

SP-3000DB

Double Beam UV-VIS Spectrophotometer



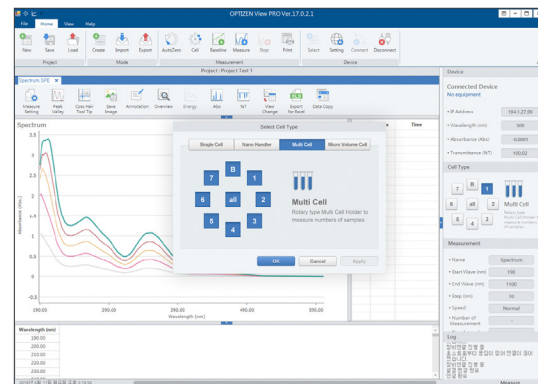
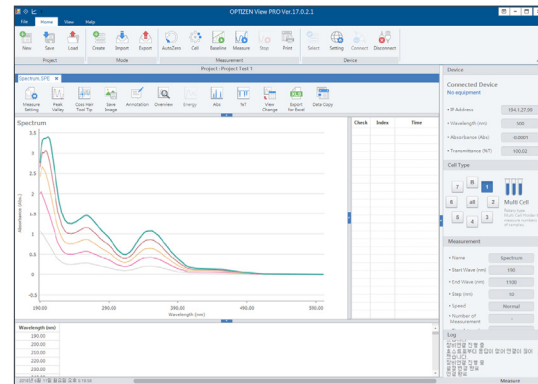
Use SP-3000DB
and you will find it more useful
beyond your expectation.



SP-3000DB UV-VIS SPECTROPHOTOMETER

Experience faster and more convenient SP-3000DB.

OPTIVIEW (PC Software) - optional



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

Log-in management Function
Can protect device and measuring data 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
OPTIVIEW can easily analyze data, using fast result value acquisition and post-processing functions.

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
SP-3000DB supports up to 4 USB ports, allowing various peripheral devices to be connected.

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

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

User Convenience

All functions of existing PC software are installed in SP-3000DB, making it faster and more convenient.

Extensive Scalability

SP-3000DB 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 SP-3000DB enhances the efficiency of the experimental space.

Incredible Speed

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

Sensuous Design

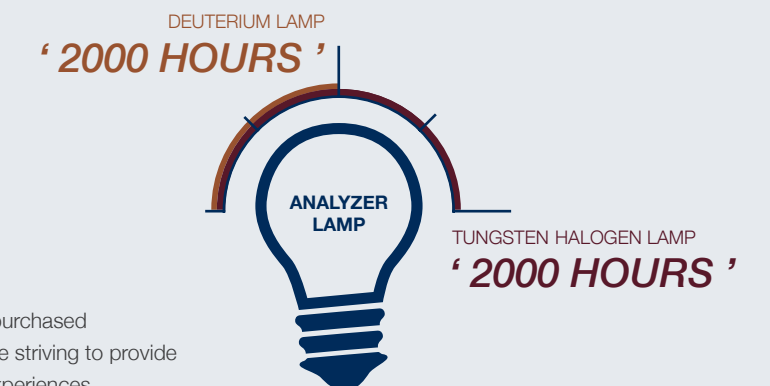
Now, you can enjoy a greater level of pleasure with a sensuous design.

After Sales Service Support Policy

OPTIMA® provides systematic services based on professional technology to support the various requirements of customers.

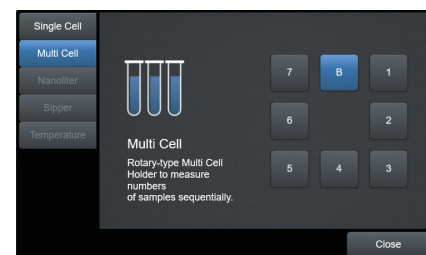
Warranty Service

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.



BEST VISUAL AND FUNCTIONAL EXPERIENCE

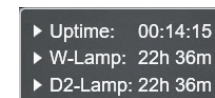
SP-3000DB has an intuitive interface that allows accurate data measurement and analysis with a single touch, focusing on user convenience. The measurement results are also easy to be edited and exported.



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.

Measured Value Monitoring Function

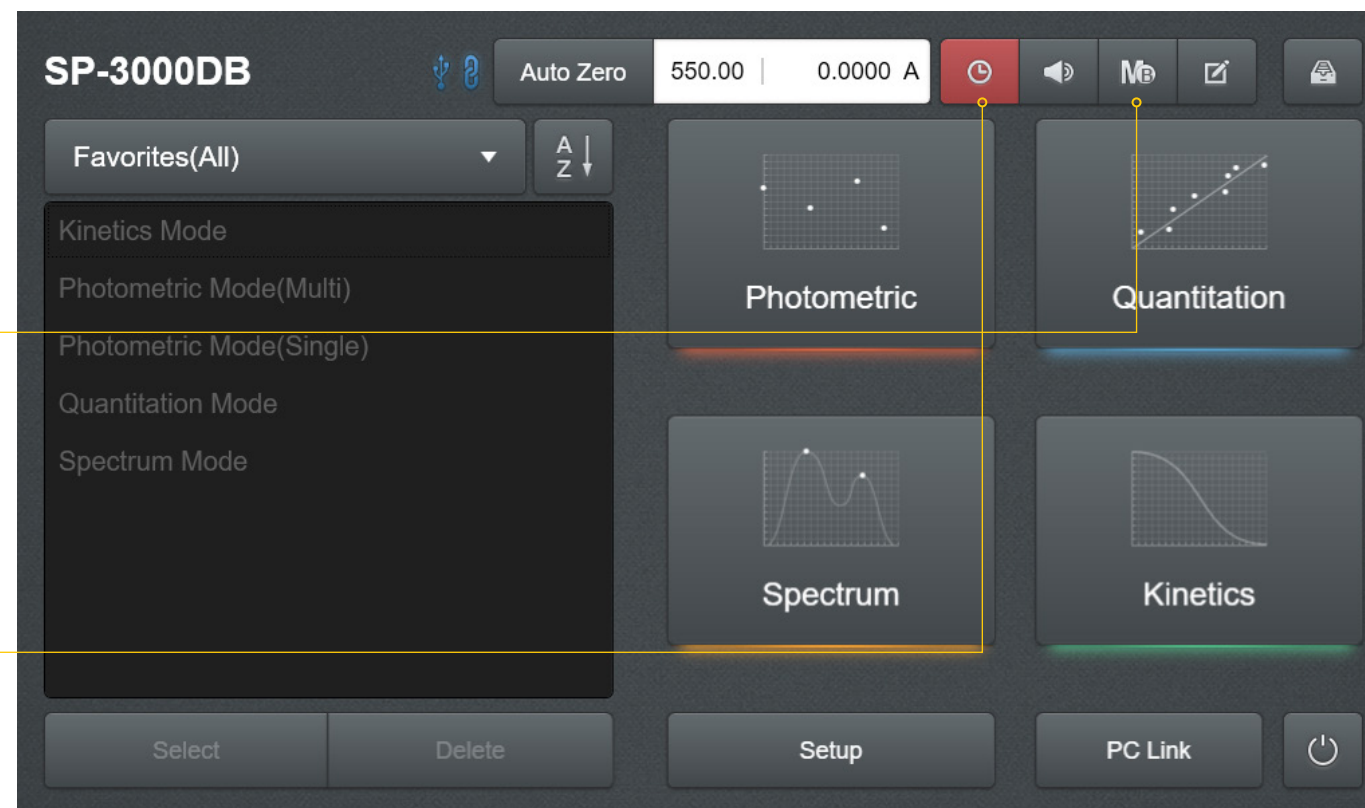
You can always check measured values in real time.
* [AUTO ZERO] Quick button provided.

Volume Control Function

The volume can be adjusted to suit the laboratory environment.

Help

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



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.

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.

Setting

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

PC-Link

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

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

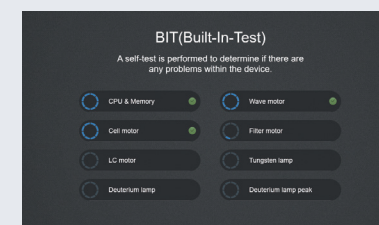
By providing a drag-select method, it is possible to set a magnification range, and the user can easily enlarge the desired section. The auto-scale function is implemented.

Provision of Useful Control Mode

SP-3000DB can directly measure 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.

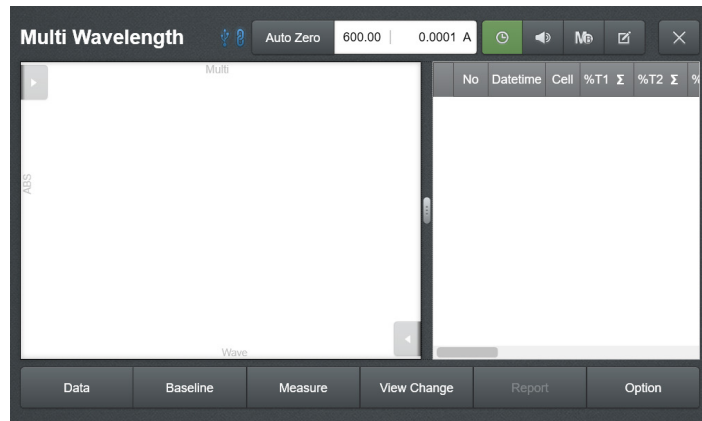


Provision of Built-In-Test (BIT)

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.

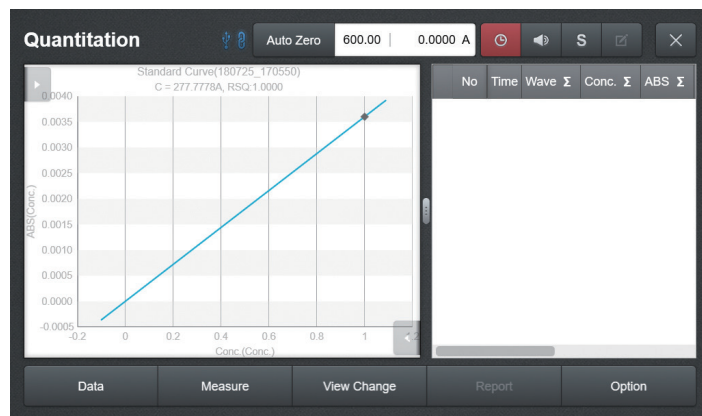
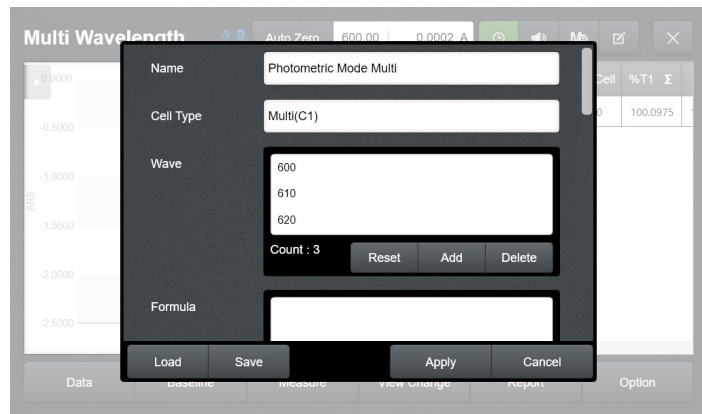
Self-test Items

- CPU & Memory
- Wave Motor
- Cell Motor
- Filter Motor
- Lamp Motor
- Tungsten Lamp
- Deuterium Lamp



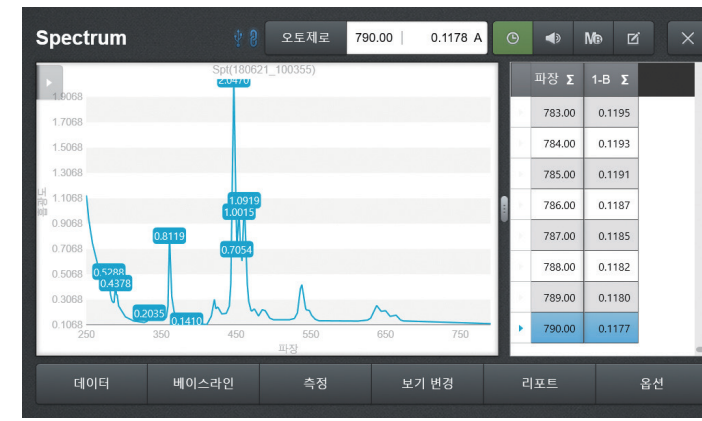
Photometric Mode

- 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 ($C = K \times A$) 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.



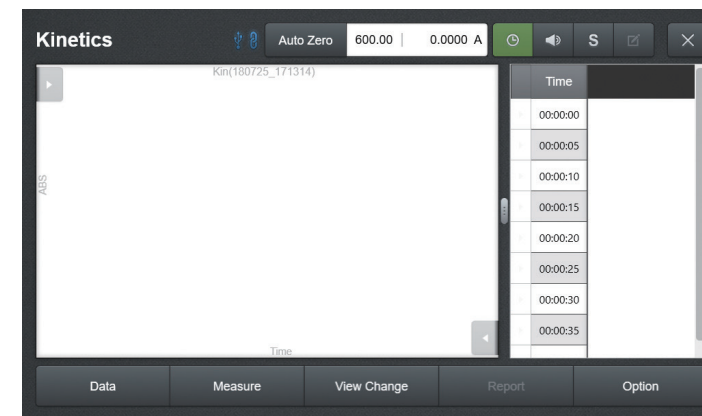
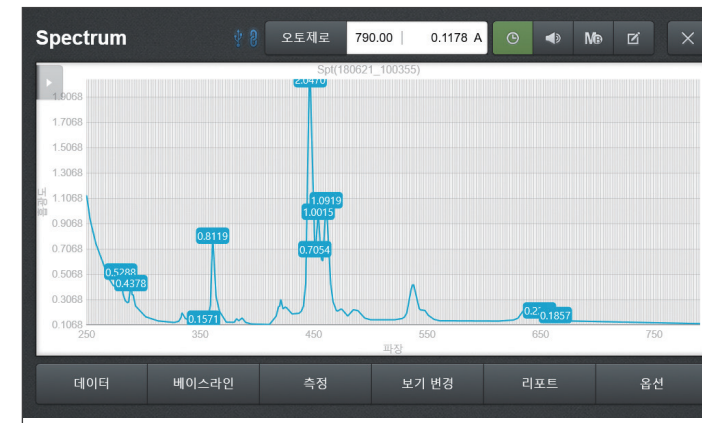
Quantitation Mode

- 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.



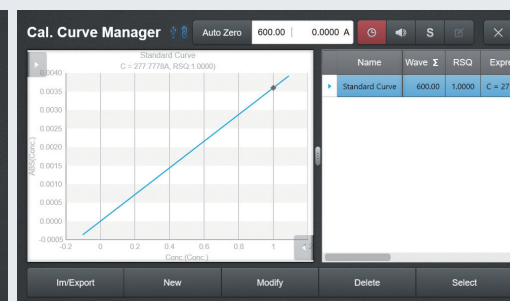
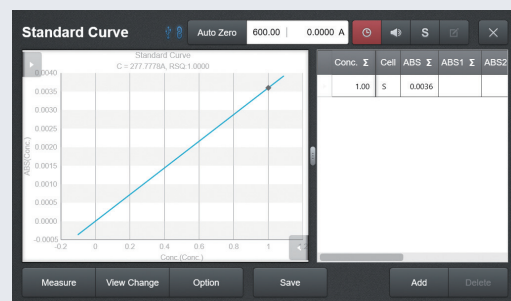
Spectrum Mode

- 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.



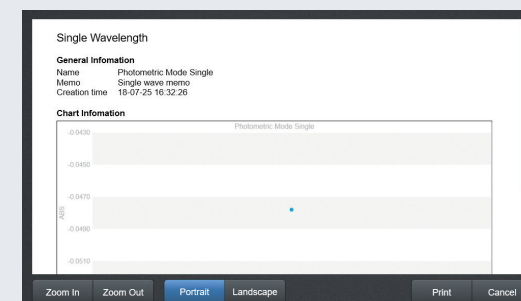
Kinetics Mode

- 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.



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.

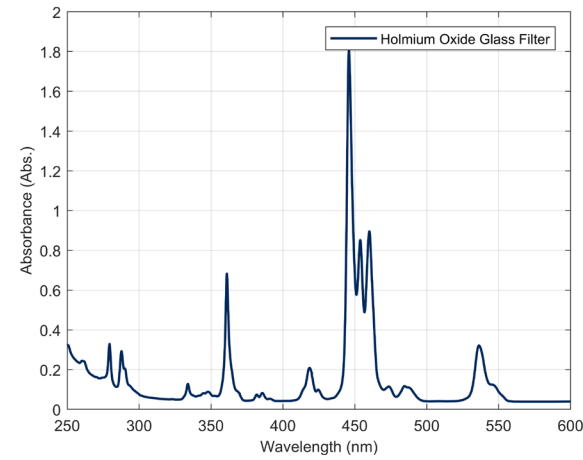


Report & Print

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

SP-3000DB is designed as a double beam type, providing high wavelength accuracy and repeatability.

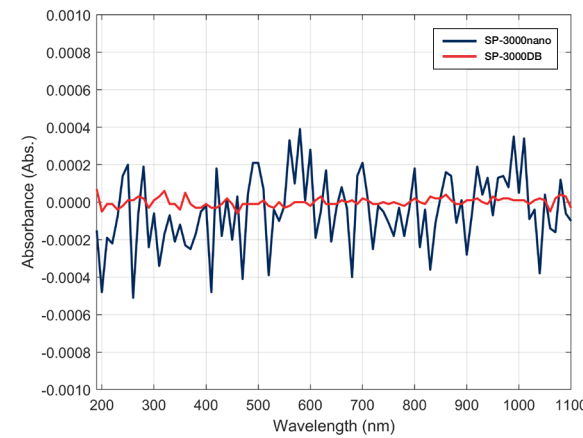


Wavelength accuracy & repeatability

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

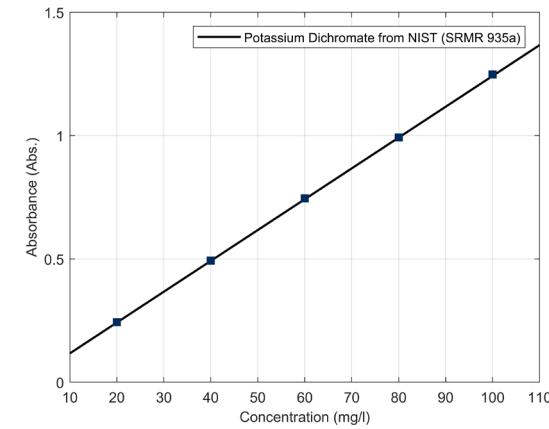


Baseline Flatness

SP-3000DB offers high Baseline Flatness at all Wavelength range.

Baseline Flatness (190 – 1100)

Measured value	Tolerance
P-P: 0.00002 Abs	± 0.0005 Abs



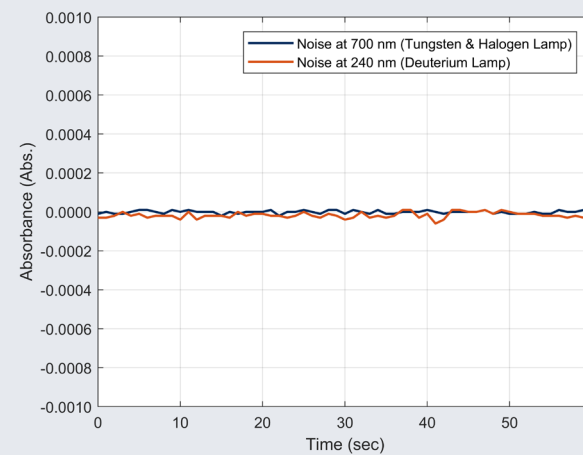
Photometric accuracy & repeatability

SP-3000DB 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	0.000009

Photometric reproducibility measurement with blank solution at 273.00 nm

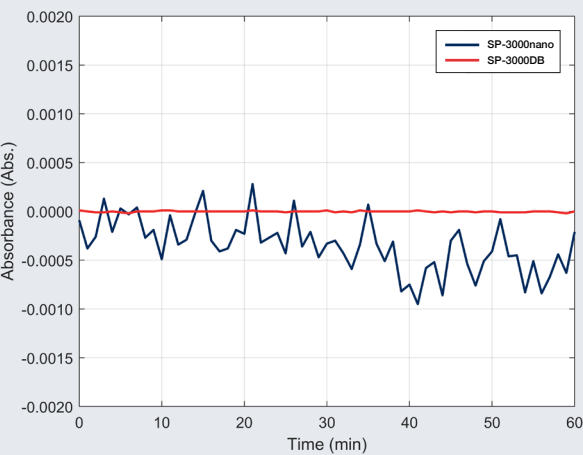


Noise

SP-3000DB guarantees 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



Baseline stability

There could be a tremor at measuring result by drift phenomena of light source when SP-3000DB is turned on. We recommend to 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

SP-3000DB ACCESSORIES (Options)

SP-3000DB 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

Code NO.3000-N-CO5W



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

Code NO.3000-N-CO5e



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

Code NO.3000-N-CO3



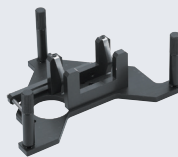
Round Cell Holder

Single cell holder used for analysis using a test tube.

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

Code NO.3000-N-CO16

Code NO.3000-N-CO25



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

Code NO.3000-N-CO4



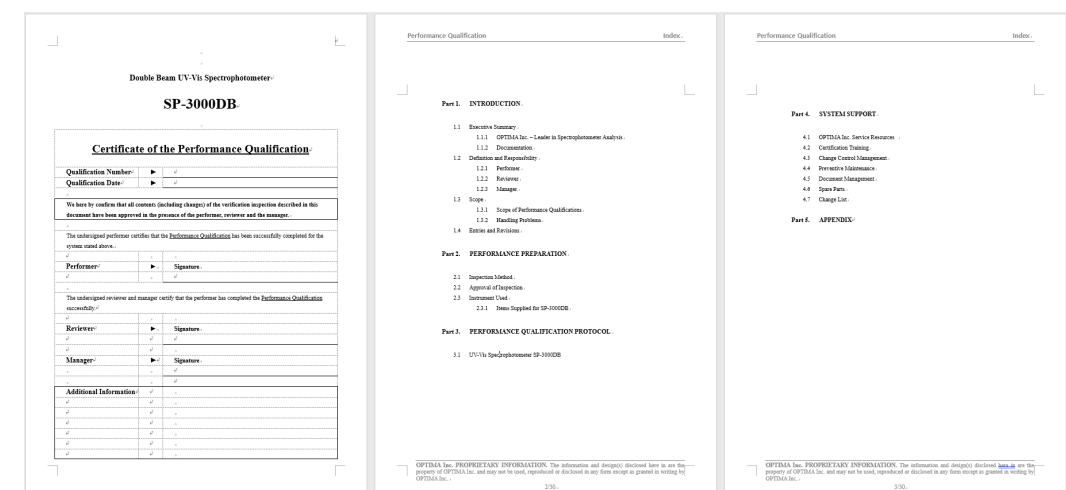
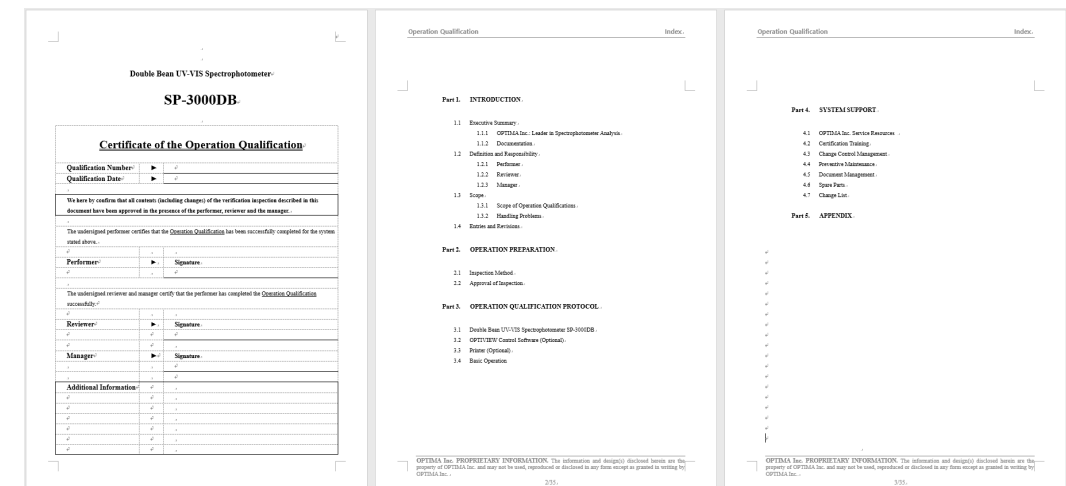
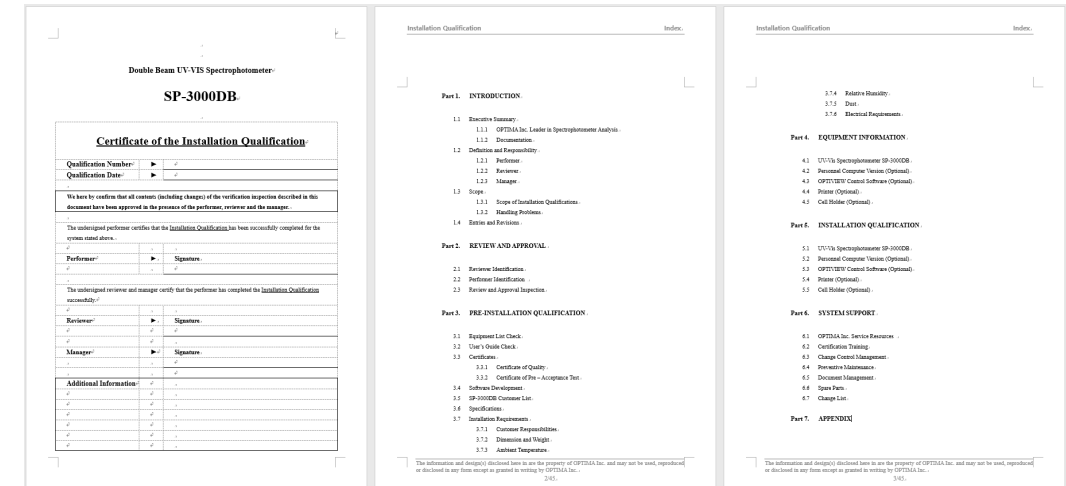
Temperature Cell Holder (Water/Oil circulator Type)

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

Code NO.3000-N-CO6

SP-3000DB VALIDATION and DOCUMENTATION (Options)

SP-3000DB meets the needs of the modern age by helping to manufacture safe pharmaceuticals in compliance with IQ / OQ / PQ requirements and applications regulations.



SP-3000DB

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 % NaI 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	Automatic 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.

Made in JAPAN

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