

MN-UVS-B205

ULTRAVIOLET-VISIBLE SPECTROPHOTOMETER OPERATION MANUAL



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MN-UVS-B205-E

V0

I .Features

- The instrument has basic functions of photometric analysis and quantitative analysis. With PC software, it expands the applications, such as spectral scanning, kinetics, DNA/protein analysis, multi-wavelength test, etc.
- Adopts 51 microcomputer system, and can store 4000 test data and 128 standard curves.
- Socket type deuterium and tungsten lamp can make lamps switching without optics debugging and easy to be replaced.
- Large sample chamber can accommodate 5-100mm cuvettes of all kinds.
- Extensive accessories are optional, such as 50/100mm manual 4-cell holder, auto 8-cell holder, film holder, 21 CFR compliant software, etc.

II .Technical Parameters

Optical system	automatic wavelength
Wavelength range	190~1100nm
Spectral bandwidth	2nm
Wavelength accuracy	±1nm
Wavelength repeatability	≤0.2nm
Wavelength resolution	0.1nm
Stray light	≤0.2%T @220nm/360nm
Noise	0.001A/2min @500nm
Baseline flatness	±0.002A/h
Photometric range	0~200%T, -3~3A, 0~9999C (0~9999F)
Photometric accuracy	±0.5%T
Photometric repeatability	≤0.2%T
Work mode	T, A, C, E
Light source	deuterium lamp, tungsten lamp
Display	128×64 LCD
Data storage	200 test data or 100 working curves
Power supply	AC 220V, 50Hz
Dimension (W×D×H)	420×510×240mm
Weight	15.5kg

III.Main Functions

- 3.1 Automatic control functions
 - Self-check of internal system working state when the instrument is powered on
 - Automatic wavelength calibration
 - Automatic filter calibration
 - Automatic lamp switching
 - Display error messages
 - Storage of data and curve
 - Printing of data and curve
- 3.2 Analysis and test functions
 - Photometric measurement: Measure absorbance or transmittance of the sample.
 - Quantitative analysis: Use the standard sample to establish a standard curve, and use the curve to measure the unknown sample concentration. If the slope and intercept of the curve are known, the coefficient method can also be used to measure.

IV.Operation Keys

- Number Key:** Used to enter wavelength, concentration and time.
- SET:** Parameter setting key
- GOλ:** Wavelength setting key
- ZERO:** Zero calibration key, put the reference solution into the light path, press ZERO to calibrate 0.000Abs/100.0 %T.
- PRINT:** Printing key
- ▲:** Upward key
- ▼:** Downward key
- START:** Test start key
- RETURN:** Return key/Save key
- ENTER:** Confirm key

CLEAR: Delete key

Tips: When the input value exceeds the input range, the system will automatically return to previous interface after three beeps.

V. Start-up

● **Self-test:** After startup, the instrument enters self-test state, which includes Filter, Lamp Switch, Detector, Deuterium Lamp, Tungsten Lamp, WL Calib. (Wavelength Calibration), and Dark Calib. (Dark Current Calibration).

● **Self-test error:** If any self-test error occurs, the system will beep an alarm and display the error item at the same time. You can press any key to continue self-testing the next item, and press ENTER key to enter system preheating state. After preheating, check the sample chamber to see if the optical path is blocked, then perform the corresponding self-test in system setting again.

● **System preheating:** After the self-test, the instrument will enter the warm-up state for 20 minutes. After preheating, dark current will be tested again. Press any key to skip preheating.

● **Main Menu:** Photometry, Quantitation, System

VI. Photometry

Select Photometry, press ENTER to go to the main interface of photometric measurement.

6.1. **Set Test Mode:** Press SET, press Test Mode, select Abs, T% or Energy.

6.2. **Set Wavelength:** Press GOλ to set wavelength, press RETURN to save.

6.3. **Measure Sample:** After zero calibration, pull the sample to be tested into optical path. When ' 😊 ' appears, press START to enter measurement interface, press START again to measure the sample.

Tips:

1. The wavelength can also be set in measurement interface.

2. In the interface displaying measurement results, you can also press ZERO to make zero calibration.

VII. Quantitation

Select Quantitation, press ENTER to go to the main interface of Quantitative Analysis.

7.1. Standard Curve Method

New Curve:

Select New Curve, select Standard Curve, press ENTER to input Work WL (Work Wavelength) and Number (Standard Sample Number, input range: 1-9), press RETURN to save, press Up/Down key to select 'Press ENTER to save', press ENTER to go to standard sample measurement interface, press ENTER to set standard sample concentration value, press ENTER to input Conc. (Concentration), press RETURN to save, make zero calibration, press UP/Down Key to select 'Press ENTER to read', press ENTER to read the Abs value of the sample, press UP/Down Key to select 'Press ENTER to save', press ENTER to save and check the standard curve, press ENTER again to enter test interface. make zero calibration, pull the sample to be tested into optical path, press START to make test.

Tips:

1. The concentration values of standard samples are generally arranged from low to high.
2. To ensure the high accuracy of the test results, the cuvettes with the same accuracy shall be selected for testing.
3. If the standard curve created by the system fails to meet the measurement requirements, please check whether the standard sample preparation and concentration value input are correct, and then create standard curve again. If the system gives an error message, carefully check whether the standard sample meets the requirements for curve establishment. Check whether the slope and intercept of the working curve are qualified. Please do not measure the sample when the system gives an error message. At this time, the system will get the wrong result and may cause the system to work abnormally!

Select Curve:

The instrument provides the function of curve storage and call. The curve created by the user will be automatically stored in the system.

Select a curve, press ENTER to check the the curve, press ENTER again to select the curve and enter test interface, make zero calibration, pull the sample to be tested into optical path, press START to make test.

7.2. Coefficient Method

The calculation formula in coefficient method is given by the system as $C=K \times A+B$, only need to input curve parameter K and curve parameter B to measure the sample.

Select New Curve, select Coefficient, press ENTER to input Work WL (Work Wavelength), Coef K (Coefficient K) and Coef B (Coefficient B), press RETURN to save, press Up/Down key to select 'Press ENTER to save', press ENTER to save and check the curve parameter, press ENTER again to enter test interface, make zero calibration, pull the sample to be tested into optical path, press START to make test.

VIII. System

Test Mode: Abs, T%, Energy

D2 Lamp: Deuterium Lamp

If deuterium lamp is not used for a long time after startup, it is recommended that you turn off deuterium lamp after the initialization of the instrument to extend the service life of deuterium lamp. Please turn on the deuterium lamp before turning off the instrument, so that the instrument can pass self-test the next time it is turned on.

W Lamp: Tungsten Lamp

Dark Calib: Dark Current Calibration

Dark current calibration is mainly to ensure more accurate measurement results of the sample. When the ambient temperature, ambient light, or working voltage changes, it is necessary to calibrate the dark current before measurement.

WL Calib: Wavelength Calibration

If there is a big deviation in the test results, wavelength calibration can be carried out. The system will automatically test the characteristic wavelength at 656.1nm of the built-in deuterium lamp in the instrument.

Export: Insert USB drive, select Export, press ENTER to export test results.

Time Setting: Press ENTER to input, press RETURN to save, press Up/Down key to select 'Press ENTER to save', press ENTER to save.

Restore Factory: Restore all system configuration information, but not affect system baseline and data files.

Lamp Switch WL: Input the wavelength, press RETURN to save. Input range: 300-400nm.