

Analytical and Measuring Instruments

2022 - 2023



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OPTIZEN SERIES

UV-Vis & Microvolume Spectrophotometer



OPTIZEN Alpha

- OPTIZEN Alpha (190 - 1100 nm)
- Double-beam Type
- Spectral Bandwidth : 1 nm
- Measurable Range : -4 A - 4 A
- 8 Cell holder (Initially installed)
- Voice support



OPTIZEN Alphalook

- OPTIZEN Alphalook (190~1100 nm)
- PDA Type (1024 pixels)
- Spectral Bandwidth : 1 nm
- Measurement Time
Min. 1 second (Full range)



OPTIZEN POP Series

- OPTIZEN POP (190~1100 nm)
- Single-beam Type
- Spectral Bandwidth : 1.8 nm
- Measurable Range : -3 A ~3 A
- 7" Display
- 8 Cell holder (Initially installed)
- Voice support



OPTIZEN NanoQ Plus

- OPTIZEN NanoQ Plus (190~850 nm)
- Xenon flash lamp
- Absorbance Accuracy
3% (at 0.97A at 302 nm)
- Maximum Concentration
16,500 ng/μL (dsDNA), 400 mg/mL (BSA)

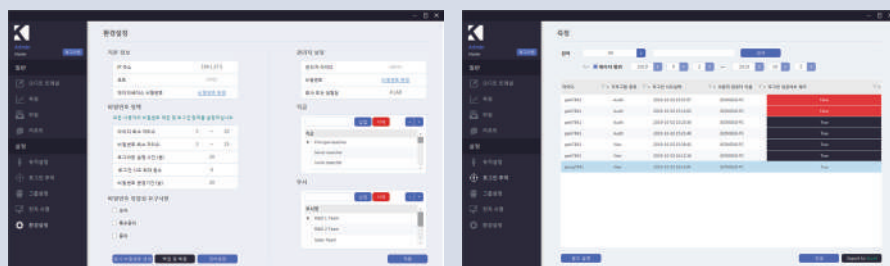


MRX A2000

- MRX A2000
- Microplate Reader
- Microplate types: 6 ~ 384 well plates
- Spectral Bandwidth: 2.9 nm
- Dynamic range: 0 - 4.0 OD
- Reading speed: < 8 seconds (96 wells)
- Temperature control: up to 65 °C



- *To be launched in 2021 ~ 2022
- Microplate Reader (Multi-mode)
- Variable bandwidth spectrophotometer
- UV-Vis-NIR spectrophotometer
- PCR



OPTIZEN Secure

OPTIZEN Secure is Windows® PC software can manage, check and trace user activities(Login, measurement, print) at OPTIZEN View. You need OPTIZEN View(CFR mode included) to use OPTIZEN Secure.

OPTIZEN Alpha

The luxuriously designed OPTIZEN Alpha is spectrophotometer to use double-beam method.

OPTIZEN Alpha can grasp the quantitative characteristics such as density or purity by measuring transmittance or optical density according to wavelength of sample in the range of ultraviolet rays and visible ray. OPTIZEN Series can be utilized from not only a general analysis experiment to but also a specialized research field and guarantee accurate measurement and excellent reproducibility, accordingly offer reliable results in the various fields such as environment, biotechnology, chemistry, etc.

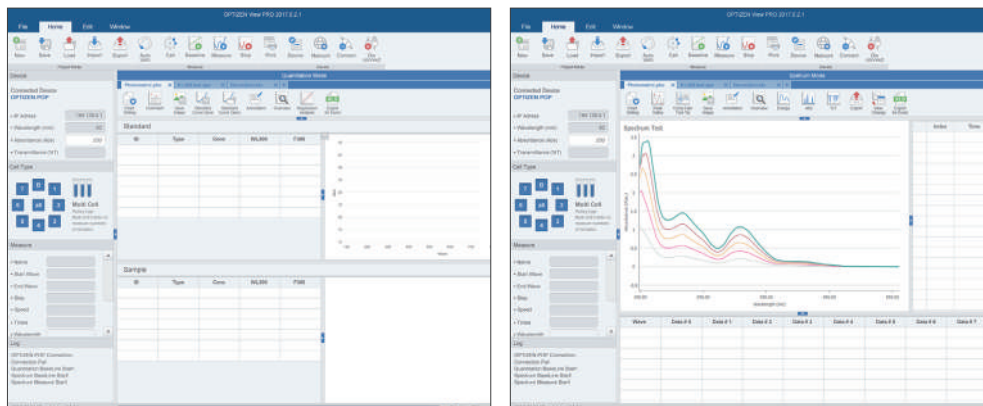


The previous single beam type spectrophotometer has a weak point of error occurrence in measuring a sample, because of the movement of a light source by time lag in measuring the strength of between a reference light and a light from sample. To solve the problem, OPTIZEN Alpha was designed as a double-beam type spectrophotometer. The system utilizes an additional reference beam to improve the measurement performance by compensating the intensity fluctuation of its light source.

- 01 Offering self-diagnosis function
- 02 Easily and quickly call up the information that is being measured or analyzed by registering it in you favorites.
- 03 Changing to the remote mode and then can link it with PC by using OPTIZEN View.
- 04 The measurement is possible in the optimal condition by checking the equipment's operation time, lamp warm up condition and accumulated using time in real time.
- 05 OPTIZEN Alpha's login function can prevent the measured data from leaking to many and undesigned persons.
- 06 Various cell compatibility and fast cell type choice.
- 07 Automatic measurement of lots of samples by equipping multi-cell.
- 08 Convenient voice service and volume control.
- 09 Offers 32GB storage.
- 10 Data can be printed by connecting to the machine without installing a printer driver



OPTIZEN View



OPTIZEN View, PC-Interface software of OPTIZEN Series, enables the user to check and control the result of sample measurement in real time in Windows® environment and facilitate the general management related to the device and the measurement.

Specifications			
Photometrics System	Double-beam type	Photometric Repeatability	± 0.0002 at 0.5 A
Light Source(s)	Tungsten Halogen Lamp & Deuterium Lamp (Built-in light source auto interchanging motor)		± 0.0006 at 1.0 A ± 0.001 at 2.0 A
Detector	Silicon Photodiode	Baseline Stability	< 0.0003 A/h
Spectral Bandwidth	1 nm (190 - 1100 nm)	Baseline Flatness	< ± 0.0005 A
Wavelength Range	190 - 1100 nm	Stray Light	< 0.02% NaI at 220 nm
Wavelength Display (setting)	0.05 nm		NaNO ₂ at 340 nm
Wavelength Accuracy	± 0.3 nm (For entire range)	Monochromator	Czerny-Turner type with 1200 lines/nm blazed grating
	± 0.1 nm (656.1 nm)	Standard Cell Holder	Automatic Rotary type 8-position Multi-Cell Holder
Wavelength Repeatability	< ± 0.1 nm	Operating System (OS)	Windows® 10 (Embedded PC)
Slew Rate	About 13,500 nm/min	Display	8 inch color LCD with touch screen
Scanning Speed	max 6,000 nm/min	Control Options	Onboard with built-in touchscreen Computer (OPTIZEN View)
Photometric Range	Absorbance: -4 A - 4 A Transmittance: 0% - 400%		Dimensions(W*D*H)
	Photometric Accuracy	±0.002 Abs at 0.5 Abs ±0.004 Abs at 1.0 Abs ±0.006 Abs at 2.0 Abs	Power Requirement
		Weight	14 kg
		PC Software	(optional) OPTIZEN View for Windows®

OPTIZEN Alphalook

By using Photodiode array detector to collect and handle simultaneously all wavelength of a light in the range of UV-Vis, the device can reduce the analysis time and lower the error from the experiment.

PDA UV-Vis spectrophotometer can obtain an Ultraviolet-to-NIR broad spectrum at one time by using a simple and precise optical device and check the result value of the wavelength data that the user wants to see. In addition, the product can handle very conveniently a complicate sample or a lot of samples with a simple touch by using compatible accessories.



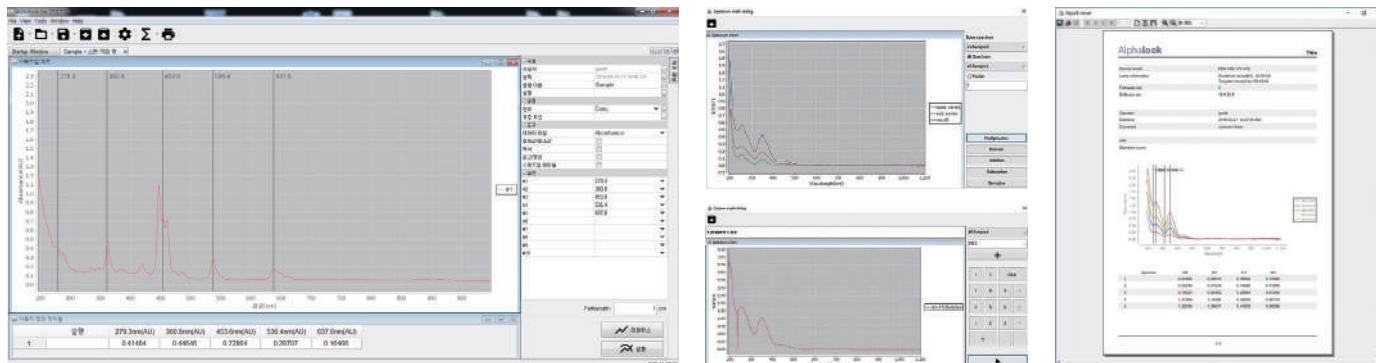
OPTIZEN Alphalook is a spectrophotometer to measure the wavelength of the light from ultraviolet rays, visible rays to near-infrared rays(190 - 1100 nm) all together in real time by using Photodiode array. The device takes at most 2 seconds to measure all range of the wavelength and is suitable for checking repetitive wavelength analysis and dynamic characteristic of spectrum and performing quantitative analysis in the various range of wavelength. In addition, its exterior touch button enables to measure easily the sample and it can be compatible with Android™-based tablet and Windows®-based PC.

OPTIZEN Alphalook's main characteristics

- Very simple interface
- Supporting Windows®-based desktop PC software
- Use of Xenon Flash Lamp

- 01 The exterior button is available for the simple and fast measurement.
- 02 Quartz coating treatment to prevent the high-precision parts from a polluted material.
- 03 Easy replacement of a cell holder owing to using screws.
- 04 It can operate without additional transformer and power stabilizer even in unstable power supply.
- 05 Swift and precise measurement through electrical shutter control.
- 06 Compatibility of analyzed data with PDF and EXCEL.
- 07 Provides a clear screen.
- 08 Can be used semi-permanently without lamp replacement by using Xenon Flash Lamp
- 09 Real-time measurement of the spectrum of all areas

OPTIZEN Alphalook UI (Windows®)



Specifications

Photometrics System	Photodiode array, PDA
Light Source(s)	Xenon Flash Lamp
Detector	Photodiode array
Spectral Bandwidth	1.0 nm (190 - 1100 nm)
Wavelength Range	190 - 1100 nm
Wavelength Display (setting)	0.1 nm
Wavelength Accuracy	< ± 0.5 nm
Wavelength Repeatability	< ± 0.1 nm
Measurement Time	Min. 1 second (Full range)
Photometric Accuracy	< ± 0.005 A (NIST 930E filters), < ± 0.01 A (Potassium dichromate)
Photometric Noise	< 0.0005 A (at 500 nm)
Baseline Stability (RMS)	< 0.001 A/h
Standard Cell Holder	Single cell
Operating System (OS)	Windows®
Dimensions(W*D*H)	587 mm*315 mm*203 mm
Other Interface	Ethernet
Power Requirement	90 - 264 VAC, 47 - 63 Hz
Weight	14.52 kg

OPTIZEN POP Series

OPTIZEN POP chooses our unique high resolving power wavelength measurement mechanism.

OPTIZEN POP Series are single-beam type spectrophotometers and offer stable performance and compact-size and reasonable price to the users. The series are categorized into POP, POP-V according to the specification of the products.



OPTIZEN POP offers four measurement modes (Photometric Mode, Quantitative Mode, Spectrum Mode, Kinetics Mode). The user can choose a suitable mode depending on the purpose to measure. The embedded S/W, touch screen interface and application facilitate the use of the device.





- 01 Offering a help service with a graphic type.
- 02 Easily and quickly call up the information that is being measured or analyzed by registering it in your favorites.
- 03 Link it with PC by using OPTIZEN View.
- 04 The measurement is possible in the optimal condition by checking the equipment's operation time, lamp warm up condition and accumulated using time in real time.

Uptime : 01:15:12	⊗	Yellow : before lamp warm up
Lamp used time(hours)	⊗	Green : after after lamp warm up (1 hour)
- W : 0011:36		
- D2 : 0011:36		

- 05 The measurement monitoring is possible through choosing cell type without entering a mode and easily checking the current cell condition is possible through a change cell type icon according to the cell type condition or position.
- 06 Checking and recording the temperature at the analysis moment by applying the temperature measurement system.
- 07 It can measure automatically lots of samples by using Multi Cell.
- 08 Supporting convenient voice service and volume control function.

Specifications

Product Image		
Product Name	OPTIZEN POP	OPTIZEN POP-V
Photometrics System	Single-beam type	
Light Source(s)	Tungsten Halogen Lamp & Deuterium Lamp (Built-in light source auto interchanging motor)	Tungsten Halogen Lamp
Detector	Silicon Photodiode	
Spectral Bandwidth	< 1.8 nm	< 3.0 nm
Wavelength Range	190 - 1100 nm	340 - 1100 nm
Wavelength Display (setting)	≥ 0.1 nm	
Wavelength Accuracy	< ± 0.5 nm (at D2 peak 656.1, 486.0 nm)	
Wavelength Repeatability	< ± 0.1 nm	< ± 0.2 nm
Slew Rate	About 7,800 nm/min	
Scanning Speed	max 4,000 nm/min	
Photometric Range	Absorbance : -3 A - 3 A / Transmittance : 0% - 300%	
Photometric Accuracy	< ± 0.005 A (at 1.0 A), < ± 0.003 A (at 0.5 A)	
Photometric Repeatability	< ± 0.001 A	
Baseline Stability	< ± 0.001 A/h (at 700 nm)	< ± 0.002 A/h
Baseline Flatness	< ± 0.001 A (200 - 1100 nm)	< ± 0.003 A (340 - 1050 nm)
Stray Light	< 0.1%T (220, 340 nm)	
Monochromator	Czerny-Turner type with 1200 lines/nm blazed grating	
Standard Cell Holder	Automatic Rotary type 8-position Multi-Cell Holder	
Lamp Interchange Wavelength	340 - 410 nm (Default 370 nm)	-
Operating System (OS)	Windows® CE	
Display	7 inch color LCD with touch screen	
Control Options	Onboard with built-in touchscreen, Computer	
Dimensions(W*D*H)	433 mm*381 mm*180 mm	
Power Requirement	100 - 240 V; 50 - 60 Hz	
Weight	8 kg	
PC Software	(optional) OPTIZEN View for Windows®	

OPTIZEN QX Series

We recommend OPTIZEN QX Series possessing an excellent water quality analysis function.

OPTIZEN QX is invented to help scientists, facility managers, engineers, environment health experts and water treatment specialists to carry out the water quality analysis quickly and accurately. As the device provides the voice service and more than 150 pre-programmed methods, the users can use it easier than other devices. The device is available for a continuous management, an improved and simplified analysis procedure and a simple, precise analysis for measuring water quality items such as COD, TN, TP, etc.



OPTIZEN QX Series are the water quality analysis system to reduce the correction time and improve the general precision degree. The devices use Hach's and Merck's pre-programmed methods (more than 150) and their convenient interface and automation function help you to perform an easy, quick and precise experiment.

OPTIZEN QX Series' main characteristics

- Water quality analysis.
- Standard curve drawing is possible by themselves.
- High speed wavelength scanning.
- Supporting a network printer connection function.
- Supporting all-in-one cell holder (original size : 16, 25mm, quadrangle 10 mm compatibility).
- Convenient voice service
- A touch screen display using an intuitive user interface.

- 01 Using all-in-one cell holder enables the user to use all the cell conveniently and simply.
- 02 Easily and quickly call up the information that is being measured or analyzed by registering it in your favorites.
- 03 Using Hach and Merck kit's pre-programmed methods (more than 150), one of the best water quality test kits.
(*Refer to the table shown in right side.)
- 04 Supporting software online update.

Pre-programmed Methods

Parameter	Range	Unit	Parameter	Range	Unit	Parameter	Range	Unit
Aluminum Alumin.	0-0.8	mg/L	Manganese, HR	0-0	mg/L	P. React. PV	0-2.5	mg/L
Boron, HR	2-0	mg/L	Manganese, LR	0.005-0.7	mg/L	P. React. PV AV	0-2.5	mg/L
Chlor Diox DPD AV	0-5	mg/L	Manganese, LR PAN	0-0.7	mg/L	P. React. PV TNT	0-5	mg/L
Chloride	0-5	mg/L	Manganese, LR PAN 50	0.005-0.5	mg/L	P. Total HR TNT	0-0	mg/L
Chlorine F&T AV	0-2	mg/L	Molybdenum HR AV	0-0	mg/L	P. Total/AH PV TNT	0-3.5	mg/L
Chlorine F&T HR	0-0	mg/L	Monochloramine LR	0-4.5	mg/L	PAA	0.1-0	mg/L
Chlorine F&T MR	0-4.4	mg/L	N., Ammonia Free	0-0.5	mg/L	Perman. Index HR	4.5-5	mg/L
Chlorine F&T PP	0-2	mg/L	N., Ammonia HR TNT	0-0	mg/L	Perman. Index LR	0.5-5	mg/L
Chlorine F&T RL	0-2	mg/L	N., Ammonia LR TNT	0-2.5	mg/L	Silica, HR	0-0	mg/L
Chlorine F&T TNT	0-5	mg/L	N., Ammonia Ness.	0-2.5	mg/L	Silica, LR	0-1.6	mg/L
Chromium, Hex.	0-0.7	mg/L	N., Ammonia Salic.	0-0.5	mg/L	Silica, ULR	0-0	µg/L
Chromium, Hex. AV	0-0.7	mg/L	N., Nitrate HR AV	0-0	mg/L	ULR Phosphate	30-0	µg/L
COD HR	0-0	mg/L	N., Nitrate HR PP	0-0	mg/L	Zinc	0-3	mg/L
COD LR	0-0	mg/L	N., Nitrate HR TNT	0-0	mg/L			
COD Mn III	0-0	mg/L	N., Nitrate LR	0-0.5	mg/L			
COD RD 20 HR	0-0	mg/L	N., Nitrate MR AV	0-0	mg/L			
COD RD 20 LR	0-0	mg/L	N., Nitrate MR PP	0-0	mg/L			
COD ULR	0-0	mg/L	N., Nitrite HR PP	0-0	mg/L			
Copper, Bicin.	0-5	mg/L	N., Nitrite LR AV	0-0	mg/L			
Copper, Bicin. AV	0-5	mg/L	N., Nitrite LR PP	0-0	mg/L			
Cyanide	0-0.24	mg/L	N., Nitrite LR TNT	0-0	mg/L			
H2O2	0.05-5	mg/L	N., Total HR TNT	0-0	mg/L			
Hardness, Ca	0-4	mg/L	N., Total LR TNT	0-5	mg/L			
Hardness, Mg	0-4	mg/L	N. Inorganic TNT	0-5	mg/L			
Hydrazine	0-0	µg/L	Oxygen, Dis. HR AV	0-5	mg/L			
Hydrazine AV	0-0	µg/L	Oxygen, Dis. LR AV	0-0	µg/L			
Iodine	0-7	mg/L	Oxygen, Dis. UHR AV	0-0	mg/L			
Iodine, AV	0-7	mg/L	Ozone HR AV	0-1.5	mg/L			
Iron, FerroMo	0-1.8	mg/L	Ozone LR AV	0-0.25	mg/L			
Iron, FerroVer	0-3	mg/L	Ozone MR AV	0-0.75	mg/L			
Iron, FerroVer AV	0-3	mg/L	P. React. Amino.	0-0	mg/L			
Iron, FerroZine	0-1.4	mg/L	P. React. HR TNT	0-0	mg/L			
Iron, TPTZ	0-1.8	mg/L	P. React. Mo	0-5	mg/L			
Iron, TPTZ AV	0-1.8	mg/L	P. React. Mo AV	0-5	mg/L			

Specifications

Photometrics System	Single-beam type	Photometric Repeatability	± 0.003 at 1.0 A
Light Source(s)	Tungsten Halogen Lamp & Deuterium Lamp	Baseline Stability	< 0.001 A/h
	(Built-in light source auto interchanging motor)	Baseline Flatness	< 0.003 A/h (220 - 1050 nm)
Detector	Silicon Photodiode	Stray Light	< 0.05%T (220 nm, 340nm)
Spectral Bandwidth	1.8 nm (190 - 1100 nm)	Monochromator	Czerny-Turner type with 1200 lines/nm blazed grating
Wavelength Range	190 - 1100 nm	Standard Cell Holder	Automatic Rotary type 8-position Multi-Cell Holder
Wavelength Display (setting)	0.1 nm	Lamp Interchange Wavelength	340 - 410 nm (Default 370 nm)
Wavelength Accuracy	< ± 1.0 nm at 486, 656.1 nm	Operating System (OS)	Windows® CE
Wavelength Repeatability	< ± 0.1 nm	Display	7 inch color LCD with touch screen
Slew Rate	About 7,800 nm/min	Control Options	Onboard with built-in touchscreen, Computer
Scanning Speed	max 4,000 nm/min	Dimensions(W*D*H)	433 mm*381 mm*180 mm
Photometric Range	Absorbance : -3 A - 3 A	Power Requirement	100 - 240 V; 50 - 60 Hz
	Transmittance : 0% - 300%	Weight	8 kg
Photometric Accuracy	5 mAbs at 0.0 - 0.5 A	Preprogrammed Method	> 80 (Hach), > 130 (Merck)
	< 1% at 0.50 - 2.0 A at 546 nm	PC Software	(optional) OPTIZEN View for Windows®

OPTIZEN MINI

It is a portable spectrophotometer with excellent reproducibility, fast and accurate measurement.

OPTIZEN MINI, a portable analysis device, is designed to facilitate to conduct a quick and precise experiment in a field or a laboratory. Technology for miniaturization and weight-reduction is applied to the device. The device is portable conveniently and is used for various fields simultaneously.



OPTIZEN MINI offers a choice of up to two wavelengths between 355 and 1100 nm, but the wavelength can also be selected according to the user's need. Thus the device can be used in the diverse fields of chemistry, environment, biology-chemistry and so on.

OPTIZEN MINI's main characteristics

- Allowed cell size – 10 mm standard quadrangle cell
– 16 mm and 25 mm circle cell (Optional)
- Selection of wavelength ranged from 335 - 1100 nm is possible.
(*Contact us for other wavelengths)
- Saving 6 standard curves and 100 measurement values is possible.
- Applying to the various fields.

Specifications

Selectable wavelength	Maximum 2 wavelengths
Light Source	Light Emitting Diode(LED)
Detector	Photodiode
Photometric Range	0 - 3 A
Standard Capability	ABS/%T Mode, CONC.1, CONC.2
Sample Compartment	10 mm Square cell holder or 16 mm, 25 mm Round cell holder(Optional)
Power Requirement	1.2V NiMH / DC 9V/1A
Dimensions(W*D*H)	110 mm*48 mm*245 mm
Weight	500 g
Display	128 x 64 Graphic LCD

ACCESSORIES

OPTIZEN Series offer the perfect solution suitable for each laboratory and experimental environment owing to their compatibility with the various accessories.



Film Cell Holder – Wide & Small Type

The single cell holder available for measuring the solid sample for a light to pass through such as an optical film or a slide glass.

Sample Size: Wide – max. 100 mm(H) x 70 mm(W), Small – max. 100 mm(H) x 30 mm(W)
Sample Thickness: Wide – max. 5 mm, Small – max. 2 mm

(*) Compatible Products

- OPTIZEN POP
- OPTIZEN POP-V
- OPTIZEN Alpha



Micro Volume Cell Holder

The single cell holder available, in case that sample's volume is below 500 μ l.

Optical Path Length: 10 mm
Center Height: 15 mm

(*) Compatible Products

- OPTIZEN POP
- OPTIZEN POP-V
- OPTIZEN Alpha



Round Cell Holder

The single cell holder available, when using circle cell to analyze a sample.

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

(*) Compatible Products

- OPTIZEN POP
- OPTIZEN POP-V
- OPTIZEN Alpha



Long Path Cell Holder

The single cell holder is used, when measuring after lengthening a light path in order to analyze a low density sample.

Optical Path Length: 50 – 100 mm

(*)호환 제품

- OPTIZEN POP
- OPTIZEN POP-V
- OPTIZEN Alpha



Temperature Cell Holder (Water/Oil Circulator Type)

This is used to control the temperature of the cell holder by using a temperature circulatory device.

Tubing Size: 6 mm

(*) Compatible Products

- OPTIZEN POP
- OPTIZEN POP-V
- OPTIZEN Alpha



Multi Cell Holder

The multi cell holder to be able to measure automatically a great volume of sample.

(*) Compatible Products

- 8 Cell holder
- OPTIZEN Alpha (*Initially installed)
 - OPTIZEN POP (*Initially installed)
 - OPTIZEN POP-V (*Initially installed)



Sipper

It is possible to perform automatic suction and measurement of liquid samples, and it has a built-in function to automatically correct the amount of suction, enabling accurate and stable sample processing.

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)

(*) Compatible Products

- OPTIZEN POP
- OPTIZEN POP-V
- OPTIZEN Alpha

OPTIZEN NanoQ

It supplies extremely fast and easy quantitative analysis of nucleic acid and protein by UV-Vis absorption spectrophotometry.

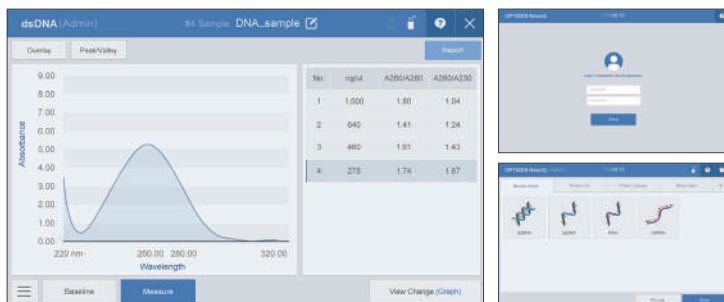
NanoQ is wide wavelength microvolume spectrophotometer with modern design and user convenience UI. It provides microvolume sample measuring mode and cuvette measuring mode so can measure wide range of concentration. You can easily set over 20 measuring modes.

Note The OPTIZEN NanoQ Plus model provides pedestal and cuvette measuring mode, but the OPTIZEN NanoQ does not.



Full Spectrum Analysis

OPTIZEN NanoQ can measure the absorption spectrum UV-Vis (190 - 850 nm) in seconds using by array type spectrophotometer technology with Xenon lamp and CMOS-sensor(2048 pixels). It also provides various algorithms like Peak/Valley detection.



Measuring Mode : Nucleic Acid(dsDNA, ssDNA, RNA), Protein(Lysozyme, BSA, IgG), OD600, etc.

Measurement menu configuration		
	Menu	Factor
Nucleic Acid (ng-cm/μl)	dsDNA	50
	ssDNA	33
	RNA	40
	miRNA	33
	Custom	Input
	Protein (g-cm/l)	BSA
SA		1.49, 1.72
IgG		0.71, 0.74
IgE Human		0.65
Lysozyme		0.38
OD1		1
OD600		1

Specifications		
Product Name	OPTIZEN NanoQ Plus	OPTIZEN NanoQ
Photometrics System	Microvolume Spectrophotometer	
Light Source(s)	Xenon flash lamp	
Lifetime	Up to 10 years	
Detector	CMOS linear image sensor (2048 pixels)	
Spectral Bandwidth	1.0 nm (FWHM at Hg 253.7 nm)	
Wavelength Range	190 - 850 nm	
Wavelength Display (setting)	1 nm	
Wavelength Accuracy	± 1 nm	
Microvolume	Minimum Sample Volume	1 µL
	Photometric Range	0.02 - 330 A (10mm equivalent)
	Detection Limit (Microvolume)	2 ng/µL (dsDNA) 0.06 mg/mL (BSA) 0.003 mg/mL (IgG)
	Maximum Concentration	16,500 ng/µL (dsDNA), 400 mg/mL (BSA)
Cuvette	Photometric Range	0 - 2 A
	Detection Limit	0.2 ng/µL (dsDNA) 0.006 mg/mL (BSA) 0.0003 mg/mL (IgG)
	Center Height (Z-height)	15 mm
	Heating (Optional)	37 °C
Absorbance Precision	0.002 A (0.5 mm path) or 1%	
Absorbance Accuracy	3% (at 0.97A at 302 nm)	
Measurement Time	< 8 seconds	
Software Compatibility	Windows® 7 and 10	
Touchscreen	Multipoint capacitive touch	
CPU	Octa Core ARM® Cortex™-A53 Processor	
Storage	32 GB Internal Storage	
Glove Compatibility	Compatible with lab gloves	
Connectivity	4 x USB ports, Ethernet, and RS-232	
Display	7-inch, 1280 x 800 HD color display	
Operating System (OS)	Android™	
Footprint (W*D)	216*290 mm	
Weight	3.0 kg	
PC Software	(optional) OPTIZEN View for Windows®	

OPTIZEN NanoQ Lite

OPTIZEN NanoQ Lite is a small microvolume sample analyzer with a simple yet sophisticated design and easy and convenient user interface(UI).

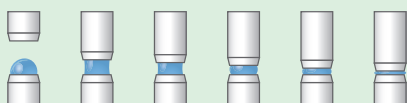
It applies the Slope Algorithm, which is a light path optimization technique, to enable measurement of a wide range of absorbance. Using three LEDs (260 nm, 280 nm, and 600 nm) and a single silicon photodiode, it lowered the product cost drastically while maintaining the needed functions and performance level. It offers the baseline correction function using an additional LED (360 nm).



Slope Algorithm

OPTIZEN NanoQ Lite uses the Slope Algorithm to automatically determine the sample concentration to be "High", "Middle", or "Low" and set the optical path optimized for the measurement.

“Slope Algorithm” applies Beer’s Law to improve the performance of measuring the concentration of the sample using the absorption change according to the change of the optical path and the linearity. NanoQ Lite uses this algorithm to offer the high measurement performance in a wide concentration range.



Slope Algorithm

It is the technology to improve the measurement performance of the sample concentration using the absorption change according to the change of the optical path and the linearity.

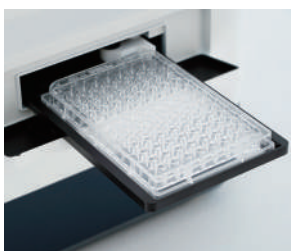
Measurement menu configuration		
	Menu	Factor
Nucleic Acid (ng-cm/μl)	dsDNA	50
	ssDNA	33
	RNA	40
	Other	Input
Protein (g-cm/l)	Protein	1
	BSA	1.5
	IgG	0.71
	Lysozyme	0.38
	Other	Input
OD600	OD600	1

Specifications		
Photometrics System	Microvolume Spectrophotometer	
Light Source(s)	LEDs	
Lifetime	Up to 10 years	
Detector	Silicon photodiode	
Microvolume	Wavelength Range	260, 280 nm
	Wavelength Accuracy	± 1 nm
	Spectral Bandwidth	≤ 8.0 nm
	Minimum Sample Volume	1 µL
	Absorbance Range	0 - 40 A
	Absorbance Precision	0.002 Abs (0.5 mm pathlength)
	Photometric Accuracy	3% (at 1A/mm at 280 nm)
	Detection Limit	2 ng/µL (dsDNA) 0.06 mg/mL (BSA) 0.003 mg/mL (IgG)
	Maximum Concentration	2,000 ng/µL (dsDNA), 60 mg/mL (BSA), 28.8 mg/mL (IgG)
Cuvette	Wavelength Range	600 nm (OD600)
	Photometric Range	0 - 2 A
	Center Height (Z-height)	15 mm
	Measurement Time	< 10 seconds
Touchscreen	Resistive touch	
Storage	4 GB Internal Storage	
Connectivity	USB-A, USB-B, RS232C	
Baseline Correction Wavelength	360 nm	
Pathlength	0.03 - 0.5 mm (Auto ranging)	
Power Consumption	Operating: 4.7- 5.2 W, Stand-by: 3.3 W	
Display resolution	480 x 272 pixels (Color display)	
Operating Voltage	12 V (DC)	
Display	4.3-inch, Touch-screen glove compatible	
Footprint (W*D)	145 x 190 mm	
Weight	1.4 kg	

MRX A2000

Microplate Reader MRX A2000 can be used with 6 - 384 well plates and cuvettes, and provides excellent measurement performance in the UV-VIS range.

User convenience has been improved by enabling the use of tablet PCs as well as PC software. It provides Endpoint, Kinetic, Spectral scanning, and Well area scanning modes, as well as Incubation and Shaking functions to enable various applications.



Application

- Endpoint or Kinetic ELISA
- Nucleic acid, protein direct quantification
- Microbial growth assays
- Cytotoxicity assay
- Cell proliferation assay
- Spectral scanning

- 01 Quantitative analysis of nucleic acids and proteins, ELISA, microbial growth experiments with selectable wavelengths in the range of 200 – 999nm.
- 02 Various workflows applied by providing Endpoint, Kinetic, Spectral scanning, and Well area scanning modes.
- 03 Compatible with 6 – 384 well plates
- 04 Quantitative analysis of nucleic acids without dilution using Micro-Volume Plates accessory.
- 05 Temperature control up to 65°C, condensation control to perform temperature-sensitive assays.
- 06 Device control via tablet PC.
- 07 Linear, orbital and double orbital shaking.
- 08 Measurement through cuvette port. (optional) (launched in the second half of 21)

Configurations

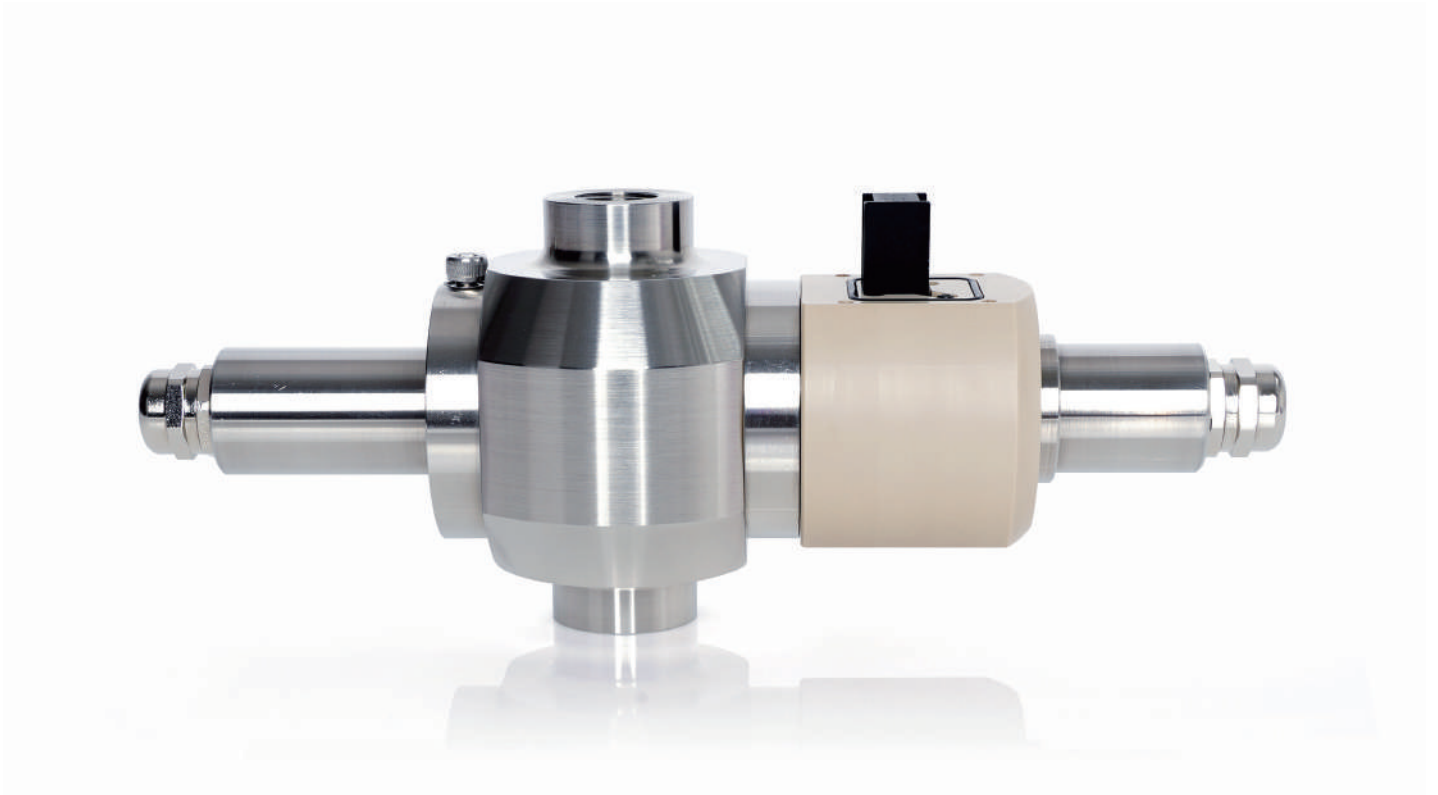
Order Number	Description
MR	Microplate Reader with PC S/W
MRC	Microplate Reader with PC S/W, plus cuvette port.
MRT	Microplate Reader with PC S/W, plus tablet PC.
MRCT	Microplate Reader with PC S/W, plus cuvette port, tablet PC.

Specifications	
Product name	MRX A2000
Detection modes	UV-Vis absorbance
Read methods	Endpoint, Kinetic, Spectral scanning, Well area scanning
Microplate types	6 ~ 384 well plates
Temperature control	up to 65 °C
Shaking	Linear, orbital, double orbital
Light source	Xenon flash
Detector	Photodiode
Wavelength selection	monochromator
Wavelength range	200 - 999 nm / 1 nm increments
Bandwidth	2.9 nm
Dynamic range	0 - 4.0 OD
Resolution	0.0001 OD
Pathlength correction	yes
Wavelength accuracy	± 1 nm
Wavelength repeatability	± 0.2 nm
OD accuracy	<1% at 2.0 OD
	<3% at 2.5 OD
OD linearity	<1% from 0 to 2.5 OD
OD repeatability	<0.5% at 2.0 OD
Stray light	0.03% at 230 nm
Reading speed (kinetic)	96 wells fast read: < 8 seconds
Power	110/220V, 50/60Hz
Weight	12 kg
Dimensions(W*D*H)	340mm x 410mm x 225mm
Regulatory	CE, KC

ProTec UV Sensor

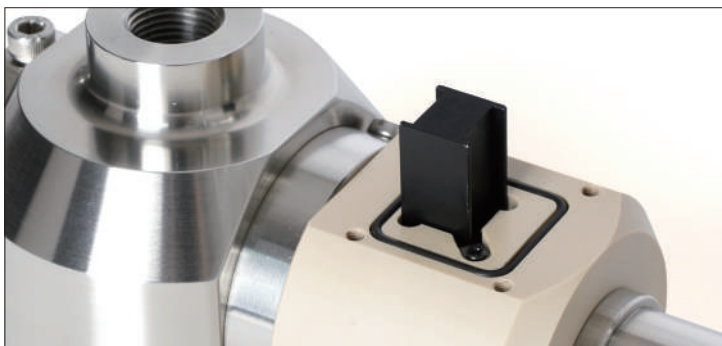
ProTec UV Sensor is a single channel Process UV Absorption sensor with a lamp reference channel applied.

It is designed for inline process monitoring and ensures accurate concentration measurements and reproducibility and linearity. When measuring data, it compensates for fluctuations in the intensity of light by simultaneously measuring the intensity of light from the lamp with the PD of the reference channel.



Depending on the needs, users can choose from a variety of wavelengths such as 254, 280, 290, 300, 313 nm, and optical pathlength in the range of 1 – 160 mm. This makes it applicable to Aromatic compound detection, protein concentration, and other demanding applications.

The use of sapphire as optical windows provides high hardness and resistance to chemical corrosion. It also offers a variety of line sizes and process connections and wetted materials to facilitate connection to process equipment.



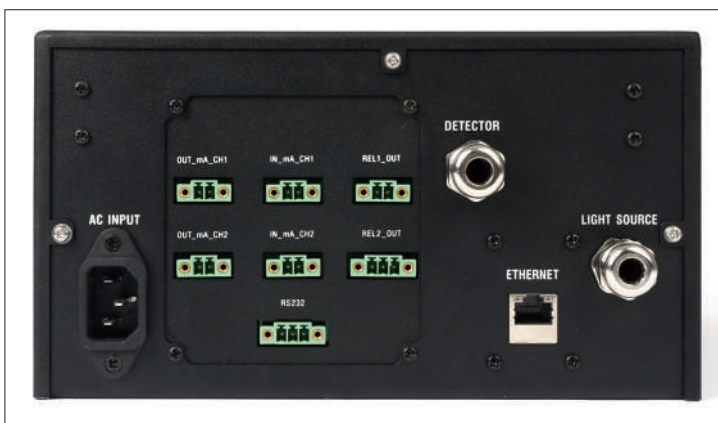
- Inline real-time process monitoring
- Compensation for fluctuations in light intensity using reference channel
- Provides various line sizes and process connection methods (line size, process connection)
- Wetted materials

Specifications	
Product name	ProTec UV Sensor
Measurement	
Measurement principle	1- Channel Absorption of light
Measurement wavelength(s)	254, 280, 280, 290, 300, 313, ... others on request
Detector(s)	1 silicon photodiode (hermetically sealed)
Reference detector(s)	1 silicon photodiode (hermetically sealed)
Measuring Range	any measuring range between 0 - 0.05 to 3 CU (dependent on filter used / OPL) (contact product specialist for application specific ranges)
Optical path length	1 - 160 mm
Calibration	CU (concentration units) application specific calibration
Light source	low pressure mercury lamp typical life span: 1 to 2 years (8,000 to 16,000 hours)
Resolution	< ± 0.05 % of respective measuring range
Repeatability	< ± 0.5 % of respective measuring range
Linearity	< ± 1 % of respective measuring range (specific to application)
Sensor Body	
Material	Stainless steel KS D 3706 STS316L PEEK
Line size	3/8", 1/2" (DN10, DN15)
Process connection	NPT tapered pipe thread (ANSI B 1.20.1)
Process pressure	10 mbar to 60 bar (0.15 psi to 870 psi)
Windows	Sapphire
Window gaskets	Viton® (FDA)
Temperature Ratings	
Process temperature	permanent: 0 - 70 °C (32 - 158 °F)
Ambient temperature	permanent: 0 - 40 °C (32 - 104 °F) transport: -20 - 70 °C (-4 - 158 °F)
Explosion Proof	
Ex-proof	none
Ex-proof OPTION EX (EN-D)	Ex d IIB+H2 T5

ProTec UV Converter

ProTec UV Converter is a single channel UV Absorption Sensor Converter with a lamp reference channel applied.

ProTec UV Converter is a microcontroller-based photometric converter that can be applied to ultraviolet and visible light absorption sensors (ProTec UV Sensor). User convenience has been improved by applying a 7-inch color touch display and menu-based UI. Measured values are expressed through text or graphs, and a data log function is provided to check the trend of the measured values.



- 01 It is possible to create a calibration curve through 8 linear tables and slope+offset input, so it is possible to measure and apply various kinds of samples.
- 02 Analog input/output connection is possible using the panel connector, and multiple analog and relay outputs are provided.
- 03 Measurement results such as absorbance, transmittance, and concentration are output to the analog terminal in real time. Through this, it is possible to control the production process using PLC.
- 04 Up to 20,000 data logs are stored inside the equipment for quality assurance and factory management. Saved data can be transferred to a PC via Ethernet.

- Real-time Photometric Converter
- Data log recording for quality control (up to 20,000 data)
- Easy installation using Optical Fiber
- 2 analog outputs for PLC connection
- Data PC transmission through Ethernet
- Easy maintenance
- Explosion-proof case (Optional)

Specifications	
Product name	ProTec UV Converter
Housing	Rack mounting/Explosion proof housing(option)
Housing material	Stainless steel
Display	7 inch color LCD
	Touchscreen user interface
	Measurement updates every interval
Display modes	Numeric with bargraph, continuous trend-line and others configurable in any combination
Software tools	8 offset + slope sets
	linearization: 8 user-configurable tables
	factory zero for scattered light sensors
	mA Input/Output calibration
	memory: upon power failure, non-volatile memory retains all configurations and logged data
Data logger	approx. 20,000 points
	(resolution max. 1/second), cycle memory
System clock	accuracy approx. 1 minute / month
Operation	Resistive touch
Language	English
mA-inputs	4 channel mA-input (4 -20mA or 0 -20mA)
mA-outputs	4 channel mA-output (4 -20mA or 0 -20mA)
	load: 0 - 600 Ohm
Relay-outputs	3 independent software-configurable relay contacts
Interface	RS232/Ethernet
Ambient conditions	Ambient temperature: 0°C to +50°C (32°F to 122°F)
	Transport: -20°C to +70°C (-4°F to 158°F)
Internal operating temperature	-20 °C to +75 °C (-4 °F to +167 °F)
Power Supply	115/230 V AC selectable or 24 V AC/DC
Cable length	up to 100m, Depending on wavelength
Certificates	CE, Ex d IIB+H2 T5(option)

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