

SP-3000nano

UV-VIS SPECTROPHOTOMETER



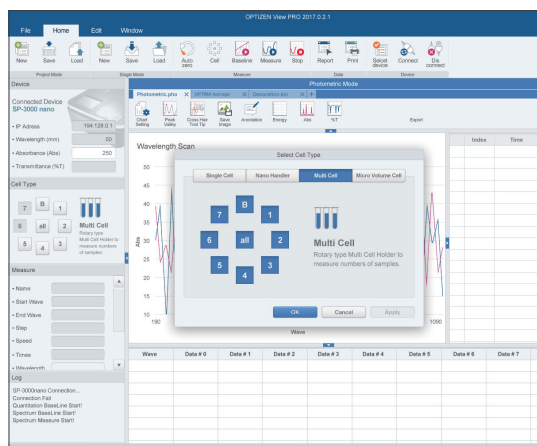
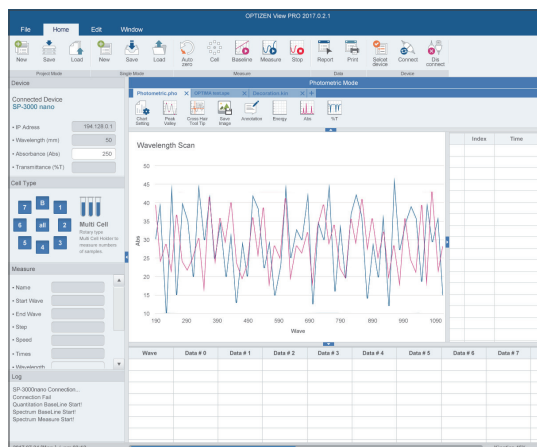
*Use **SP-3000nano**
and you will find it more useful
beyond your expectation.*



SP-3000nano UV-VIS SPECTROPHOTOMETER

Experience faster and more convenient SP-3000nano.

OptiView II (PC Software) - optional



One-touch Cell Holder Cover

At a touch the cell holder cover can easily be opened or closed

Mounting a Measurement Part with Temperature Sensor

Temperature measurement system is adopted as standard inside the sample box, allowing the temperature of analysis to be checked and recorded instantaneously.

Supporting Network Printer

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

Remote Control

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



User Convenience

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

Compact Size

Compact **SP-3000nano** 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 faster than that of existing products.

Sensuous Design

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



Installation of a Powerful On-Board Controller

Equipped with an ARM® Cortex™ – A8 Processor it includes a 16GB default storage capacity and data backup using USB memory.

7-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-3000nano 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 be easily used.

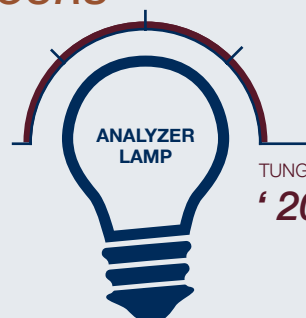
A/S Support Policy

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.

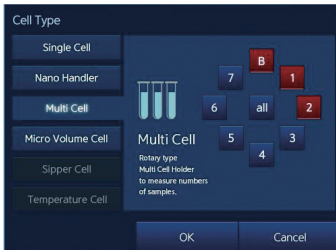
DEUTERIUM LAMP
' 2000 HOURS '



TUNGSTEN HALOGEN LAMP
' 2000 HOURS '

THE BEST VISUAL AND FUNCTIONAL EXPERIENCE

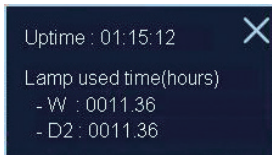
SP-3000nano has an intuitive interface that allows accurate data measurement and analysis with a single touch, focusing on user convenience. The measurement results are also easy to be edited and exported.



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*.

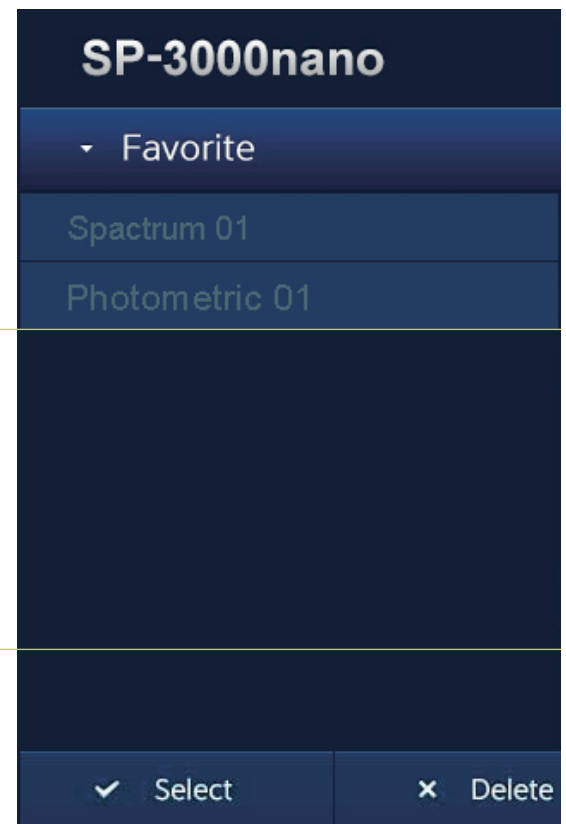
Before lamp preheating, the icon is displayed in yellow.
After lamp preheating (1 hour), the icon is displayed in green.

(* 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.



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

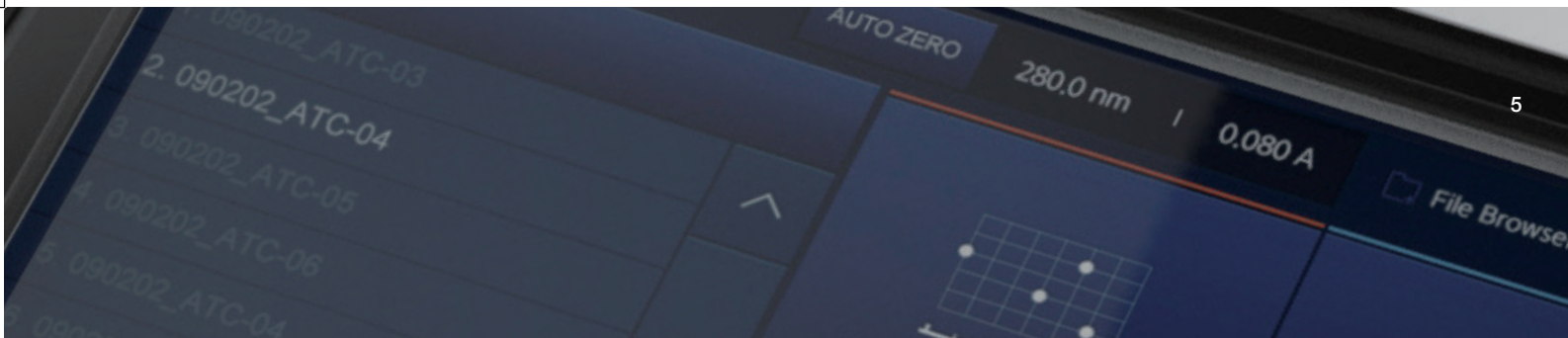
By providing a drag-select method, it is possible to set a magnification range, and the user can easily enlarge the desired section. The auto-scale function is implemented.

Provision of Useful Control Mode

SP-3000nano 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.



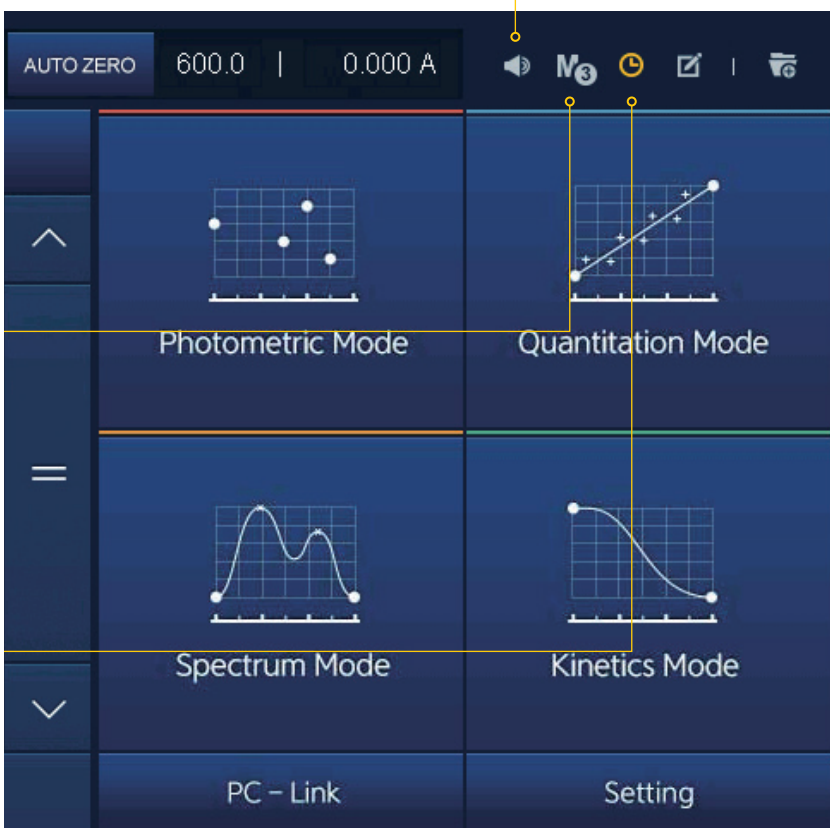
Volume Control Function

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.



Modes for Measurement

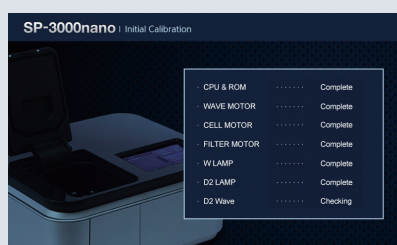
- **Photometric Mode**
Absorption information measurement mode
This mode allows you to measure the absorbance and concentration of a sample at a specific wavelength.
- **Quantitation Mode**
Quantitative analysis mode
This mode allows you to quantitatively analyze a sample using the calibration curve.
- **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.

PC-Link

By changing the mode of the equipment to the remote mode, you can use it by direct link to a PC through OptiView II. (optional)

Setting

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



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 whether any issues are present within the device. Each item is checked, and the result is displayed to maintain the best condition at all times.

Self-test Items

- CPU ROM
- WAVE MOTOR
- CELL MOTOR
- FILTER MOTOR
- W LAMP
- D2 LAMP
- D2 Wave



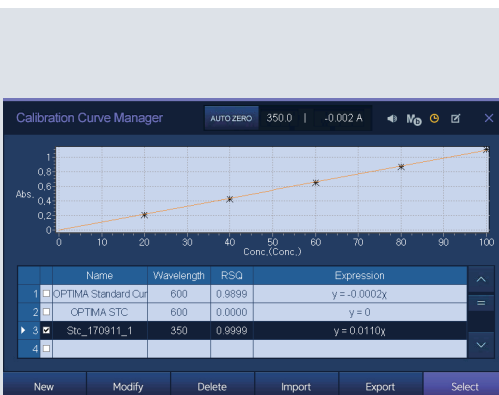
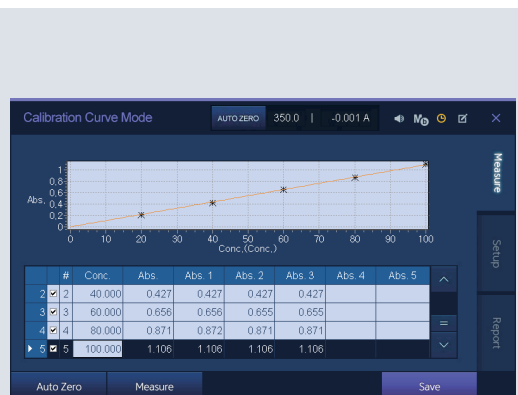
Photometric Mode

- 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 with zero intercept, 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

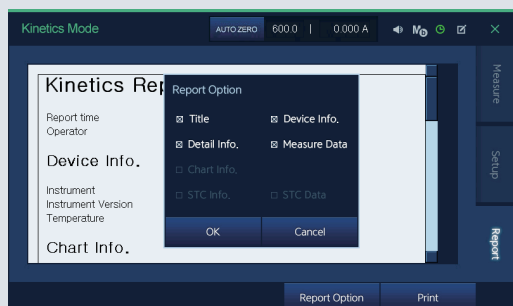
- This mode allows the user to check the spectrum of the desired wavelength band.
- Absorbance (Abs) and transmittance (%T) data can be switched using a shortcut key.
- Automatic spectrum analysis for up to 7 samples (excluding the reference sample) is possible.
- This mode includes the functions to 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 as 1 second.
- This mode's progresses during the measurement are displayed, and 24-hour measurement is possible.
- The changes in the absorbance of 7 samples can be obtained automatically.

* The minimum measurement interval is adjusted according to the measurement range and conditions.

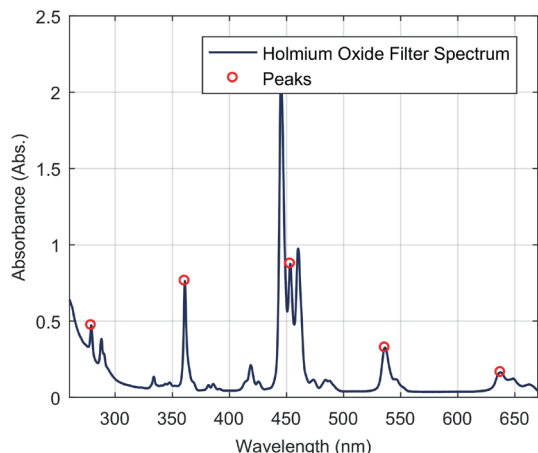


Report & Print

You can check the data measured at each mode in the 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-3000nano is equipped with an 8-position rotary multi-cell holder as standard which minimizes the impact of light source drift by measuring the blank in each sample measurement.



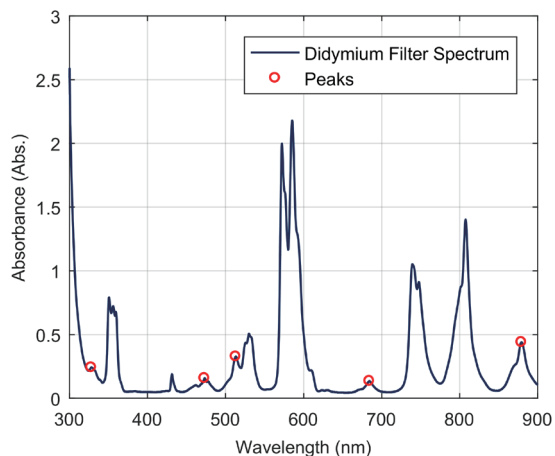
Wavelength accuracy & repeatability

SP-3000nano employed high resolution wavelength measurement mechanism. This mechanism guarantees a wavelength reproducibility of less than 0.1 nm in all bands. The wavelength accuracy verified through the Holmium Oxide filter ($MU^* = \pm 0.2$ nm) and Didymium Filter ($MU^* = \pm 0.2$ nm) is ± 0.5 nm or less.

(*) MU : Measurement Uncertainty

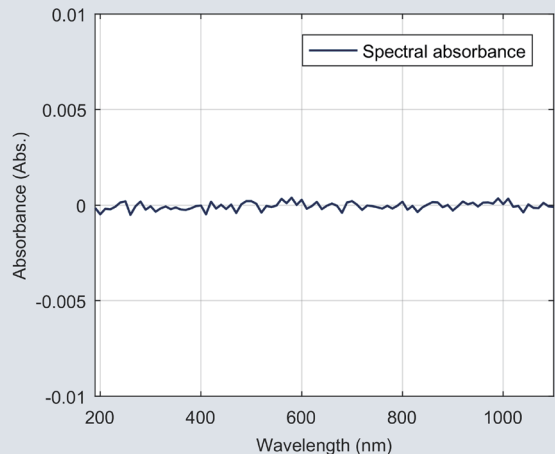
Holmium Oxide Spectrum

Reference	279.35 nm	360.85 nm	453.60 nm	536.40 nm	637.65 nm
Measured	279.00 nm	361.00 nm	453.30 nm	536.20 nm	637.40 nm
Judge	PASS	PASS	PASS	PASS	PASS



Didymium Spectrum

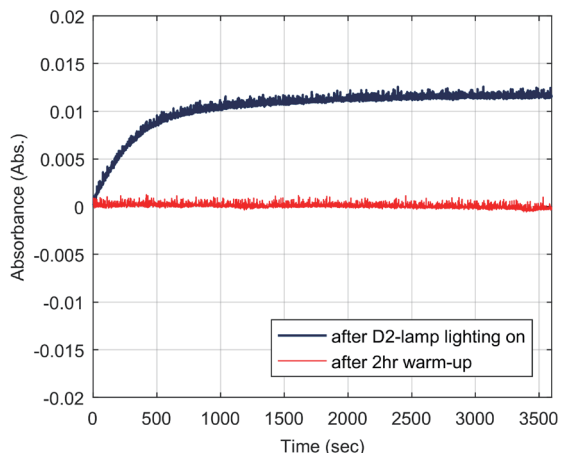
Wavelength	328.15 nm	473.35 nm	513.55 nm	684.50 nm	879.40 nm
Error	328.00 nm	473.00 nm	513.10 nm	684.40 nm	879.10 nm
Judge	PASS	PASS	PASS	PASS	PASS



Baseline Flatness

SP-3000nano automatically adjusts the baseline at each measurement, providing a constant baseline flatness without additional baseline correction.

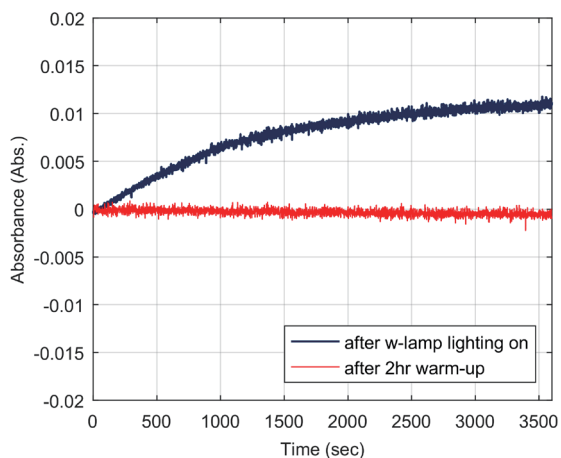
Baseline Flatness
Limits : ± 0.002 ABS (240 ~ 1050)



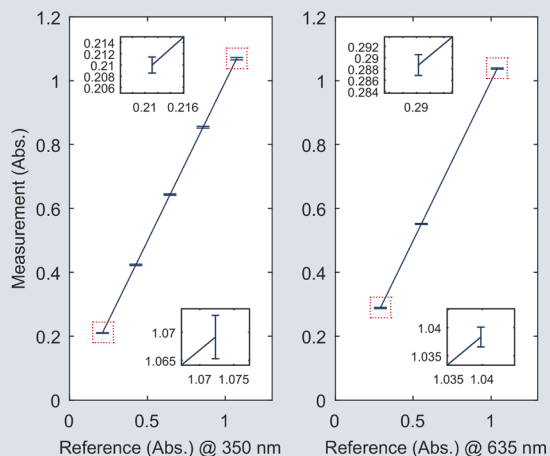
Baseline stability

Since **SP-3000nano** uses a single-beam monochromator, fluctuations in the measured values may occur due to the drift phenomenon of the light source immediately after turning on the equipment. This phenomenon is gradually stabilized through a preheating process of the light source. Therefore, it is recommended to preheat for more than one hour for high-precision measurement, and in this case, the stability within 0.001 Abs is guaranteed.

Absorbance change of Deuterium before and after warm-up



Absorbance change of tungsten halogen lamp before and after warm-up



Photometric accuracy & repeatability

SP-3000nano ensures photometric accuracy within ± 5 mAbs and photometric reproducibility within ± 3 mAbs through excellent noise characteristics.

	350 nm (@ 1 Abs) (using Potassium Dichromate)	635 nm (@ 1 Abs) (using Neutral Density Filter)
Photometric Accuracy	3.3 mAbs	1.5 mAbs
Photometric Reproducibility	1.6 mAbs (P-P) 0.5 mAbs (σ)	9.7 mAbs (P-P) 0.3 mAbs (σ)

VOICE GUIDE

Built-in voice recorder supports operation of equipment with English and Japanese voices

- ▶ List of recently saved files.
- ▶ Auto zero is made successfully.
- ▶ Input filename.
- ▶ Select cell holder type.
- ▶ Nanoliter cell to measure extremely small amounts of sample.

- ▶ All cells.
- ▶ Single cell as a fixed cell holder, also called single cell holder.
- ▶ Sipper cell to measure samples by sipping from one big sample.
- ▶ Input wavelength.
- ▶ Input dilution factor, if needed.

- ▶ Select the unit of the sample.
- ▶ Additional information of the experiment can be noted.
- ▶ Save measured data or open saved data.
- ▶ Convert measured data to graph or table form.
- ▶ Check or print out the measured data as the report form.

- ▶ Set up the items to contain in the report.
- ▶ Print out to connected printer.
- ▶ Open the standard curve file.
- ▶ Opened the file successfully.
- ▶ Save the created standard curve or export to specific media.

- ▶ Exported the file successfully.
- ▶ Modification can be done at a saved standard curve. Selecting a saved standard curve shall be necessary process.
- ▶ Delete selected standard curve.
- ▶ Make baseline with reference sample.
- ▶ Baseline is made successfully.





Sipper System

Code NO.3000-N-CO1

Useful apparatus for experiments in which a large amount of sample is transferred by flow-through cells to continuously supply the sample.

Intake Volume: max. 70 μ l
RS-232C Communication Control



Film Cell Holder (Wide-Type)

Code NO.3000-N-COSW

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)

Code NO.3000-N-CO5e

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

Code NO.3000-N-CO3

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

Optical Path Length: 10 mm
Center Height: 15 mm



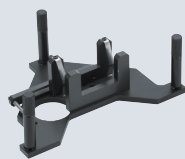
Round Cell Holder

Code NO.3000-N-CO16

Code NO.3000-N-CO25

Single cell holder is used for analysis using a test tube.

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



Long Path Cell Holder

Code NO.3000-N-CO4

Single cell holder is 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)

Code NO.3000-N-CO6

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



Peltier Control System (including Temperature Cell Holder)

Code NO.3000-N-CO2

Apparatus that precisely controls the temperature of the cell holder using the Peltier effect.

Temperature Control Range: 5 ~ 85 $^{\circ}$ C
Temperature Accuracy: \pm 0.5 $^{\circ}$ C
Temperature Control Precision: \pm 0.1 $^{\circ}$ C

SP-3000nano SPECIFICATIONS

Photometrics System
Light Source
Detector
Monochromator
Lamp Interchange Wavelength
Spectral Bandwidth
Wavelength
Range
Accuracy
Repeatability
Setting
Slew Rate
Scanning Speed
Photometric
Range
Accuracy
Repeatability
Stray Light
Baseline Stability
Baseline Flatness
Standard Cell Holder
Operation
Display
Interface
Data Capacity
Printer
Electrical
Dimensions
Weight

Single Beam Type
Tungsten Halogen Lamp & Deuterium Lamp (Built-in light source auto interchanging motor)
Silicon photodiode
Czerny-Turner type with 1200 lines/mm blazed grating
Set freely in the range of 340~410 nm (Default: 370 nm)
< 1.8 nm
190 ~ 1100 nm
<± 0.5 nm (at D2 peak 656.1, 486.0 nm)
<± 0.1 nm
≥ 0.1 nm
About 7,800 nm/min
Max 4,000 nm/min
- 3.0 ~ 3.0 Abs (Enable to Set up)
<± 0.005 Abs (at 1.0 Abs)
<± 0.001 Abs
< 0.1 %T (220, 340 nm)
<± 0.001 Abs/h (at 700 nm)
<± 0.001 Abs (200~1100 nm)
Rotary type 8 position Multi Cell Holder
Embedded S/W (Window CE6.0)
7" LCD with touch screen
4 USB ports/Ethernet
8 Giga byte
Supporting network printer
100~240 AC, 50/60 Hz
433(W) x 381(D) x 180(H) mm
8 kg

*Standard Accessories	
· Power supply cord	1
· User's Manual	1
· Quartz Cuvette	1case
(3.5mL, 2pcs/case)	
*Optional Accessories	
· Quartz Cuvette	1case
(0.5mL, 2pcs/case)	
· Quartz cuvette	1case
(1.0mL, 2pcs/case)	

* All specifications subject to change without notice

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