

**UV-9000 UV/Vis Double Beam Scanning
Spectrophotometer**
Optional bandwidth 0.5nm/1.0nm2.0nm/4.0nm



UV-VIS Double Beam UV-9000 is a superior instrument for the research laboratory and is an advanced and affordable system that generates accurate and reproducible measurements. UV-9000 spectrophotometer is accurate, reliable, and an exceptional value. With its narrow beam design, the system provides optimal and reproducible results for micro and macro samples with high resolution for protein, nucleic acid, and DNA/RNA analysis.

UV/Vis Double Beam UV-9000, optional band width 0.5nm/1.0nm/2.0nm/4.0nm, the two detectors are measuring sample and reference respectively simultaneously for optimizing measurement accuracy.

UV/Vs Double Beam UV-9000 has a powerful built in software which permits this instrument to be linked to a computer and a printer to display the photometric and spectral data on the PC monitor. This spectrophotometer is rugged, reliable, affordable, and maintenance free. **UV/Vis Double Beam UV-9000's** enhanced transmission and full reflection makes this double beam spectrophotometer highly effective and reduces noise.

UV/Vis Double Beam UV-9000 advantage is its accurate wavelength, ease of operation, versatile software application, and effortless optional accessory installation. This instrument can be used for analyzing solid samples through use of an optional reflectance accessory and integrating sphere.

Scanning software is free along with the spectrophotometer.

**Shanghai Metash Instruments Co., Ltd is certified by
ISO 9001, has CE Conformity and is RoSH Licensed.**

Features

Excellent Performance : The high-performance blazed holographic grating and the optimized CT-type monochromator reduce stray light, and widen the photometric range.

Ideal baseline stability: Double-beam dynamic feedback ratio recording photometric system coupled with reasonably designed electric control system ensures high stability of the instrument baseline.

High resolution: The unique optic design of full-transmission and full-reflection satisfies both needs of the double beam optic and the enhancement of the light energy of instrument so as to reduce noise and guarantees high resolution.

Accurate wavelength: The automatic wavelength driving system and the automatic light source interchanging system ensures wavelength accuracy and high holistic performance of instrument.

Easy accessories replacement: The detachable structure of the sample chamber facilitates change of a wide range of optional accessories and ensures wavelength accuracy of instrument.

Easy light replacement: The open-type design of light source chamber, socket deuterium lamp and socket tungsten halogen lamp facilitates light source over replacement, simplify maintenance and reduces operation error.

Versatile Application: The application software on Windows platform offers rich operation and data processing facilities, representing to the full the fascination of modern computer technology.

Computer System is optional (NOT INCLUDED).

LOCAL FIRMWARE FUNCTIONS

All software methods are included as built-in standard, thus eliminating the need for software options. Online software upgrade via Internet helps to keep your software up-to-date.

The local control software include functions as: Basic Mode, Quantitative, Wavelength Scan, Kinetics, DNA/Protein, Multi- wavelength Test and System Utilities.

Basic Model: To measure the Absorbance and Transmittance (Fig1)



Fig 1

Quantitative: (Fig 2)

1, Coefficient Method

2, Standard Curve

Up to 10 standard samples may be used to establish a curve. Four methods for fitting a curve through the calibration points: Linear fit, Linear fit through zero, Square fit and Cubic fit.

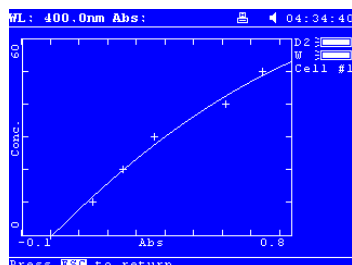


Fig 2

DNA/Protein Test: (Fig 3)

Concentration and DNA purity are calculated:

Absorbance ratios 260nm/280nm or 260nm/230nm with optional subtracted absorbance at 320nm

DNA Concentration=62.9 x A260 - 36.0 x A280

or 49.1x A260 - 3.48x A230

Protein Concentration=1552 x A260 - 757.3 x A280

or 183 x A260 - 75.8 x A230

Other wavelengths and factors may be entered.

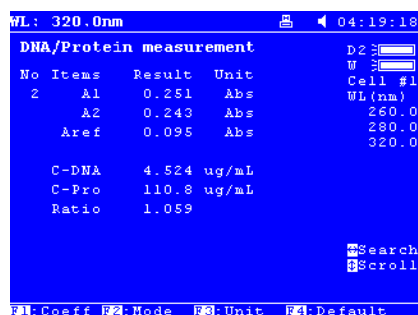


Fig 3

Wavelength Scan:(Fig 4)

The wavelength scan intervals are 0.1, 0.2, 0.5, 1, 2, 5nm, and Hi, Medium and Low scan speeds are available. Scan speeds vary from 100 to 1000nm/min. Wavelengths are scanned from high to low so that the instrument waits at high wavelength. This minimizes the degradation of UV sensitive samples. Precise control of filter and lamp changes means that their effects are not seen on the final scan. Post-run manipulation

includes re-scaling axes, curve tracking and peak picking.

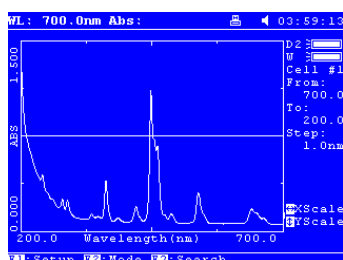


Fig 4

Kinetics: (Fig 5)

This mode may be used for time course scanning or reaction rate calculations. Abs. vs. time graphs is displayed on the screen in real time.

Wait time and measurement time up to 12 hours may be entered with time intervals of 0.5, 1, 2, 5, 10, 30 seconds and 1 min.

Post-run manipulation includes re-scaling, curve tracking and selection of the part of the curve required for the rate calculation. Rate is calculated using a linear regression algorithm before multiplying by the entered factor.



Fig 5

PC SOFTWARE--UV/Vis Analyst For UV-9000

※Such operations as photometry measurement, spectrum measurement, quantitation measurement and kinetic measurement are offered in UV-Win Windows applications.

※Multi-wavelength photometric measurement at up to 10 wavelengths with the arithmetic calculation according to the user-entered formula.

※Up to 10 spectra and time-course curves can be measured and recalled in memory with data-handling of arithmetic calculation, logarithmic calculation, reciprocal calculation, smooth, derivate (1st ~ 4th), Abs to/from %T conversion and peak pick.

※Up to 24 standards can be entered and measured for the fit of calibration curve with order to 1st ~ 4th. Offered are the quantitation methods of single wavelength, two-wavelength, coefficient two-wavelength, three wavelength and 1st ~ 4th derivatives.

※Kinetic measurement can monitor the changes of absorbance and transmittance against time course at 10 different wavelengths. This module allows flexibility in

manipulation and data display.

※With the Windows clipboard, the measured data and graphics can be copied to other applications software for reports. Also offered are filing functions, display functions, and others (such as auto file and repeat measure/scan etc.).

※Performance—Perfectly designed high-performance spectrophotometer.

※Detector : Silicon Photodiode

※Sample Chamber: one sample holder and one reference holder

※Size: 625mm x 430 mm x 206 mm

※Weight: 30 kg.

The PC Control software comes standard with Model UV-9000. It offers the following functions:

Multi-Wavelength : (Fig 6)

Up to 32 wavelengths can be selected and multiple samples can be measured.

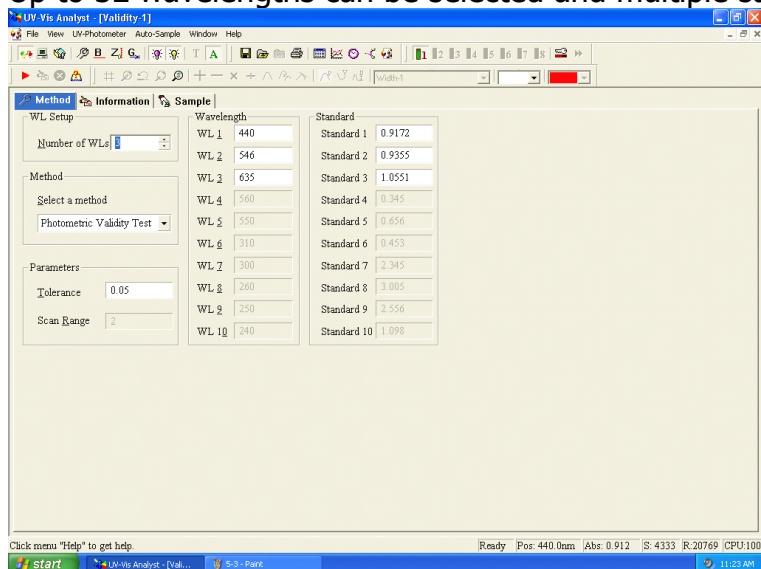


Fig 6

Quantitative: (Fig 7)

- 1, Coefficient Method
- 2, Standard Curve

Up to 10 standard samples may be used to establish a curve. Four methods for fitting a

curve through the calibration points: Linear fit, Linear fit through zero, Square fit and Cubic fit.

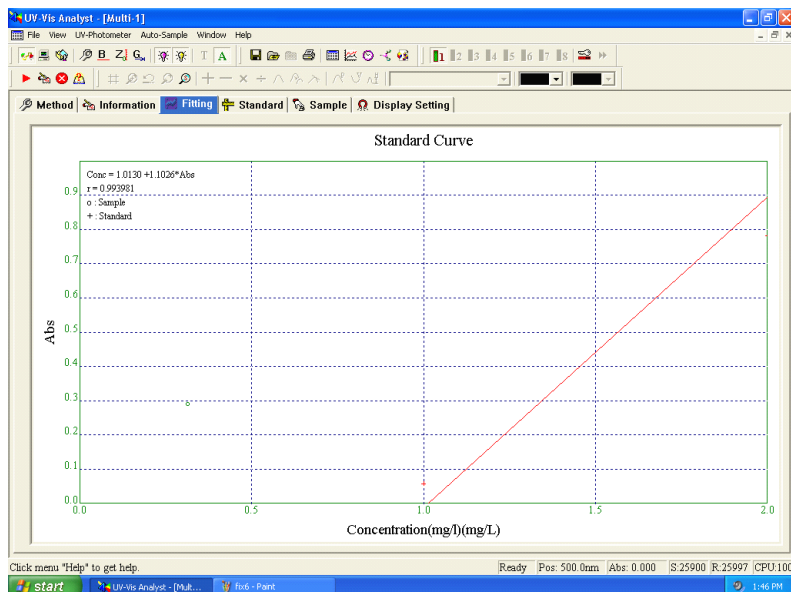


Fig 7

DNA/Protein Test: (Fig 8)

Concentration and DNA purity are calculated:

Absorbance ratios 260nm/280nm or 260nm/230nm with optional subtracted absorbance at 320nm

DNA Concentration= $62.9 \times A_{260} - 36.0 \times A_{280}$

Protein Concentration= $1552 \times A_{260} - 757.3 \times A_{280}$

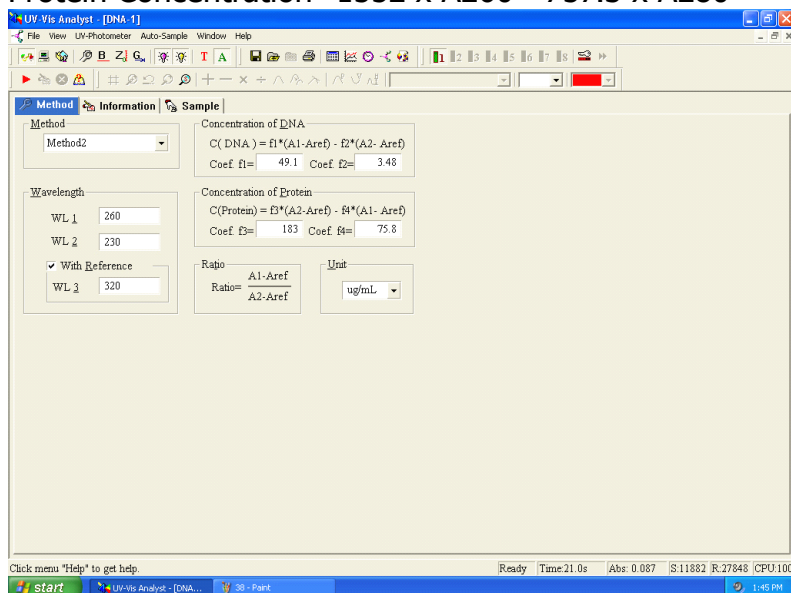


Fig 8

Kinetics: (Fig 9)

This mode may be used for time course scanning or reaction rate calculations.

Abs. VS time graphs is displayed on the screen in real time.

Wait time and measurement time up to 12 hours may be entered with time intervals of 0.5, 1, 2, 5, 10, 30seconds and 1 min.

Post-run manipulation includes re-scaling, curve tracking and selection of the parts of the curve required for the rate calculation. Rate is calculated using a linear regression algorithm before multiplying by the entered factor.

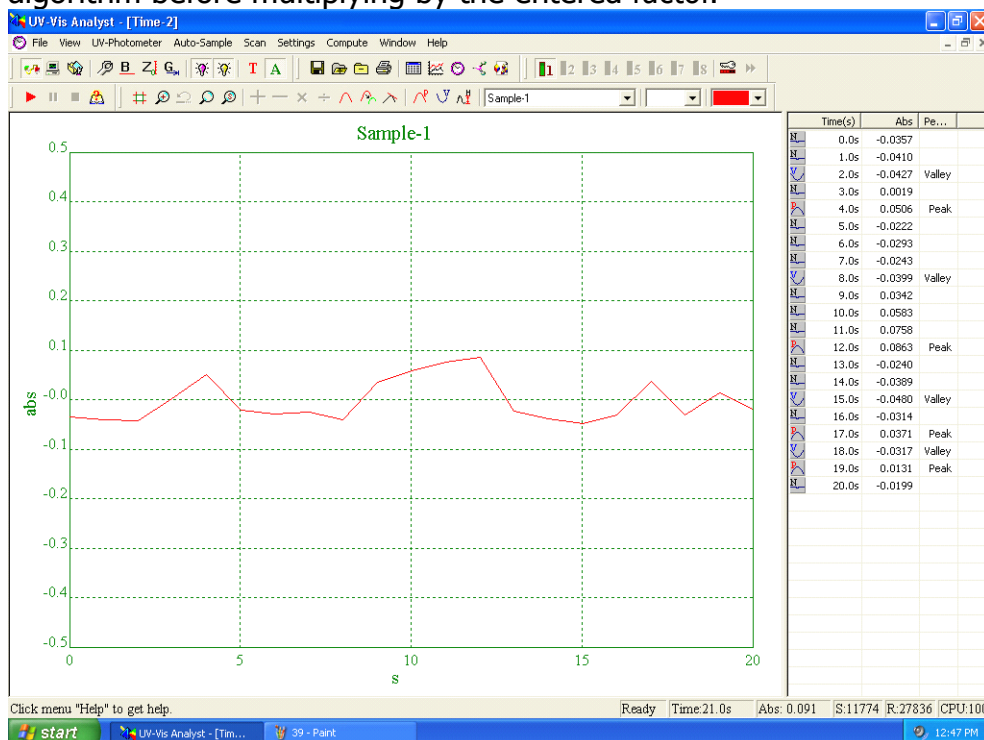


Fig 9

Wavelength Scan: (Fig 10)

- 1) The wavelength scan intervals are 0.1, 0.2, 0.5, 1, 2, 5nm
- 2) Hi, Medium and Low scan speeds are available. They vary from 100 to 3000nm/min
- 3) Wavelengths are scanned from high to low so that the instrument waits at high WL. and it minimizes the degradation of UV sensitive samples.

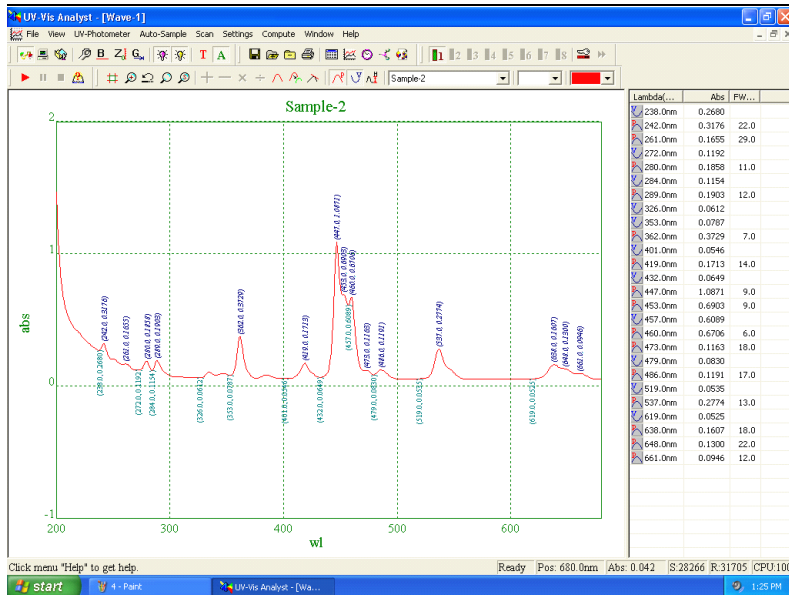


Fig 10

Included Accessories

- ※ 4pcs 10mm glass cuvettes
- ※ 2pcs 10mm quartz cuvettes
- ※ 1pc instruction book
- ※ 1pc power cord
- ※ 1pc dust cover
- ※ 1pc software kit(Disc 1 + USB Cable 1 + Dongle 1)
- ※ 1pc software manual

Optional Accessories

- ※ Micro Printer
- ※ Adjustable Cell holder for Micro Cuvette
- ※ Transparent Film Holder
- ※ 50mm 4-position cell holder
- ※ 100mm 4-position cell holder
- ※ 10mm auto 8-position cell holder
- ※ UV ANALYST software
- ※ Peltier System
- ※ Sipper System
- ※ Peltier/Sipper System
- ※ Tungsten lamp
- ※ Deuterium lamp
- ※ 5mm/10mm/20mm/30mm/40mm/50mm/100mm Glass Cuvette

- ※ 5mm/10mm/20mm/30mm/40mm/50mm/100mm Quartz Cuvette
- ※ 5mm/10mm/20mm/30mm/40mm/50mm/100mm Glass Cuvette with Stopper
- ※ 5mm/10mm/20mm/30mm/40mm/50mm/100mm Quartz Cuvette with stopper
- ※ 100ul/200ul/500ul/700ul Quartz Micro Cuvette

Technical Specifications

Model	UV-9000
Optical System	Double Beam (1200 Lines/mm Grating)
Wavelength Range	190-1100nm
Band Width	Optional 0.5nm/ 1.0nm/2.0nm/4.0nm
Wavelength Accuracy	±0.3nm
Wavelength Repeatability	0.2nm
Photometric Accuracy	±0.3%T
Photometric Repeatability	0.2%T
Photometric Display Range	0-200%T, -0.3-3.0A, 0-9999C
Stability	0.001A/h @ 500nm
Baseline Flatness	±0.001A
Noise	±0.001A
Stray Light	≤0.05%T @220nm, 360nm
Data Output Port	USB
Printer Port	Parallel Port
Display	LCD (320*240 Dots)
Lamps	Deuterium Lamp & Tungsten Halogen Lamp
Detector	Silicon Photodiode
Software	Optional
Dimension (L*W*H)	625*430*206mm
Weight	30kg