

**ALLSHENG**



## **Micro-spectrophotometer Series**

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## Micro-spectrophotometer

Micro-spectrophotometer can quickly and accurately detect nucleic acid, protein and cell solution. Because it is easy to use, less sample consumption, no preheating, can quickly cleanup residual samples, no cuvettes or other sample positioning devices required, samples do not need to be diluted and other characteristics. It has become a routine instrument in many laboratories. During the test, users can directly add the sample point to the sample plate. After the test the sample can be directly erased or recovered.

### Features

#### User-friendly software, easy to use

Graphical software operation, more intuitive interface, the results can be directly exported, easy to save, view and output data.

#### Micro-volumes measuring

Only 0.5  $\mu$ L-2  $\mu$ L sample is needed for each test. After the measurement, the samples can be recovered and the precious samples can be studied with confidence.

#### Fast detection

No dilution or cuvette needed in the detection process; 5 s can complete the test and display the result.

#### Long life light source, do not need to warm up

Xenon flash, life span is 10<sup>9</sup> (up to 10 years). No preheating, direct use, ready to test in any time, no need for other consumables.

#### High concentration detection

The maximum concentration of the detectable sample is 15000 ng/ $\mu$ L (Nano-500, dsDNA as an example), and the sample basically does not need to be diluted.

#### Convenient and easy to use

Directly point the sample on to the sample plate without dilution or cuvette. The sample concentration can be measured as 50 times of the conventional uv-visible photometer, and the result can be directly output as the sample concentration.

#### Nano-500 added fluorometer mode, accurate quantitative nucleic acid concentration

For samples with concentrations lower than 2 ng/ $\mu$ L, fluorometer mode can be selected and the minimum detection limit can be up to 0.5 pg/ $\mu$ L.

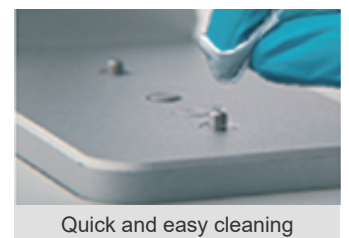
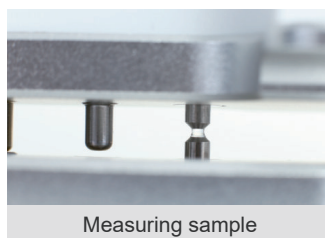
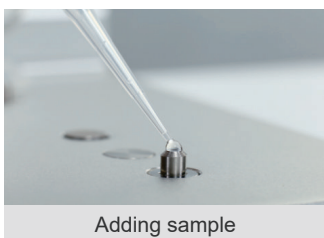
#### Single machine operation, convenient and efficient

Nano-100 / Nano 300 / Nano-500 is full-wavelength micro-spectrophotometer, and Nano-400A is a fixed wavelength ultra-micro nucleic acid analyzer.

### Applications

260 nm: dsDNA, ssDNA, RNA	595 nm: Bradford
280 nm: A280, BSA, IgG, Lysozyme	600 nm: Bacterial liquid concentration
562 nm: BCA	650 nm: Lowry

### Operation Process





Nano-100



Nano-400A



Nano-300



Nano-500

## Nano Series Selection Guide

	Nano-100	Nano-300	Nano-500	Nano-400A
Wavelength range	200~800 nm	200~800 nm	200~800 nm	260 nm, 280 nm
Nucleic acid test dsDNA (ng/ $\mu$ L)	2~4500	2~4500	2~15000	10~2500
A280 protein BSA (mg/mL)	0.1~135	0.1~135	0.1~450	0.5~75
Colorimetry	●	●	●	
Full wavelength scan	●	●	●	
OD600		●	●	●
Fluorometer			●	
Touch screen		●	●	●
Automatic blank and detection		●	●	







## PRODUCT VOLUME OF MICRO SPECTROPHOTOMETER

### Nano-500 Micro-spectrophotometer Product Introduction

Nano-500 is an improved micro-spectrophotometer based on Nano-300 with full wavelength (200-800 nm). It added a function of fluorescence and without requiring a computer. With a sample size of only 0.5  $\mu\text{L}$  to 2  $\mu\text{L}$ , the sample concentration can be rapidly and accurately detected.

The cuvette mode can be used to detect the concentration of culture media such as bacteria. The newly added fluorescence detection function, combined with the fluorescence quantitative analysis kit, can accurately quantify the concentration of DNA, RNA and protein through the specific combination of the fluorescent dye and the target substance, and the minimum limit can reach 0.5  $\text{pg}/\mu\text{L}$  (dsDNA).



-  Patented motor lifting structure to prevent liquid column fracture due to structural problems, increasing the detection stability
-  Standard OD600 detection function
-  Android system, 7-inch capacitive touch screen
-  High-resolution CCD array detector, 6 s can complete detection and display results
-  Long life pulse xenon lamp light source
-  The detection data can be transferred to the computer through USB, which is convenient for data processing and analysis. The built-in printer can print the data directly

### Nano-500: Perfect Fusion of Micro-detection and Fluorescence Detection

**A** Add 0.05 mm optical path to make nucleic acid concentration detection up to 15000  $\text{ng}/\mu\text{L}$ . The detection result is stable with the motor lifting structure.

**B** Added fluorescence detection function, can accurately measure DNA samples below 5  $\text{ng}/\mu\text{L}$ . With the corresponding detection kit, the detection limit can reach 0.5  $\text{pg}/\mu\text{L}$  (dsDNA).

**C** The automatic detection function is added, and the instrument automatically starts concentration detection when the detection arm is lowered, which greatly improves detection efficiency.

## New Fluorescence Detection Function for Nano-500

Fluorescence detection combined with fluorescence quantitative analysis kit, able to accurately quantify the concentration of DNA, RNA and protein through the specific binding of fluorochrome with target material, and the minimum limit is 0.5 pg/ $\mu$ L (dsDNA). Nano-500 can be compatible with common fluorescence quantitative reagent to provide users with the maximum convenience and minimum detection cost.



### Fluorescence Detection Mode (Can Be Customized)

Model	Channel	Excitation wavelength	Emission wavelength
Nano-500U (optional)	UV	365 $\pm$ 20 nm	420~480 nm (60 nm)
Nano-500 (standard)	Blue	460 $\pm$ 20 nm	525~570 nm (45 nm)
Nano-500G (optional)	Green	525 $\pm$ 20 nm	575~640 nm (65 nm)
Nano-500R (optional)	Red	625 $\pm$ 20 nm	670~725 nm (55 nm)

### Fluorescence Detection Mode - Specification

Light source	LED
Dynamic range	5 orders of magnitude
Linear dynamic range	R <sup>2</sup> $\geq$ 0.995
Detector	Photodiode
Repeatability	$\leq$ 1.5 %
Stability	$\leq$ 1.5 %
Sensitivity	dsDNA: 0.5 pg/ $\mu$ L
Measurement speed	3 s (once)

## Applications of Different Fluorescence Channels

Channel	Excitation wavelength	Common reagent	Application
UV channel	365 $\pm$ 20 nm	Hoechst 33258, 4-MU, EnZCheK Caspase	Nucleic acid quantification, plant GUS reporter gene detection, apoptosis detection
Blue channel	460 $\pm$ 20 nm	PicoGreen <sup>®</sup> , oligreen, RiboGreen <sup>®</sup> , GFP, Protein, Fluorescein	dsDNA, ssDNA, GFP, gene detection, fluorescein detection, protein quantification
Green channel	525 $\pm$ 20 nm	Rhodamine, Cy3, RFP Vybrant Cytotoxicity	Rhodamine detection, Cy-3 fluorescence labeling detection, RFP gene detection, cytotoxicity detection
Red channel	625 $\pm$ 20 nm	Cy5, Quant-iT RNA	Cy-5 fluorescence labeling detection, RNA quantification

## Unique Advantages for Nano-500

In the process of sample detection, when the sample concentration is high or the sample is viscous, the determination by micro-spectrophotometer will often result in the failure of liquid column tension or even the direct fracture of liquid column, which will directly affect the results of detection. In addition, when the sample concentration is high, some tiny bubbles are easily generated in the sample. When these bubbles are in the detection light, the detection results are not stable.

Finally, because the stepper motor generates the liquid column in a gentler process, there will be less loss in the detection of the liquid. If the customer's sample is very precious and needs to be recycled, stepper motor is more suitable for sample recovery. Nano-500 adopts the patented sample stretching technology and the optical path length accuracy reaches 1  $\mu$ m, which effectively solves the above problems and makes the test results more stable and reproducible.





## Nano-300 Micro-spectrophotometer Product Introduction

Nano-300 is an improved micro-spectrophotometer based on Nano-100 with full wavelength (200-800 nm). It added a function of bacterium cell concentration detection (OD 600) and without requiring a computer. It can not only measure the sample concentration rapidly and accurately like Nano-100 only needs 2  $\mu\text{L}$  sample, but also equipped with the cuvette mode to measure the concentration of bacteria and other culture media, so as to estimate count the growth of bacteria. Nano-300 uses a 7-inch capacitive touch screen and a customized android system to make it more efficient and convenient for life science experiments.



- Direct detection of high concentration samples without dilution, maximum detection concentration up to 4500 ng/ $\mu\text{L}$  (dsDNA)
- Android system, 7-inch capacitive touch screen, optimized APP software
- Newly designed OD600 optical path detection system, new cuvette mode, for bacteria concentration detection
- High resolution CCD array detector, 5 s can complete the detection and display the results
- Long life pulse xenon lamp light source
- The test data is transferred to the computer via USB for easy sorting and analysis
- The built-in printer can print the report directly



## Nano-300 Unique Advantages

- Android system, 7-inch capacitive touch screen, optimized APP software
- Newly designed OD600 optical path detection system, new cuvette mode, convenient for the concentration detection of bacteria, microorganisms and other culture solutions
- High resolution CCD array detector, 5 s can complete the detection, display the results
- With its own high-definition touch screen and control program, it can be detected without a computer connection
- Long life pulse xenon light source, intelligently identify the user's usage. No operation within 5 minutes, the light source will be automatically turned off to prolong the service life
- The test data is transferred to your computer via USB flash memory for easy data sorting, analysis and storage
- Easy-to-use data to printer option, can print reports directly through the built-in printer
- Automatic detection and automatic blank function: automatically detect the sample concentration when the detection arm is lowered, which greatly shortens the detection time of large batches of samples.

## Nano-100 Micro-spectrophotometer Product Introduction

Nano-100 is a micro-spectrophotometer with full wavelength (200-800 nm). It can quickly and accurately detect the sample concentration. Because it is easy to use, less consumption of samples (only 2  $\mu\text{L}$ ), no preheating, can quickly clean up residual samples, samples do not need to dilute and other characteristics, has become a routine instrument in many laboratories.



- Full wavelength (200~800 nm) micro-spectrophotometer
- Direct detection of high concentration samples without dilution, maximum detection concentration up to 4500 ng/ $\mu\text{L}$  (dsDNA)
- High resolution CCD array detector, 5 s can complete the detection, display the results
- Need to connect PC computer to run detection, data saving, printing, sorting are very convenient
- Long life pulse xenon lamp light source

## Nano-400A Ultra-micro Nucleic Acid Analyzer Product Introduction

Nano-400A ultra-micro nucleic acid analyzer is an instrument used to detect the concentration and purity of DNA and RNA. The sample size required for each measurement is only 1.0 to 2  $\mu\text{L}$ . User can directly add the sample point to the sample plate without accessories such as cuvettes or capillaries.



- Ultra-micro nucleic acid analyzer with fixed wavelength (260 nm, 280 nm, 365 nm)
- Android system, 7-inch capacitive touch screen, no computer connection required
- LED light source, long life component
- It is mainly used to detect the concentration and purity of nucleic acid, and to detect the concentration of nucleic acid at 260 nm, the concentration of protein at 280 nm. The 260 / 280 ratio is used to measure the purity
- Newly designed OD600 optical path detection system, new cuvette mode, convenient for the concentration detection of bacteria, microorganisms and other culture solutions
- The test data is transferred to the computer via USB for easy sorting and analysis
- The built-in printer can print the report directly

## Specification

	Nano-100	Nano-300	Nano-400A	Nano-500
Wavelength range	200~800 nm	200~800 nm	260 nm, 280 nm	200~800 nm
Minimum sample size	0.5~2.0 $\mu$ L	0.5~2.0 $\mu$ L	1.0~2.0 $\mu$ L	0.5~2.0 $\mu$ L
Path length	0.2 mm 1.0 mm	0.2 mm 1.0 mm	0.5 mm	0.05 / 0.2 mm 1.0 mm
Light source	Xenon flash lamp	Xenon flash lamp	UV LED	Xenon flash lamp
Detector type	2048-linear CCD array	2048-linear CCD array	UV-silicon photocell	2048-linear CCD array
Wavelength accuracy	1 nm	1 nm	----	1 nm
Spectral resolution	$\leq$ 3 nm	$\leq$ 3 nm	$\leq$ 8 nm	$\leq$ 3 nm
Absorbance precision	0.003 Abs	0.003 Abs	0.005 Abs	0.003 Abs
Absorbance accuracy	1 % (7.332 Abs at 260 nm)	1 % (7.332 Abs at 260 nm)	2 % (7.332 Abs at 260 nm)	1 % (7.332 Abs at 260 nm)
Absorbance range	0.04~90 A	0.04~90 A	0.2~50 A	0.04~300 A
Nucleic acid detection range	2~4500 ng/ $\mu$ L (dsDNA)	2~4500 ng/ $\mu$ L (dsDNA)	10~2500 ng/ $\mu$ L (dsDNA)	2~15000 ng/ $\mu$ L (dsDNA)
Measurement time	< 5 s	< 5 s	< 6 s	< 6 s
Dimension (WxDxH) mm	200x250x166	210x268x181	208x280x186	208x320x186
Weight	2.6 kg	2.8 kg	2.0 kg	3.6 kg
Sample pedestal material	Aluminum alloy and quartz fiber	Aluminum alloy and quartz fiber	Aluminum alloy and quartz fiber	Aluminum alloy and quartz fiber
Operating voltage	DC 24 V 2 A	DC 24 V 2 A	DC 24 V 2 A	DC 24 V 2 A
Operating power	20 W	25 W	25 W	25 W
Standby power	5 W	5 W	5 W	5 W
Software compatibility	Win 7, Win XP, Win 8	Android system	Android system	Android system

### Cuvette mode (OD600 measurement)

Light source	----	LED	LED	LED
Wavelength range	----	600 $\pm$ 8 nm	600 $\pm$ 8 nm	600 $\pm$ 8 nm
Absorbance range	----	0~4 A	0~4 A	0~4 A

### Fluorometer mode

Sensitivity	----	----	----	dsDNA: 0.5 pg/ $\mu$ L
Linear dynamic range	----	----	----	R <sup>2</sup> $\geq$ 0.995
Repeatability	----	----	----	$\leq$ 1.5 %

## Ordering Information

Code	Description	Code	Description
AS-11010-00	Nano-100 micro-spectrophotometer, DC 24 V 5 W	AS-11060-00	Nano-500 micro-spectrophotometer (standard), DC 24 V 5 W
AS-11020-00	Nano-300 micro-spectrophotometer, DC 24 V 5 W	AS-11070-00	Nano-500U micro-spectrophotometer (optional), DC 24 V 5 W
AS-11050-00	Nano-400A ultra-micro nucleic acid analyzer, DC 24 V 5 W	AS-11080-00	Nano-500G micro-spectrophotometer (optional), DC 24 V 5 W
AS-11021-01	Cuvette for Nano-300, Nano-400A, Nano-500	AS-11090-00	Nano-500R micro-spectrophotometer (optional), DC 24 V 5 W

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