013, South Korea

Website: [www.klab.im](http://www.klab.im)

Phone / Fax (Technical and Service)

Phone: +82 42-932-7586 /

Fax: +82 42-932-7589

Email: [sales@klab.im](mailto:sales@klab.im)



Learn more → <https://klab.im/>

