OPTIZEN Alpha

UV–VIS SMART SPECTROPHOTOMETER

KLAB
Keen Innovative Solutions

KEEN INNOVATIVE SOLUTIONS

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We study the future of analytical instruments.

The goal of K Lab Co., Ltd. is to create innovative products and produce value for our customers that has never existed in the word, leading to a better future.

We have developed spectrophotometers based on our best technology and have been providing opportunities to use them easily in laboratories and various fields.

We pursue innovation not only in product technology but also in customer satisfaction. We aim to improve the quality of our research by supplying products that meet customer needs.

K LAB CO.,LTD.
OPTIZEN Alpha

Based on our technical experience, K Lab Co., Ltd. has been leading the development and dissemination of a spectrophotometer having a monochromator applied with a high-precision scanning mechanism developed for the first time in Korea.
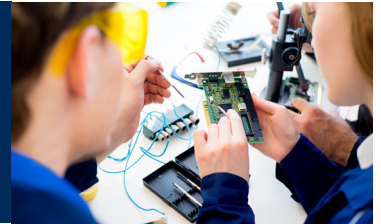
The K Lab's spectrophotometer product line, OPTIZEN Alpha has been produced based on high technology and strict quality control. It offers superior performance and design as well as convenience to customers, which cannot be compared to other products.

OPTIZEN Alpha can measure the transmittance or absorbance at each wavelength of a sample in ultraviolet and visible light bands to determine the quantitative characteristics such as concentration and purity. OPTIZEN Alpha, which can be used widely from general analytical experiments to professional research fields, guarantees accurate measurement and excellent reproducibility and provides reliable results in various fields such as the environment, biotechnology, and chemistry.

OPTIZEN Alpha provides four measurement modes (Photometric Mode, Quantitation Mode, Spectrum Mode and Kinetics Mode), and users can select a mode according to the purpose of the measurement. The embedded S/W built into the equipment, touch screen interface and applications make it very easy for users to use the equipment.

OPTIZEN Alpha provides an automatic multi-cell holder as standard, allowing users to easily measure multiple samples. The rotary type 8-cell holder realized by precise optical path design and micro stepping control technology enables precise, fast and convenient sample measurement.

BUSINESS
KEYWORDS

- **Innovative products**
- **World's best competitiveness**
- **Trusted brand**

K Lab Co., Ltd. ensures the world's best competitiveness through the development of innovative products in the field of analytical instruments and creates a brand trusted by customers through unwavering quality and services.
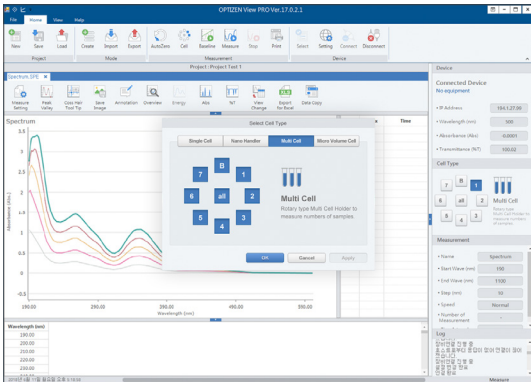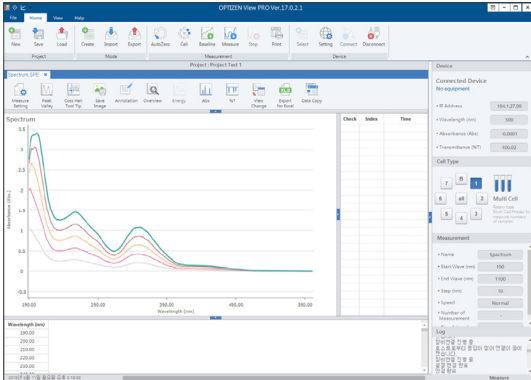
THE SMART
UV-VIS SPECTROPHOTOMETER

Experience faster and more convenient OPTIZEN Alpha.

OPTIZEN VIEW (PC Software)

One-touch Cell Holder Cover

One-type touch cell holder can easily be opened and closed.

Log-in management Function

Can protect device and measuring date safely through Log-in management Function using by ID and Password.

Network Printer Support

Data can be printed out by connecting to the main unit without installing a printer driver.

Remote Control

OPTIZEN VIEW can easily analyze data, using fast result value acquisition and post-processing functions.

User Convenience

All functions of existing PC software are installed in OPTIZEN Alpha, making it faster and more convenient.

Incredible Speed

Fast and flexible software delivers the best result with analytical speeds up to 1.5 times that of existing products.

Rapid Service

Quick services are available as OPTIZEN Alpha is made in Korea from design conception to manufacturing based on the unique technology of K LAB Co., Ltd.

Extensive Scalability

OPTIZEN Alpha is designed for high-precision/high-resolution measurement in widebands from ultraviolet to visible light and can be used in various applications.

Compact Size

Compact OPTIZEN Alpha enhances the efficiency of the experimental space.

Sensuous Design

Now, you can enjoy a greater level of pleasure with a sensuous design.

Installation of a Powerful Controller

Equipped with an Intel(R) Celeron(R) Quad Core Processor N3160 it includes a 32GB default storage capacity and data backup using USB memory.

8-inch Color Touch Screen LCD

Delivers rich visual information with a high-resolution color screen. Convenience has been improved by applying a touch screen.

USB 4-port Installation and Support

OPTIZEN Alpha supports up to 4 USB ports, allowing various peripheral devices to be connected.

Multi-cell Adoption by Default

More samples can be automatically measured with the built-in multi-cell as standard.

Compatibility

Various types of accessories such as Flow Cell, Peltier, and Sipper can easily be used.

A/S Support Policy

K Lab Co., Ltd. provides systematic services based on professional technology to support the various requirements of customers.
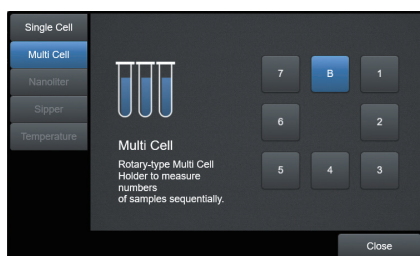
Free Warranty Service

We provide repair and replacement services free of charge for products purchased within one year and lamp failures occurring within the warranty life. We are striving to provide stable performance based on systematic and continuous services and experiences.

DEUTERIUM LAMP
1000 HOURS

ANALYZER LAMP

TUNGSTEN HALOGEN LAMP
2000 HOURS

THE BEST VISUAL
AND FUNCTIONAL EXPERIENCE

OPTIZEN Alpha has an intuitive interface that allows accurate data measurement and analysis with a single touch, focusing on user convenience. The measurement results are also easy to be edited and exported. The Alpha includes a variety of features optimized for laboratory equipment.

Measured Value Monitoring Function

You can always check measured values in real time.
* [AUTO ZERO] Quick button provided.

Quick Cell Type Selection

Measurement monitoring is possible by selecting a cell type without entering the mode. The icon of the cell type in the quick menu changes according to the cell type status or position, so that the current status of the cell can be easily checked.

Mb, M7, M6, M5, M4, M3, M2, and M1: display of the cell position
m, μ, n, and s: display of the current cell type status

Lamp Preheating Status Check Function

You can check the operating time of the equipment, the preheating status of the lamp and the cumulative operating time in real time and measure in the optimal status*.
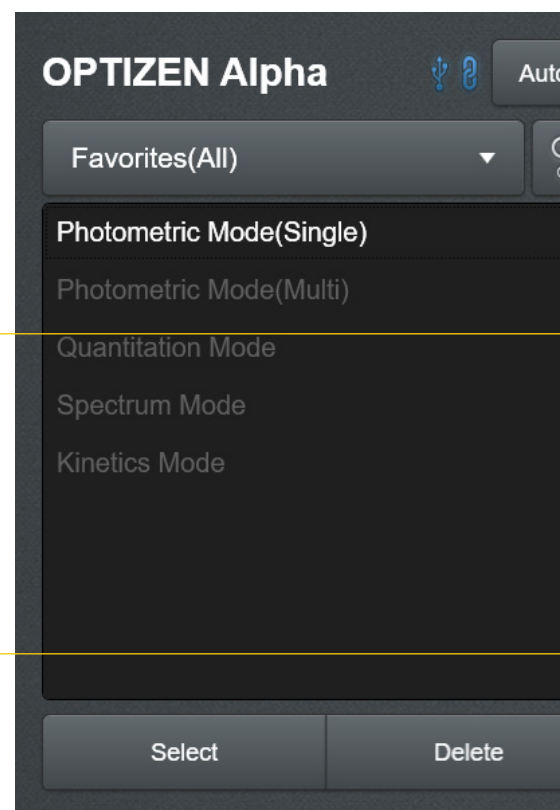
Before lamp preheating, the icon is displayed in yellow.
After lamp preheating (1 hour), the icon is displayed in green.
(*) The equipment can be measured and operated immediately without preheating.

Favorite

By registering the information that is being measured or analyzed, or has been completed, you can easily and quickly call up the information to perform tasks.

Provision of Data Security

Measured data are saved in the extended memory by default to prevent data loss due to equipment damage. They can also be saved in an external device by using the backup function.

Touch Graph Zoom-In/Out

By providing a drag-select method, it is possible to set a magnification range, and the user can easily enlarge the desired section. The auto-scale function is implemented.

Provision of Useful Control Mode

OPTIZEN Alpha can be directly measured from the instrument or remotely from a PC. In a network environment, analysis results can be viewed on a PC without a limit of work space.

Convenient Data Management

By storing data in the extended memory and USB, the user can perform various tasks such as switching data, applying special conversion expressions and exporting to Excel in PC.

Kinetics Mode
OPTIZEN Alpha
Photomatric Mode
Quantitation Mode
Spectrum Mode

Photometric

Quantitation

Volume Control Function

The volume of the instrument (16 levels) can be adjusted to suit the laboratory environment.

Help

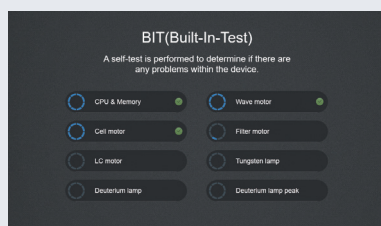You can check the explanations and precautions for using the functions (features) of the program.

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Photometric

Quantitation

Spectrum

Kinetics

Setup

PC Link
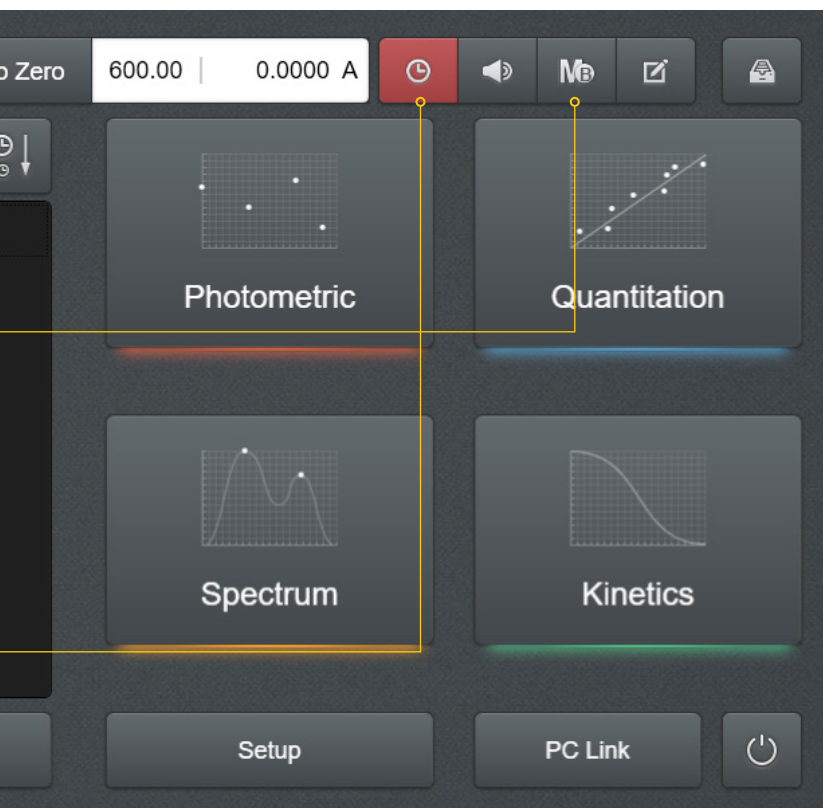
Modes for Measurement

- **Photometric Mode**
  Absorption information measurement mode

  This mode allows you to measure the absorbance and concentration of a sample at a specific wavelength.

- **Quantitation Mode**
  Quantitative analysis mode

  This mode allows you to quantitatively analyze a sample using the calibration curve.

- **Spectrum Mode**
  Absorption spectrum acquisition mode

  This mode allows you to acquire the absorption or transmission spectrum in the desired wavelength band.

- **Kinetics Mode**
  Temporal absorption information change confirmation mode

  This mode allows you to measure the absorbance or transmittance of a sample over time.

Setting

You can change the basic information, network, event, and system settings of the equipment as well as calibrate the equipment.

PC-Link

By changing the mode of the equipment to the remote mode, you can use it by direct link to a PC through OPTIZEN VIEW.

BIT(Built-In-Test)

A self-test is performed to determine if there are any problems within the device.

CPU & Memory · Wave motor ·
Cell motor · Filter motor
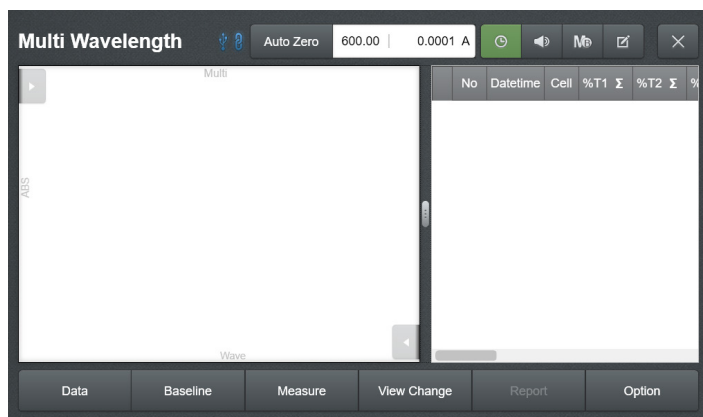LC motor · Tungsten lamp
Deuterium lamp · Deuterium lamp peak

Provision of Built-In-Test (BIT)

When the power is turned on, a self-test is performed to determine if there are any problems within the device. During the initial self-test, the CPU & ROM, drive of each motor, lamp and calibration status are checked to determine if there are any problems within the device. Each item is checked, and the result is displayed to maintain the best condition at all times.

Self-test Items

CPU & Memory
Wave Moter
Cell Moter
Filter Moter
Lamp Moter
Tungsten Lamp
Deuterium Lamp

Photometric Mode

· In this mode, the absorbance (Abs) (or transmittance (%T)) at a specific wavelength can be easily measured.

· The factor (K) value can be set to allow a simple quantitative test (C = K × A) on a sample to be performed making it possible for absorbance (Abs) measurement.

· Up to 8 wavelengths can be set, and the absorbance at each wavelength is measured automatically.

· Automatic analysis for up to 7 samples is possible using the multi-cell holder.
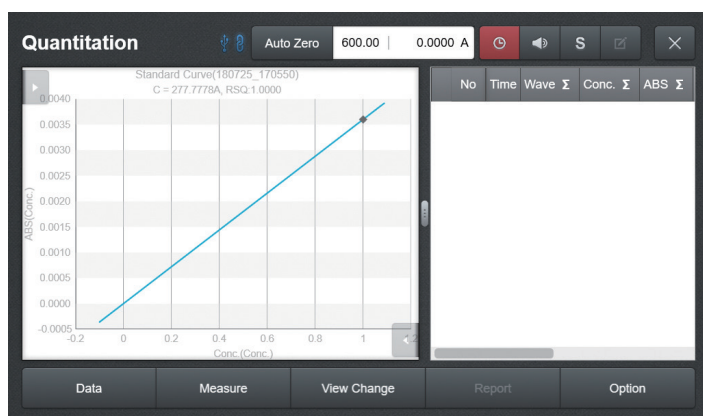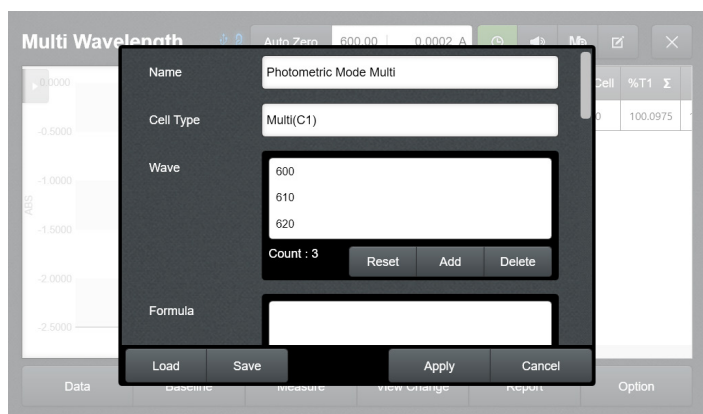

Quantitation Mode

· It is a mode that can measure and manage the calibration curve by utilizing the multi-cell holder.

· Quantitative analysis for a sample of interest can be performed using a calibration curve made by up to 7 concentrations of the sample.

· Four types of calibration curves including linear (zero-crossing), linear, quadratic, and cubic types are provided.

· Accurate calibration curve can be created with the values measured repeatedly for a maximum of 5 times.
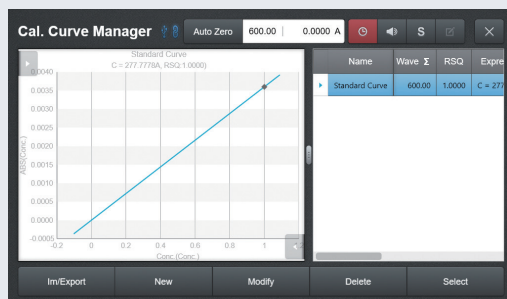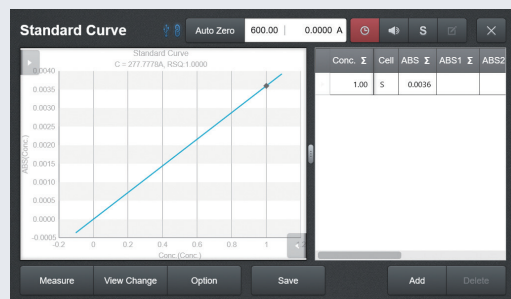

Calibration Manager

The calibration manager allows the user to use the standard curve to select, create, modify, delete, import and export external quantitation mode files from the external storage, etc.
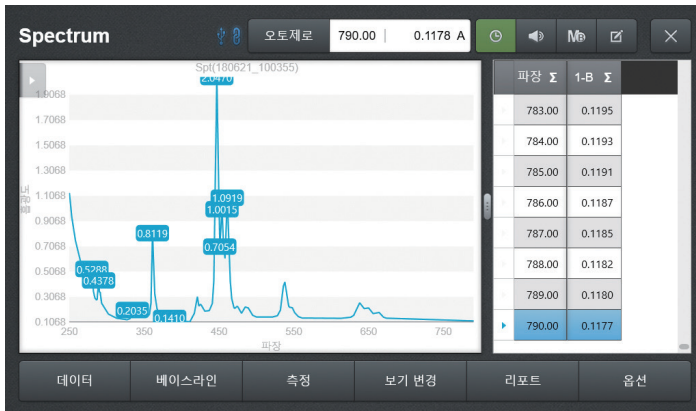
Spectrum Mode

· This mode allows the user to check the spectrum of the desired wavelength band.

· Absorbance (Abs) and transmittance (%T) data can be switched using a shortcut key.

· Automatic spectrum analysis for up to 7 samples (excluding the reference sample) is possible.

· This mode includes the functions to zoom in the section and to find the Peak/Valley location of the spectrum.
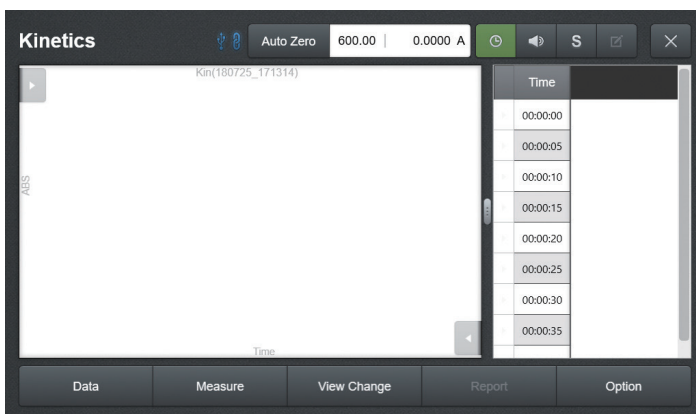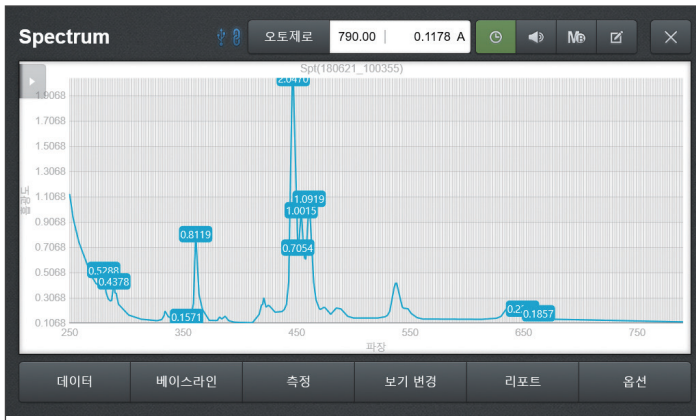
Kinetics Mode

· This mode allows the user to check the change in absorbance (or transmittance) over time at a specific wavelength.

· This mode is measured at regular intervals, and the minimum interval that can be set is for 1 second.

· This mode's progresses during the measurement is displayed, and 24-hour measurement is possible.

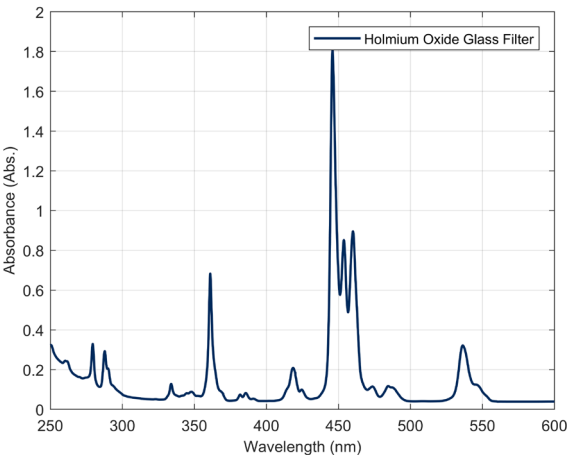· The changes in the absorbance of 7 samples can be obtained automatically.
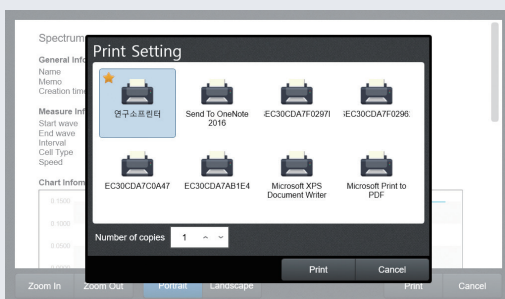
Report & Print

You can check the data measured at each mode in a report format or print them out. Moreover, you can select the items to be included through the Report Option and print out only the necessary information.

THE UNCOMPROMISING
PERFORMANCE

Optizen Alpha is designed as a double beam type spectrophotometer. Therefore we could improve repeatability, accuracy and safety of date.
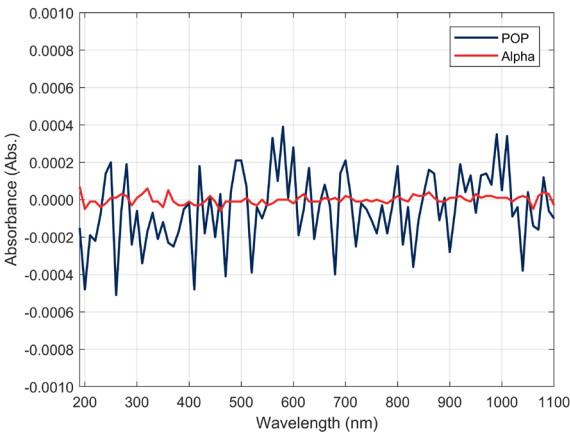

Wavelength accuracy & repeatability

We guarantee wavelength accuracy as <± 0.3 nm and wavelength reproducibility as <± 0.1 nm at all Wavelength range.

Spectra and peak results were obtained using NIST traceable Holmium Oxide Glass filters.

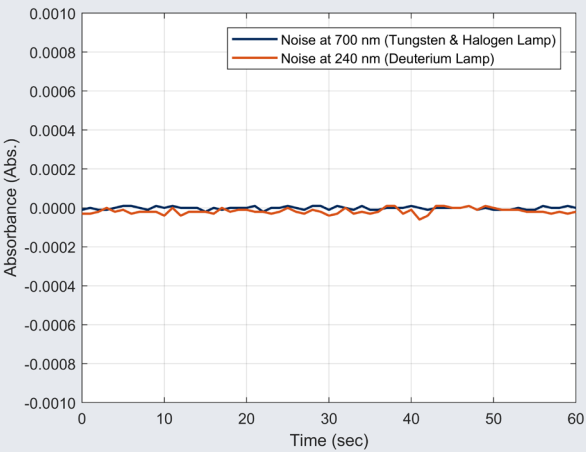| Specified Value (nm)	279.35	360.85	453.60	536.40
Measured value (nm)	279.45	361.05	453.75	536.30
Judgement	PASS	PASS	PASS	PASS

Baseline Flatness

Optizen Alpha offer high Baseline Flatness at all Wavelength range.

Baseline Flatness (190 – 1100)

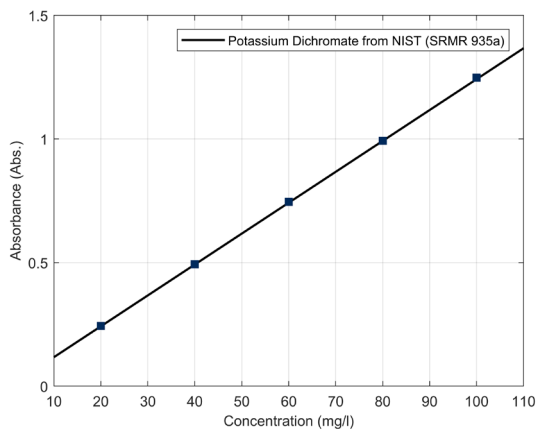| Measured value	Tolerance
P–P: 0.00002 Abs	<± 0.0005 Abs

Noise

Optizen Alpha guarantee Noise Level same as <± 0.00005 Abs at 700 nm and <± 0.00008 Abs at 240 nm.

Noise level measurement

| Wavelength	Measured Value	Tolerance
700 nm (Tungsten & Halogen lamp)	P–P: 0.03 mAbs RMS: 0.008 mAbs	P–P: <± 0.30 mAbs RMS: <± 0.05 mAbs
240 nm (Deuterium lamp)	P–P: 0.07 mAbs RMS: 0.022 mAbs	P–P: <± 2.4 mAbs RMS: <± 0.4 mAbs

Photometric accuracy & repeatability

OPTIZEN Alpha guarantees photometric accuracy of less than ±0.005 Abs (at 1.0 Abs) and photometric repeatability of less than ±0.0006 Abs(at 1.0 Abs) with exceptional noise characteristics.

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

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 σ	0.000009

Photometric reproducibility measurement with blank solution at 273.00 nm
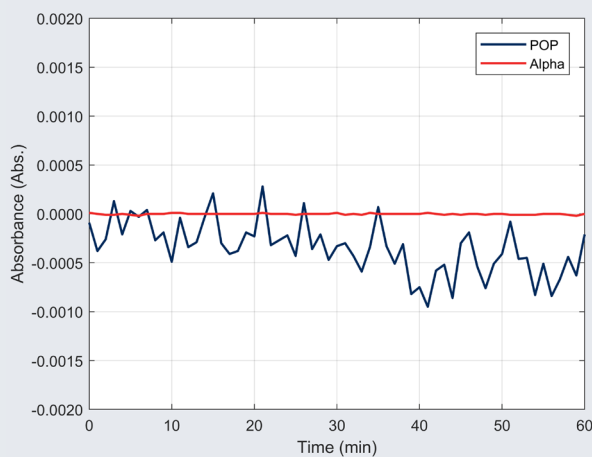
Baseline stability

There could be a tremor at measuring result by drift phenomena of light source when turn on the OPTIZEN Alpha. We recommend have preheating time about an hour in case of high-accuracy measurement. We guarantee less than 0.0003 Abs in this case.

Baseline stability measurement

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

OPTIZEN Alpha
ACCESSORIES

OPTIZEN Alpha is compatible with a wide range of accessories from a micro-volume cell holder to a temperature control system, providing a complete solution for laboratories and research environments in each field.

Film Cell Holder – Wide Type

Single cell holder to measure solid samples, such as an optical film or slide glass, which can transmit light.
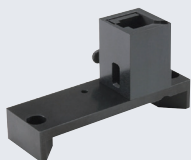
Sample Size: max. 100 mm(H) x 70 mm(W)
Sample Thickness: max. 5 mm

Film Cell Holder – Small Type

Wide type Cell holder for measuring solid samples of a smaller size. It can be mounted on a multi-cell holder for simultaneous analysis of multiple samples.

Sample Size: max. 100 mm(H) x 30 mm(W)
Sample Thickness: max. 2 mm

Micro Volume Cell Holder

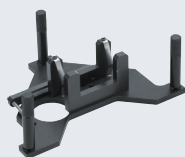Single cell holder used when a sample volume is 500 µl or less.

Optical Path Length: 10 mm
Center Height: 15 mm

Round Cell Holder

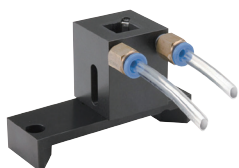Single cell holder used for analysis using a test tube.

Test Tube Diameter: 16 mm / 25 mm
Test Tube Height: max. 100 mm

Long Path Cell Holder

Single cell holder used for measurement by increasing the optical path length to analyze low concentration samples.

Optical Path Length: 50 ~ 100 mm

Temperature Cell Holder (Water/Oil circulator Type)

Apparatus that controls the temperature of the cell holder by using the water/oil circulator.

OPTIZEN Alpha
SPECIFICATIONS

Photometrics System	Double−beam type
Light Source	Tungsten Halogen Lamp & Deuterium Lamp
	(Built−in light source auto interchanging motor)
Detector	Silicon photodiode
Monochromator	Czerny−Turner type with 1200 lines/mm blazed grating
Lamp Interchange Wavelength	Set freely in the range of 340~410 nm (Default: 370 nm)
Spectral Bandwidth	1 nm (190 to 1100 nm)
Wavelength − Range	190 ~ 1100 nm
− Accuracy	± 0.3 nm (For entire range)
	± 0.1 nm (656.1 nm)
− Repeatability	<± 0.1 nm
− Setting	0.05 nm
− Slew Rate	About 8,800 nm/min
− Scanning Speed	Max 6,000 nm/min
Photometric − Range	Absorbance : −4 to 4 Abs
	Transmittance : 0 % to 400 %
− Repeatability	± 0.0002 at 0.5 Abs
	± 0.0006 at 1.0 Abs
	± 0.001 at 2.0 Abs
− Accuracy	Less than ± 0.005 Abs at 1.0 Abs
Stray light	< 0.02 % Nal at 220 nm, $NaNO_2$ at 340 nm
Baseline Stability	< 0.0003 Abs/h
Baseline Flatness	<± 0.0005 Abs
Center Height (Z−height)	15 mm
Standard Cell Holder	Autometic Rotary type 8−position Multi−Cell Holder
Operation	Windows 10 (Embedded PC);
Display	8 inch color LCD with touch screen;
Power Requirement	100~240 V; 50~60 Hz
Dimensions	500(W) x 430(D) x 200(H)
Weight	14 kg

* The contents of this document may be changed without notice.

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reddot design award
winner 2019

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