

Agilent Cary 60 UV-Vis Guaranteed Specifications



Introduction

The Agilent Cary 60 UV-Vis spectrophotometer is efficient, accurate and flexible, and is designed to meet both current and future measurement needs. The proven, robust design of the Cary 60 comprises a double beam, Czerny-Turner monochromator, 190 to 1100 nm wavelength range, 1.5 nm fixed spectral bandwidth, full spectrum Xenon pulse lamp single source with exceptionally long life, dual silicon diode detectors, quartz overcoated optics, scan rates up to 24,000 nm/min, 80 data points/sec maximum measurement rate, non-measurement phase stepping wavelength drive, room light immunity, central control by PC with Microsoft Windows operating system. Supported by optional software to support 21 CFR Part 11 compliance, and dedicated instrument validation software which includes pharmacopeia test suites.

Cary 60 UV-Vis spectrophotometers are manufactured according to a quality management system certified to ISO 9001. The guaranteed specifications are listed in this document and are based on the 4 sigma statistical confidence level of the final acceptance tests performed at the factory.

Features, advantages and benefits

Feature	Advantage/Benefit
Xenon pulse lamp source	Eliminates photobleaching while allowing the highest quality data to be collected over the complete UV-Vis range – all at the lowest cost of ownership due to an exceptionally long lamp life.
Room light immunity	Unique optical design allows accurate sample measurement even with the sample lid open – especially useful for enzyme assays, fiber-optic based measurements or high throughput QA/QC labs.
1.5 nm fixed spectral bandwidth	Gives excellent spectral resolution for solids and liquids and meets international Pharmacopoeia compliance regulations.
190–1100 nm wavelength range	Complete coverage of UV-Vis range and extending up into the NIR.
24,000 nm/min maximum scan rate	Allows complete spectral range scanning in under 3 seconds, ideal for fast kinetics or high sample throughput.
80 data points/second maximum measurement rate	Allows accurate measurement of sub-second kinetic reactions with excellent data fitting.
Photometric range up to 4 Abs	Permits the analysis of highly turbid solutions and a wide range of sample concentrations (optical densities), as well as reducing sample preparation (dilution) requirements.
Non-measurement phase stepping wavelength drive	Means that sample and reference measurements are made at the same wavelength ensuring that no peak shifts are observed – even when measuring at the fastest scan speeds.
Focused beam measuring 1.5 x 1.0 mm	Ensures efficient energy coupling to accessories including fiber optic probes and ultra-microvolume cuvettes for measurement of low volume samples.

Instrument hardware

Source	Unique full-spectrum Xenon flash lamp (80 Hz) with typical lifetime of 10 years (guaranteed 3 years)	
Monochromator	Czerny-Turner	
Grating	Holographic, 27.5 x 35 mm, 1200 lines/mm, blaze angle 8.6° at 240 nm	
Beam Splitting System	Beam splitter	
Detectors	2 silicon diode detectors for simultaneous sample beam and reference beam measurements	
Optical Design	Double beam Czerny-Turner monochromator	
UV-Vis Limiting Resolution (nm)	≤ 1.5 nm	
Toluene/hexane Limiting Resolution (EP/BP and TGA test)	≥ 1.5	
Stray Light (%T)	At 198 nm (12 g/L KCl, TGA & BP/EP method) At 220 nm (10 g/L NaI ASTM method) At 300 nm (Acetone) At 340 nm (50 g/L NaNO ₂)	≤ 1% ≤ 0.05% ≤ 1.0% ≤ 0.05%
Wavelength Range (nm)	190–1100 nm	
Wavelength Accuracy (nm)	± 0.5 at 541.94 nm	
Wavelength Reproducibility (nm)	± 0.1 nm	
Photometric Accuracy (Abs)	Using NIST 930E filters at 1 Abs At 0.2, 0.5 & 0.75 Abs (14.2% w/v KNO ₃ , TGA method) 0.292 to 0.865 Abs (60.06 mg/L K ₂ Cr ₂ O ₇ , BP method)	± 0.005 Abs ± 0.01 Abs ± 0.01 Abs
Photometric Range (Abs)	± 4.0 Abs	
Photometric Display	± 9.9999 Abs, ± 200.00 %T	
Photometric Reproducibility (Abs)	Using NIST 930E filters, at 465 nm, 2 s SAT Maximum deviation at 1 Abs Standard deviation for 10 measurements Using NIST 930E filters, at 546.1 nm, 2 s SAT Maximum deviation at 0.5 Abs Standard deviation for 10 measurements	< 0.004 Abs < 0.00050 Abs < 0.003 Abs < 0.0030 Abs

Table continues

Instrument hardware

Table continued

Photometric Stability (Abs/hour)	500 nm, 10 s SAT < 0.0004 Abs		
Photometric Noise (Abs, RMS)	500 nm, 1 s SAT	At 0 Abs	< 0.0001 Abs
		At 1 Abs	< 0.0005 Abs
		At 2 Abs	< 0.005 Abs
	260 nm, 1 s SAT	At 0 Abs	< 0.00015 Abs
Baseline Flatness (Abs)	200 to 850 nm, smooth 21 filter applied, baseline corrected \pm 0.001 Abs		
Compartment Size (width x depth x height)	130 mm x 523 mm x 123 mm Note that sample compartment can be left open during measurement due to room light immunity of Cary 60		
Sample Compartment Access	Top and front		

Recommended environmental conditions

Instrument Dimensions (width x depth x height)	Packed 595 x 710 x 350 mm (24 x 28 x 14 in) Unpacked 477 x 567 x 196 mm (19 x 23 x 8 in) The Cary 60 has been designed to withstand the weight of a PC monitor up to 10 kg (33 lb)			
Instrument Weight	Packed 23 kg (51 lb), Unpacked 18 kg (40 lb)			
Instrument Conditions	Condition	Altitude (m, ft)	Temp. (°C, °F)	Humidity (%RH) non-condensing
	Non-operating (transport)	0–4600, 0–15000	-40–75 °C, -40–167 °F	15–90%
	Operating within performance specifications	0–3100, 0–10000	5–40 °C, 41–104 °F	50–80%
Instrument Electrical Requirements	A standard 3.2 A/12 V plug pack is provided. Power cords are provided based on the user's country requirements. Only the supplied power supply is to be used with this equipment. Required supply voltage: 100–240 V AC, Frequency 47-63 Hz Nominal rating: Scanning: 18 W, Idle: 9 W			

Operational

Spectral Bandwidth (nm)	Fixed at 1.5 nm (approximately)
Signal Averaging (seconds)	0.0125–999 s
Maximum Scan Rate (nm/min)	24,000 nm/min
Slew Rate (nm/min)	24,000 nm/min
Data Interval (nm)	0.15–5.0 nm
Repetitive Scanning	4800 data points per minute, maximum number of cycles: 999, maximum cycle time (min): 9999
Data Collection Rate	80 data points/second
Temperature Monitor	Temperature probe inside cuvette (using the Temperature Probe Accessory)
Minimum Sample Volume	0.5 µL

Customer support policies

Agilent is renowned for providing expert applications and service support. Agilent has a global network of factory-trained specialists ready to provide support for hardware, software, or applications wherever you are located. Services include:

- Full 12-month warranty support
- Seven (7) year hardware support period from date of last unit manufacture. After this time, parts and supplies will be provided if available.
- Preventive maintenance to deliver consistent operation and minimize downtime
- Troubleshooting, maintenance and repair
- Software support services
- Compliance services including IQ and OQ of hardware and software
- Comprehensive warranty extension and service contracts, including peripherals
- Classroom training and onsite training delivered by experts

More information

For further information please consult your Agilent office or supplier, or our website at www.agilent.com

www.agilent.com/chem/cary60uv-vis

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