SHIMADZU
Excellence in Science

Specification Sheet

UV-1900

UV-VIS Spectrophotometer

The UV-1900 is a double-beam UV-Vis Spectrophotometer using Shimadzu's original LO-RAY-LIGH™ diffraction grating technology. In addition to its high optical performance, the UV-1900 features high resolution, low stray light, high reproducibility, and an ultra-fast scan function. It also has an easy-to-use interface on a color touch-screen display. The UV-1900 is designed to meet the needs of both high performance and usability.

Hardware Specifications

Item	Specification
Wavelength range	190 to 1,100 nm
Spectral bandwidth	1 nm (190 to 1,100 nm)
Wavelength display	0.1 nm increments
Wavelength setting	0.1 nm increments (1 nm increments when setting scanning range)
Wavelength accuracy	± 0.1 nm at D2 peak 656.1 nm, ± 0.3 nm for entire range
Wavelength repeatability	± 0.1 nm
Wavelength slew rate	About 14,500 nm/min
Wavelength scanning speed	3,000 to 2 nm/min 29,000 nm/min when survey scanning
Lamp interchange wavelength	Automatic interchange linked to wavelength. The interchange wavelength can be set freely in the range of 295 to 364 nm (0.1 nm increments).
Stray light	Less than 0.02% at 220 nm (NaI) Less than 0.02% at 340 nm ($NaNO_2$) Less than 0.5% at 198 nm (KCl)
Photometric system	Double beam optics
Photometric range	Absorbance: -4 to 4 Abs Transmittance: 0% to 400%
Photometric accuracy	± 0.002 Abs at 0.5 Abs ± 0.004 Abs at 1.0 Abs ± 0.006 Abs at 2.0 Abs (measured using NIST930D/NIST1930 or equivalent.)
Photometric repeatability	Less than ± 0.0002 Abs at 0.5 Abs Less than ± 0.0002 Abs at 1 Abs Less than ± 0.001 Abs at 2 Abs

Item	Specification
Baseline stability	Less than 0.0003 Abs/Hr (700 nm, one hour after light source turned ON)
Baseline flatness	Less than ± 0.0006 Abs (1,100 to 190 nm, one hour after light source turned ON)
Noise level	Less than 0.00005 Abs (700 nm)
Light source	20-W halogen lamp and deuterium lamp Built-in light source auto position adjustment
Monochromator	LO-RAY-LIGH grade blazed holographic grating in Czerny-Turner mounting
Detector	Silicon photodiode
Sample compartment	Internal dimensions: W110 × D250 × H115 mm Distance between light beams: 100 mm
Power requirements	AC100,120,220,230,240 V, 50/60 Hz, 140 VA
Environmental requirements	Temperature: 15°C to 35°C Humidity: 30% to 80% (without condensation; 70% max. at 30°C or higher)
Dimensions	W450 × D501 × H244 mm
Weight	16.6 kg
Output device	USB memory (optional) Data files saved in text format or UVPC format. UVPC-format files can be read directly by UVProbe and LabSolutions™ UV-Vis.
PC compatibility	UVProbe software (standard) LabSolutions UV-Vis software (optional) External control possible via USB.
Display	24-bit color touch screen
Supported languages	Japanese, English, Chinese, Spanish (Mexico), Portuguese (Brazil).

Software Specifications

Measurement mode	Specification
Photometric mode	Single-wavelength measurement 1. Photometric modes: T% or Abs 2. Quantitation using K-factor method 3. Data table storage and recall functions Multiple-wavelength measurement 4. Photometric modes: T% or ABS 5. Measurements at up to eight designated wavelengths (set in 0.1 mm increments) 6. Data calculation at up to four wavelengths (difference or ratio between two wavelengths, calculation between three wavelengths, etc.) is possible.
Spectrum mode	1. Measurement modes: ABS, T%, E 2. Number of repeat scans: 1 to 99 3. Recording system: Selection between single spectrum and data overlay 4. Data storage and recall 5. Data processing: Peak/valley detection, arithmetic operations, differentiation, smoothing, area calculation, point picking, data reading at cursor-specified point
Quantitation mode	1. Measurement methods: 1-wavelength, 2-wavelength, 3-wavelength, and 1st to 4th derivative methods 2. Quantitation methods: Automatic concentration calculation using K-factor Automatic concentration calculation using single-point calibration curve Multi-point calibration curve method (1st to 3rd order regression curves) 3. Measurement parameters: Number of standards (2 to 10) Number of repeat measurements (1 to 10 times) to obtain a mean value for quantitation.
Kinetics mode	1. Measures absorbance changes as a function of time and calculates the enzymatic activity values. 2. Measurement time: 1 to 9,999 sec/min 3. Measurement methods: 1-wavelength, 2-wavelength, multi-cell, and rate measurements
Time scan mode	1. Measures changes in measured values as a function of time. 2. Measurement mode: ABS, T%, E 3. Measurement time: 1 to 9,999 sec/min 4. Data processing functions (same as spectrum mode)

Measurement mode	Specification
Biomethod mode	DNA/Protein Quantitation 1. Calculation of DNA/protein concentration and absorbance ratio DNA concentration = K1 × A1 - K2 × A2 Protein concentration = K3 × A2 - K4 × A1 2. Factors and measurement wavelengths can be set freely. 3. Background correction is possible. Quantitation of proteins 1. Quantitation methods: Lowry method, BCA method, Biuret method, CBB method (Bradford method), UV method
Maintenance	1. Baseline correction 2. Lamp usage time display and reset. 3. Security settings Functions can be restricted according to the user. 4. Instrument validation functions: 1) Compatible with 9 JIS items Wavelength accuracy, wavelength repeatability, resolution, stray light, photometric accuracy, photometric repeatability, baseline flatness, baseline stability, noise level. 2) Semi-automatic validation Validation inspections conducted interactively while inserting and removing inspection jigs. 3) Fully automatic validation Automatic validation inspections from measurement to evaluation and printout. 4) Setting inspection parameters and pass/fail criteria Authority to make changes can be protected by password access. 5) Detailed printout of results. 6) Bulk printout of results. 7) Equipped with method in accordance with Pharmacopeia (JP, USP, EP).
Shared functions	1. Automatic setting of measurement mode after instrument initialization. It's possible to specify standby and parameter files in the parameter setting window for each measurement mode. 2. Selection of displayed number of decimal places Absorbance: 3 or 4 decimal places Transmittance: 1 or 2 decimal places 3. Number of files that can be saved (built-in memory) Measurement parameters: 100 files max. Tabular data: 15 files max. Curve data: 16 files max. Validation condition: 10 files max. Validation result: 3 files max. 4. Setting of integration time (for fixed-wavelength measurement) 5. PC control Spectrophotometer can be controlled by an external PC. This function is also used when performing operation with the standard UVProbe software and the optional LabSolutions UV-Vis software provided. *A USB cable is required.

SHIMADZU

Shimadzu Corporation

www.shimadzu.com/an/

First Edition: April 2018