

UV-Vis-IR

spectrophotometers



From routine analysis to research tasks

The UV-i Selection line includes i-models of Shimadzu spectrophotometers that operate under the control of LabSolutions UV-Vis software.

UV-Vis range

UV-1280 and UV-1900i are compact devices for solving routine tasks of industrial or research laboratories, food industry and eco-monitoring laboratories, as well as biological/biotechnological centers. The spectrophotometers have a built-in LCD display and keyboard. The USB interface and USB control function allow easy connection of a printer or a PC with a printer. UV-1900i is controlled using built-in Russified software (included in the standard package) and a processor, or using a PC. UV-1900i supports the ability to connect a barcode scanner, USB keyboard and printing using a network printer. The cuvette compartment allows easy replacement of the standard 10 mm cuvette holder with additional attachments.

UV-Vis-IR range

UV-2600i/2700i, UV-3600i Plus and SolidSpec-3700i/3700i DUV are research-grade devices that allow you to work not only with liquids but also with solids and powder samples, analyze the optical properties of materials. The spectrophotometers have a variable slit width; a double monochromator (except for UV-2600i), which further reduces the level of scattered radiation; three detectors (for UV-3600i Plus and SolidSpec-3700i/3700i DUV: a photomultiplier for working in the ultraviolet and visible spectral range, a semiconductor InGaAs and a cooled PbS detector for working in the near IR range). The UV-2700i model has a wide photometric range (up to 8.5 Abs), which allows analyzing highly concentrated samples. Spectrophotometers can be equipped with additional attachments, including large cuvette compartments, integrating spheres, mirror reflection attachments and polarizers.

Technical specifications

Model	 UV-1280	 UV-1900i	 UV-2600i	 UV-2700i	 UV-3600i Plus	 UV-3700i
Optical scheme	«Pseudo-dual-beam»	Double beam				
Monochromator	Concave polished holographic grating	Single Czerny-Turner with high-performance polished diffraction grating	Single Czerny-Turner with LO-RAY-LIGHT® diffraction gratings	Double (Cherny-Turner and Littrow's pre-monochromator)	Double (Cherny-Turner and pre-monochromator concave diffraction grating)	
Spectral range	190–1100 nm		185–1400 nm (with integr. sphere) 185–900 nm (without integr/ sphere)	185–900 nm	185–3300 nm	165–3300 nm
Detector	Silicon photodiode		Photomultiplier R-928 and additional semiconductor detectors in integrating spheres		UV/Vis: PMT NIR: InGaAs / cooled PbS	
Slit width	5 nm	1 nm	0.1; 0.2; 0.5; 1; 2 and 5 nm		UV/Vis: 8 steps; 0.1 to 8 nm NIR: 10 steps; 0.2 to 32 nm	
Scanning speed	1600–9 nm/min	29000 nm/min	from 4000 to 0.5 nm/min		4500 nm/min (UV/VIS) 9000 nm/min (IR with PMT/InGaAs) 4000 nm/min (BLIR with PbS)	
Wavelength setting accuracy	±1 nm	±0.3 nm (full range) ±0.1 nm (656.1 nm D2)		±0.2 nm (UV/VIS) ±0.8 nm (bIR)		
Reproducibility on the wavelength scale	±0.3 nm	±0.1 nm	±0.05 nm		±0.08 nm (UV/VIS) ±0.32 nm (neIR)	
Scattered radiation level	<0.05% (220 nm NaI solution; 340 nm NaNO solution ²)	<0.02% T (220 nm NaI; 340 nm NaNO ₂) <0.5% T (198 nm KCl)	≤0.005% (220, 340 and 370 nm)	≤0.00002% (340 and 370 nm); ≤0.00005% (220 nm)	0.00008% (220 nm, NaI) 0.00005% (340 nm, NaNO ₂) 0.0005% (1420 nm, H ₂ O); 0.005% (2365 nm, CHCl ₃)	<0.00008% (220 nm, NaI) <0.00005% (340 nm, NaNO ₂) <0.0005% (1420 nm, H ₂ O) <0.005% (2365 nm, CHCl ₃)
Photometric range	from -0.3 to +3.0 Abs from 0.0 to 200% T	from -4.0 to +4.0 Abs (from 0 to 400% T)	from -5 to +5 Abs	- 8.5 to +8.5 Abs	from -6 to +6 Abs	
Photometric accuracy (at 0.5 Abs) (at 1.0 Abs) (at 2.0 Abs)	±0.003 Abs ±0.005 Abs	±0.002 Abs ±0.004 Abs ±0.006 Abs	±0.002 Abs ±0.003 Abs ±0.006 Abs ±0.3% T		±0.002 Abs ±0.003 Abs	
Photometric reproducibility (at 0.5 Abs) (at 1.0 Abs) (at 2.0 Abs)	±0.002 Abs	less than ±0.0002 Abs less than ±0.0002 Abs less than ±0.001 Abs	±0.001 Abs ±0.001 Abs ±0.1% T		±0.001 Abs ±0.002 Abs	
Zero line drift	±0.001 Abs/hour	<0.0003 Abs/hour (700 nm)	≤0.0002 Abs/hour	≤0.0003 Abs/hour	0.0002 Abs/hour	<0.0002 Abs/hour; DUV: <0.0003 Abs/hour
Noise level	0.002 Abs (0.0005 Abs RMS)	<0.00005 Abs (700 nm)	<0.00003 Abs (500 nm)	<0.00005 Abs (500 nm)	≤0.00005 Abs (500 nm); ≤ 0.00008 Abs (900 nm); ≤ 0.00003 Abs (1500 nm)	0.0002 Abs (500 nm), 0.00005 Abs (1500 nm), with DDU: 0.00005 Abs (500 nm), 0.00003 Abs (1500 nm),
Dimensions of the device	416×379×274 mm	450×501×244 mm	450×600×250 mm		1020×660×270 mm	1000×800×1200 mm
Weight	10 kg	16.6 kg	23 kg		96 kg	170 kg

* The BioSpec-nano spectrophotometer is not included in this leaflet. Its characteristics can be found on the website www.shimadzu.ru in the Biotechnological equipment section.

ASX Autosamplers

UV-i Selection spectrophotometers are compatible with ASX-280 and ASX-560 autosamplers (Teledyne CETAC). Autosampler controls are fully integrated into the LabSolutions UV-Vis software. Each sample can be set to individual parameters for conducting the analysis.

- ASX-280: 120 vials (vial volume 15 ml), 2 standard tablets with 60 positions each
- ASX-560: 240 vials (vial volume 15 ml), 4 standard tablets with 60 positions each

LabSolutions UV-Vis software

The LabSolutions UV-Vis software allows several measurement modes to be opened simultaneously, allowing one mode to perform measurements while another mode collects and processes data. Band shape correction, peak search and printing can be performed automatically. In addition to the measurement and analysis functions, the possibility of evaluating the measurement results (pass/fail criteria) is available. Easy data export to text or table format increases work efficiency.

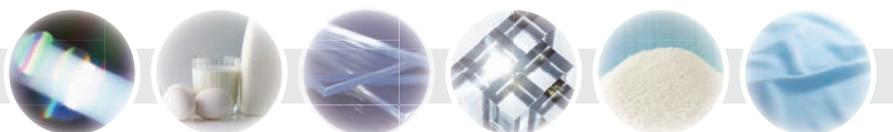
Measurement modes

- spectral - registration of absorption, transmission or reflection, scanning by wavelength with the possibility of subsequent spectrum processing (determination of the position of maxima and minima, arithmetic operations, area calculation, smoothing, reciprocals, logarithms, derivative from 1st to 4th order);
- photometric (quantitative) - measurement at one or several selected wavelengths, construction of a calibration curve using the K-factor method, single-point or multi-point;
- kinetic - recording changes in absorption, transmission or energy over time;
- report generator - free or template-based placement of material (spectra, tables, comments, etc.).

Regulatory Compliance

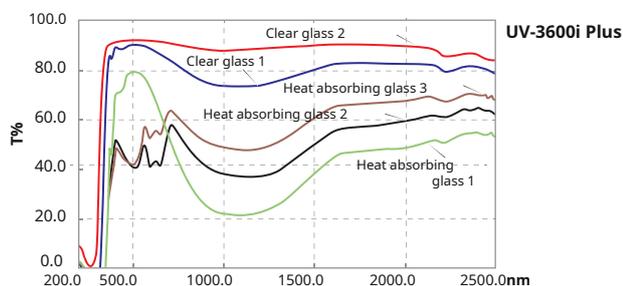
Validation functions ensure that equipment is verified in accordance with the requirements of the European, American and Japanese Pharmacopoeias. In combination with LabSolutions DB/CS software, FDA 21 CFR Part 11 and PIC/S GMP guidelines are met.

Application areas



Production of building materials

Measurement of transmission spectra of window glass characterized by low infrared transmittance and heat retention capacity.



Sample	Transmission of sunlight (T%)	Visible light transmission (T%)
Clear glass 1	81.412	88.733
Clear glass 2	89.612	91.339
Heat absorbing glass 1	47.428	75.051
Heat absorbing glass 2	44.367	43.323
Heat absorbing glass 3	52.023	50.029

Electronics and optics

Analysis of the properties of mirrors, semiconductor materials, solar batteries; obtaining spectral characteristics of LEDs, polarizing films and coatings, etc.

Food industry

Determination of vitamins, food additives; quantitative determination of phenol in packaging, etc.

Textile industry

Measuring diffuse reflectance spectra of various fabrics and fibers, using software for color measurement.

Cosmetics and pharmaceuticals

Measurement of various amino acids, quantitative determination of proteins and nucleic acids, analysis of pharmaceutical components in the near infrared range, etc.



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