



Laboratory

# NanoQ Series Microvolume UV-Vis Spectrophotometer

A high-reliability quantification instrument for the precise analysis of microvolume sample



**NanoQ Series is a microvolume spectrophotometer designed with advanced technology and strict quality control, offering exceptional performance, a sophisticated design, and superior user convenience.**

NanoQ Series sample compression technology forms a uniform liquid film between two quartz surfaces, creating an optimized measurement environment for light transmission.

By forming a stable sample column, it minimizes the impact of external environmental factors or variations in sample properties, ensuring consistent and reliable measurement results.

Furthermore, its precise optical design ensures outstanding linearity across a wide detection range. Through automated spectrum analysis and repetitive measurements, NanoQ Series maintains high measurement reliability even at low concentrations.



### **Quality and Reliability**

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

Specifications				
Product Name	NanoQ Plus	NanoQ		
Photometrics System	Microvolume & Cuvette	Microvolume		
Light Source(s)	Xenon flash lamp			
Lamp Lifetime	Up to 10 years			
Detector	2048-element CMOS linear image sensor			
Spectral Bandwidth	1.5 nm (FWHM at Hg 253.7 nm)			
Wavelength Range	190 to 850 nm			
Wavelength Display (setting)	1 nm			
Wavelength Accuracy	± 1 nm			
Baseline Correction Wavelength	Selectable (190 to 850 nm)			
Absorbance Precision	0.002 AU (0.5 mm path) or 1%			
Absorbance Accuracy	3% (at 0.97A at 302 nm)			
Measurement Time	Less than 8 seconds			
Microvolum	Minimum Sample Volume	1 µL		
	Pathlength	0.03 to 1.0 mm		
	Photometric Range	0.02 to 550 A (10mm equivalent)		
	Detection Range	2 - 27,500 ng/µL (dsDNA)		
		0.06 - 825 mg/mL (BSA) 0.03 - 400 mg/mL (IgG)		
Pedestal Compartment Material	303 stainless steel and quartz fiber			
Cuvett	Photometric Range	0 to 2 A	-	
	Display Range	0 to 3 A	-	
	Detection Range	0.2 - 150 ng/µl (dsDNA)		
		0.006 - 5 mg/mL (BSA)		-
		0.003 - 2 mg/ml (IgG)		
	Center Height (Z-height)	8.5 mm		-
Cell Types	12.5 x 12.5 mm (Outside dimension)		-	
CPU	Octa Core ARM® Cortex™-A53 Processor			
Storage	32 GB			
Glove Compatibility	Compatible with lab gloves			
Connectivity	4 x USB-A ports, Ethernet, RS232			
Display	7-inch (resolution: 1280 * 800)			
Operating System (OS)	Android			
Dimensions(W*D*H)	216 mm * 290 mm * 165 mm			
Weight	3.0 kg			

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

Instrument				
Product Name	NanoQ Plus	NanoQ	NanoQ Lite+	Cuve Lite
Spectral Range	190 - 850	190 - 850	230, 260, 280, 600(Cuvette), 360(Baseline), Customization	450, 540, 600, one selected wavelength (customizable)
Detection Range(dsDNA)	Dynamic Range (2-27,500 ng/μL)	Dynamic Range (2-27,500 ng/μL)	Standard Range (2-1,500 ng/μL)	-
Pathlength	4 Step (1.0, 0.2, 0.1, 0.03)	4 Step (1.0, 0.2, 0.1, 0.03)	Fixed (0.75)	-
Light Source	Xenon	Xenon	Xenon	LEDs
Touchscreen	7 inch	7 inch	7 inch	4.3 inch
Microvolume Sample measurement	☉	☉	☉	-
Cuvette Measurement	☉	-	OD 600 only	☉
Photometric	☉	☉	☉	☉
Spectrum	☉	☉	-	-
Kinetics	☉	-	☉	-
Built-in battery	-	-	-	optional

## NanoQ Hardware Overview

### Loading Guide

Designed to enable even first-time users to place samples onto the loading spot easily and accurately

### Auto Pathlength

The optical pathlength is automatically adjusted based on the sample concentration, enhancing the precise analysis of samples across a wide range of concentrations.

### Compact Design

This compact spectrophotometer features a space-saving footprint of 216x290x153mm and a lightweight design of only 3kg.

### Rapid Measurement

Eliminates warm-up waiting time as the system does not require lamp warming-up



### Stand-Alone

The integrated control system eliminates the need for an external computer, providing direct data storage within the instrument. This design maximizes space efficiency and enhances cost-effectiveness.

### 7.0" HD Touch LCD Display

The 7.0 inch (1280x800) HD color touch display, combined with an intuitive user interface, supports easy and convenient instrument setup and measurement.

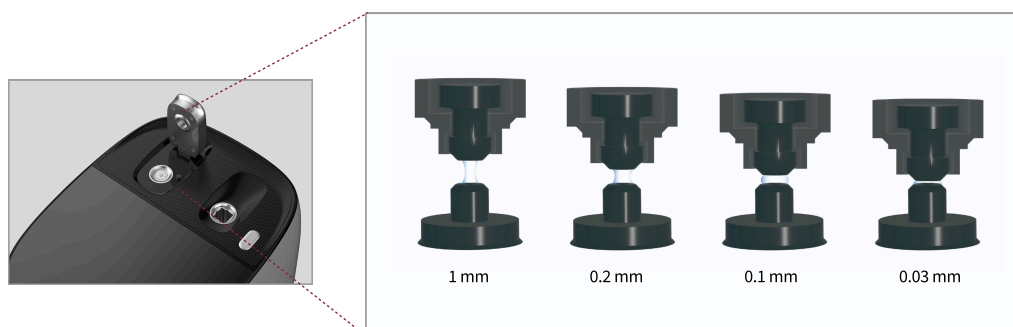
### Maximum User Convenience

By providing a simple and intuitive user environment, the system helps effortless operation without the need for a manual.

**NanoQ Series is a microvolume UV-Vis spectrophotometer featuring an intuitive user interface. It offers fast and accurate quantitative analysis of nucleic acid and protein samples through UV-Vis absorbance measurement. By supporting both microvolume and cuvette measurement modes, along with over 20 specialized analysis modes, it is versatile enough to be used across a broad range of concentrations.**

## 4-Point Optical Path

K LAB's proprietary 4-point optical path design simultaneously guarantees superior accuracy and high data security.



## Measurement Items

- **Nucleic Acid:** dsDNA, RNA, mi RNA, and custom factors
- **Protein UV:** BSA, SA, IgG
- **Protein Assay:** Bradford Assay, Biuret Assay
- **More:** Kinetics, OD600, Photometric

## Full Spectrum Analysis

NanoQ Series utilizes array-type spectrophotometer technology with a Xenon lamp and a CMOS image sensor (2048 pixels). This instrument offers the measurement of broadband absorption spectra from the ultraviolet (UV) to the visible (Vis) range (190nm to 850nm) within seconds. Furthermore, it delivers various algorithms for spectral analysis, such as Peak-Valley detection.

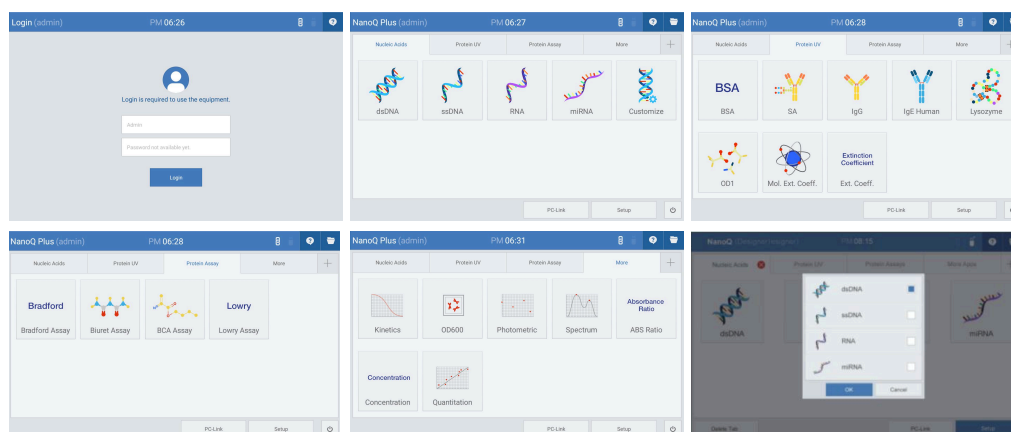


## Measurement menu configuration

Specific factors have been assigned as default values for each mode. In addition to these predefined factors, a custom mode helps users to manually specify their own factor values.

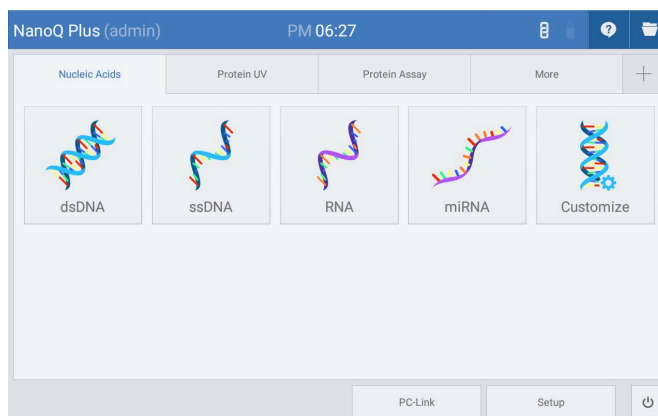
## Data Security and User Menu

This instrument supports a login function for enhanced security. The main screen features four tabs: Nucleic Acid, Protein UV, Protein Assay, and More. Users can combine their most frequently used measurement modes to create a custom User Menu, ensuring streamlined operation. (\* Up to two user menus can be registered.)



## Nucleic Acid Tab Measurement Mode Configuration

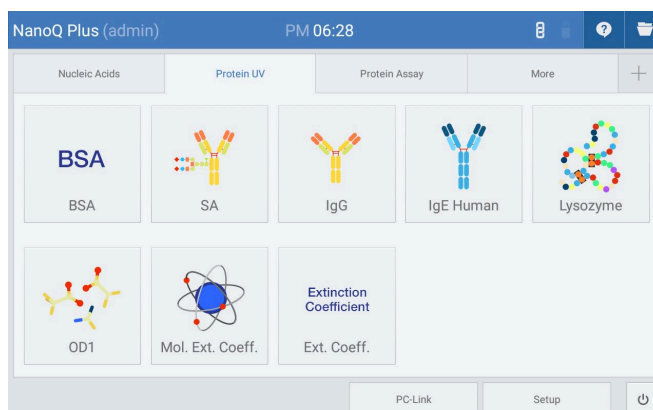
Specific wavelength and factor values have been assigned to each mode as fixed defaults. In addition to these fixed factors, a custom mode helps users to manually specify their own factor values. This enables the measurement of various sample types beyond those predefined in the menu, depending on the specific experimental environment. (\* Fixed wavelength: 260nm)



Measurement	Wavelength(nm)	Factor
dsDNA	260	50
ssDNA	260	37
RNA	260	40
miRNA	260	33
User Defined	260	50 (default), Input range: 15~150

## Protein UV Tab Measurement Mode Configuration

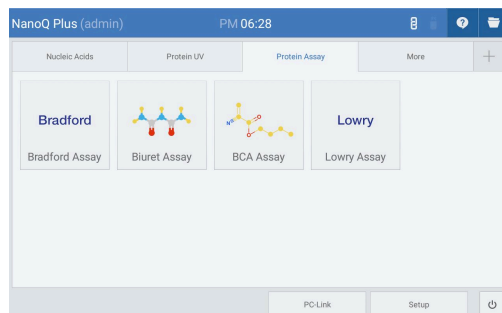
Protein UV tab supports a total of eight modes, with fixed measurement wavelengths and factors for each mode. (\* Fixed wavelength: 280nm)



Measurement Mode	Wavelength(nm)	Factor	MW(Molecular weight)
BSA	280	1.5	66,400
SA	280	1.49 (Mouse) 1.72 (Human)	66,000 (Mouse) 69,365 (Human)
IgG	280	0.71 (Mouse) 0.74 (Human)	160,000 (Mouse) 150,000 (Human)
IgE Human	280	0.65	190,000
Lysozyme	280	0.38	14,300
OD1	280	1	-
Mol.Ext. Coeff.	280	e1 : MW (default: 66,400 g/mol) e2 : Mol. Ext. Coeff. (default: 44,289 M <sup>-1</sup> *cm <sup>-1</sup> )	-
Ext. Coeff.	280	e: Ext. Coeff. (default: 0.667 l/g*cm)	-

## Protein Assay Measurement Mode Configuration

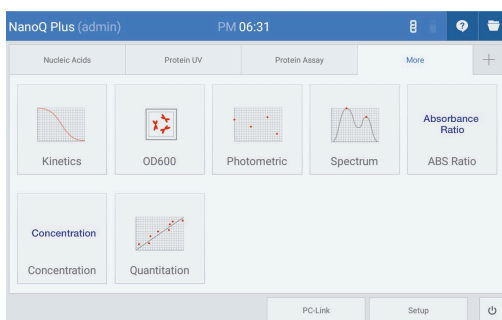
Protein Assay is a method used to analyze protein concentration via a standard curve after color development by adding specific reagents to the sample. Each measurement mode features a fixed wavelength, enabling precise quantification of protein concentrations in unknown samples through the generation of a standard curve.



Measurement Mode	Wavelength(nm)	Factor
Bradford Assay	595	-
Biuret Assay	546	-
BCA Assay	562	-
Lowry Assay	750	-

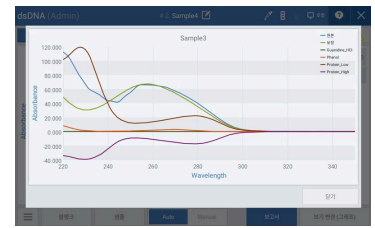
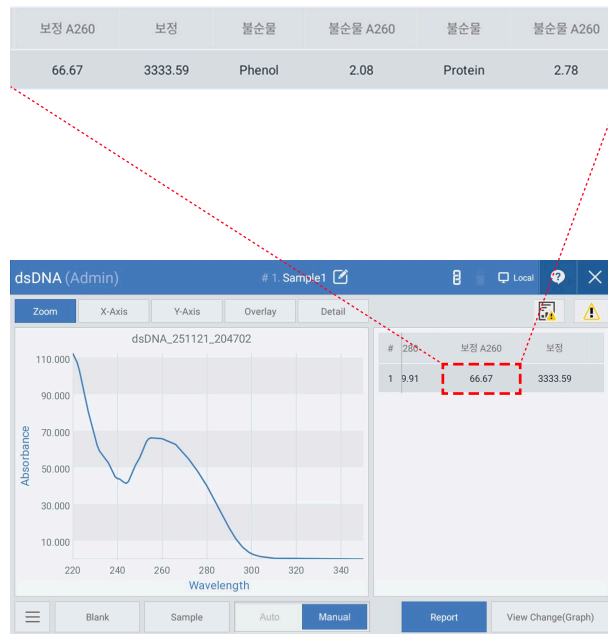
## More Application Tab Measurement Mode Configuration

The More Application tab supports a variety of commonly used measurement modes available in UV-Vis spectrophotometer and cuvette measurement modes.

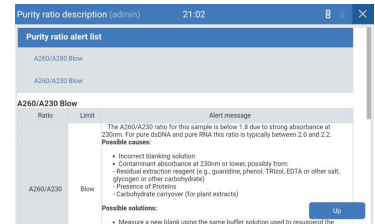


Mode	Mode Description	Remarks
Kinetics	Measurement of absorbance change with time - Time range: 1~300 min - Time interval: 10~3600 sec - Delay time: 0~3600 sec	*Up to 5 selectable wavelengths
OD600	Measurement of optical density at 600nm (Used for cell measurement) - Smoothing : off, 11, 21, 61 - Correction factor: 0~10,000	-
Photometric	Measurement of absorbance of a single or multiple wavelengths - Up to 20 selectable wavelengths	-
Spectrum	Measurement of the absorbance spectrum - Smoothing and peak/valley functions	*Up to 20 selectable wavelengths
ABS ratio	Measurement of absorbance ratio of two wavelengths	*Up to 20 additional absorbance ratios
Concentration	Measurement of sample concentration - Conversion of attenuation coefficient, dilution multiplication and absorbance into concentration	-
Quantitation	Quantitative analysis using standard curves	-

## Impurity Concentration Correction Function



**Check Spectrum Results:** You can view the original, corrected, and reference spectrum results.



**Troubleshooting:** You can check the suspected causes and simple solutions.

During the experimental process, incorporated impurities can affect absorbance, leading to calculated concentration values that differ from the actual results.

Previously, contamination could only be indirectly verified through single-wavelength ratios such as A260/A280, A260/A230. However, NanoQ Series analyzes the full spectrum from 220-350nm to automatically correct for the effects of contaminants, including nucleic acids, proteins, phenol, and buffers.

This function supports users to simultaneously verify actual concentration and purity without additional calculations or separation processes, enabling faster and more accurate spectroscopy-based quantitative analysis.

## Correctable Impurity Types

Nucleic Acids	Proteins
Protein, Phenol, Guanidine salts	Nucleic acids

### Precautions

- The impurity concentration correction function of the NanoQ Series is designed to provide more accurate concentrations by separating the measurement sample from contaminants based on spectral analysis. However, it does not guarantee absolute values under all sample conditions.
- The system does not correct for all types of impurities. The correction function is limited to representative substances with a high probability of incorporation.
- Correction accuracy may be limited depending on the type and concentration of contaminants, similarity in spectral patterns, and non-absorptive factors such as turbidity or fluorescence.
- While delivering high reliability under general experimental conditions, final results should be interpreted considering sample preparation, reagents used, and the experimental environment. Additional purification or verification procedures are recommended if necessary.

## Thermal Printer



A thermal printer compatible with the NanoQ and NanoQ Plus Spectrophotometer is available for use. (Catalog No. ACC0033)

Print Method	Thermal Method
The Number of Columns	24/32/36/42COL (English)
Font Size	36/42COL English: 9x24, 24/32COL English: 12x24
Dot Density	200 DPI(8dot/mm)
Print Speed	70 mm/sec
Printing Paper	57mm(W) x 60Φ
Power	DC +12V 2.0A 60Hz AC Free Voltage (External AC Adapter)
Temperature	5~45 °C (Operation), -10~60 °C (Storage)
Lifetime	Mechanism: 6,000,000 Lines, Head: 50Km, 100 million pulses MCBF (Mean Cycle Between failure): 15,000,000 Lines
Dimension	110W x 165D x 85H

## After Sales Support Policy

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

- **Warranty Service**

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

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

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

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