

Microvolume Spectrophotometer

NanoBio500

Features

- Adaptive range adjustment
- Fast detection: <3 seconds
- Spectral range: 190-850 nm
- Full touchscreen operation, 7-inch HD display
- Long-life light source (up to 10 years)
- No preheating; ready to use immediately
- High-performance fiber optic spectrometer
- Stable constant power light source
- Data interfaces: USB, Bluetooth, Wi-Fi
- Added cuvette mode
- Comes with temperature control and stirring function
- Highly sensitive fluorescence detection mode
- Advanced calculation algorithm; full band

Application

- Research laboratories
- Hospitals and biochemical laboratories
- Biological laboratories
- Chemical laboratories
- Environmental testing

Description

NanoBio 500 is a versatile microvolume spectrophotometer (190 ~ 850 nm) from Optosky, integrating 20+ years of spectroscopic expertise. It uses a high-performance fiber optic spectrometer and a stable light source (pulse xenon lamp or LED from Hamamatsu, Japan), ensuring rapid and precise detection of nucleic acids and proteins. It supports three modes: microvolume, cuvette, and fluorescence, adapting automatically for wide concentration ranges. The cuvette mode includes temperature control and mixing, while fluorescence mode enhances sensitivity. NanoBio 500 is essential in labs worldwide.

NanoBio 500L, an ultra-micro volume nucleic acid analyzer, focuses on 260nm, 280nm, 460nm, and 600nm UV spectrophotometry for nucleic acids and proteins. Featuring an Android OS and a 7-inch touchscreen, it offers PC-free operation, powered by a lithium battery for over 5 hours. Data can be printed or exported via USB, ensuring easy analysis and storage.

Model	Description
NanoBio500	General purpose, pulsed xenon light source, full spectrum, cuvette, fluorescence method
NanoBio500L	High-precision, long-life LED light source, OD600 cuvette



1. Parameter

Parameters	NanoBio 500	NanoBio 500L
Microvolume Mode		
Sample Size	0.5 ~ 2.0 μ L	
Measurement Cycle	< 5s	
Optic Path Length	0.05 ~ 2mm , Adaptive Range Adjustment Based on Sample Concentration	
Wavelength Range	190 ~850 nm	260nm 、 280nm 、 600nm
Light Source	Xenon flash lamp	Long-Life Narrow-Linewidth LED Light Source
Detector Type	2048 pixel linear CCD array	Ultraviolet Silicon Photodiode
Wavelength Accuracy	1 nm	1 nm
Wavelength Resolution	≤ 2 nm (FWHM at Hg 253.65 nm)	NA
Absorbance Precision	0.003 Abs(1mm)	
Absorbance Accuracy	1% (0.76 at 257 nm)	
Detection Limit	1 ng/ μ L (dsDNA) , 2.0mm Optical path	5 ng/ μ L (dsDNA)
Max Concentration	25,000 ng/ μ L (dsDNA) , 0.05mm Optical path	5,000 ng/ μ L (dsDNA)
Absorbance Range	0.02~500 (10mm)	1-100A
DNA range	1 ~ 25000ng/ul (dsDNA)	5-5000ng/ μ L(dsDNA)
Cuvette mode		
Detection type	All	OD600
Optic Path Length	1mm 、 2mm 、 5mm、 10mm (standard)	
Capacity	3.5ml (10mm)	
Absorbance Range	0-4A(10mm)	
Minimum Height	5mm	
Temperature	37 $\pm$ 0.5 $^{\circ}$ C	
Rotating Speed	0-2000RPM/min	
Stirrer Size	3*6mm	

Fluorescence mode		
Light Source	UV LED（~375nm），Blue LED（~470nm）【standard】，green LED（~525nm），red LED（~635nm）	
Excitation Channel	UV: 361-389nm, blue light: 442-497nm, green light: 490-558nm, red light: 613-662nm	
Hair color Channel	Channel 1: 435-485nm, Channel 2: 514-567nm, Channel 3: 565-650nm, Channel 4: 664-740nm	
Detector	Photodiode: Measuring range 300-1000nm	
Tube Type	0.5ml thin wall centrifuge tube	
Scope Of test	DNA: 0.5pg/ul-25000ng/ul ，RNA: 250pg/ul-20000ng/ul， protein: 12.5ug/ml-750mg/ml	
Others		
Surface Construction	304 stainless steel and quartz fiber	
Operation System	Android OS	
Panel Type	Multi-touch capacitive touch screen	
Panel Size	7 inches	
Panel Resolution	800 × 1080	
Endurance Time	5 hrs	
Li-ion Battery	60 Wh	
Operating Voltage	12V DC	
Power Consumption	9 W	7.5 W
Standby Power	1.5 W	1.5 W
Data interface	USB 、Bluetooth、WIFI	
Dimensions	286 × 196 × 227 mm（L × W × H）	
Weight	3.8 Kg	3. Kg

2. Working Principle

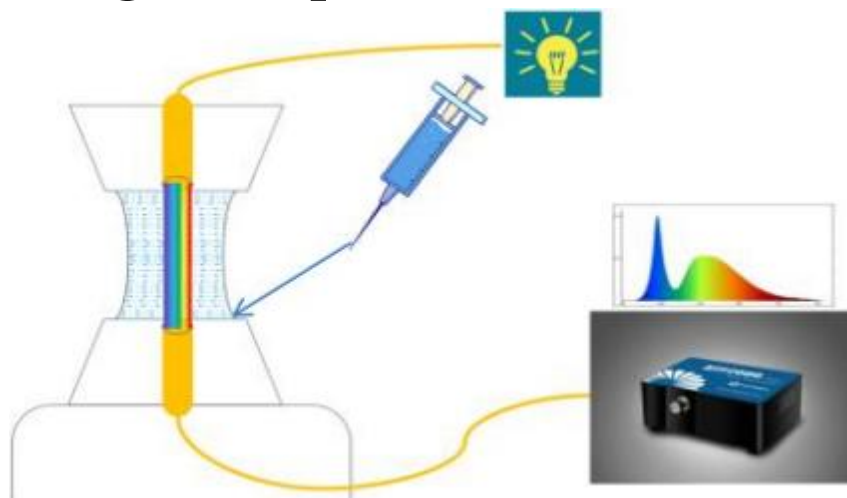


Figure 1: Schematic Diagram of the NanoBio500 Ultra-Micro Spectrophotometer

The working principle of a spectrophotometer is based on the Lambert-Beer Law. First, using our pipette, a sample of 0.5-2 μL is placed on the lower pedestal to form a small droplet. Then, the upper pedestal is pressed down to form a liquid column. When detection is initiated, the broadband light I_0 emitted from our light source passes through the liquid column. The intensity of light I that passes through the sample is recorded. Each substance has a specific absorption wavelength, and the amount of light absorbed at this particular wavelength is proportional to the concentration of the substance, according to the Lambert-Beer Law.

$$A = \epsilon L c$$

Where:

- A is the absorbance of the substance, where $A = -\log I/I_0$;
- ϵ is the molar absorptivity coefficient of the substance;
- L is the path length of the light (optical path length);
- c is the concentration of the substance.

The selective absorption wavelength of the substance and its corresponding absorption coefficient are physical constants of the substance. Once the absorption coefficient of a pure substance under specific conditions is known, the concentration of the substance in a sample solution can be determined by measuring its absorbance under the same conditions and applying the formula above.

3. Application

NanoBio500 ultra-micro-volume spectrophotometer, the effective wavelength range is 190~850nm, can conduct qualitative and quantitative analysis of samples in the ultraviolet, visible, and near-infrared spectral regions; NanoBio 500 can realize micro-volume method, cuvette method, and fluorescence method in one machine measurement mode, it is a compact instrument with full functions. It has a simple structure and fast detection. It is suitable for analysis of nucleic acids, proteins, OD600, kinetics, etc. It has high sensitivity and wide detection limit. It has special advantages in scientific research laboratories, hospitals, biological laboratories, chemical laboratories, environmental testing and other fields.

4. Dimensions

