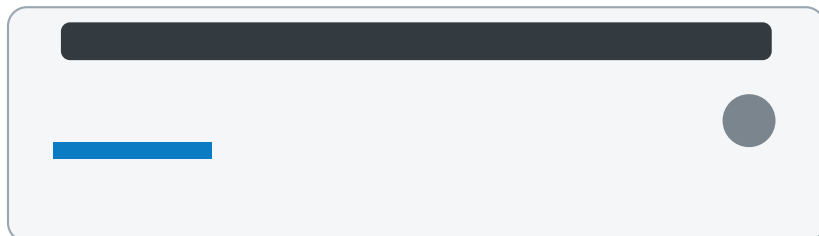


Product image reference: The manufacturer product page identifies the official Cary 3500 Compact UV-Vis image. The actual image could not be embedded into this PDF from the restricted external image host, so this brief does not misrepresent a drawing as a manufacturer photograph.



Product image reference — Agilent Cary 3500 Compact UV-Vis

[Open official Agilent product image](#)

Prepared from Agilent Cary 3500 UV-Vis documentation and the current Agilent Cary 3500 Compact product specification page.



1. Instrument Overview

The Agilent Cary 3500 Compact UV-Vis is a double-beam UV-Vis spectrophotometer designed for single-sample and reference measurements. The Cary 3500 platform uses a modular architecture with a common UV-Vis engine and dedicated measurement modules. The Compact configuration is available for ambient measurements and as a temperature-controlled Peltier configuration. The instrument combines a xenon flash-lamp source, research-grade monochromator optics, permanently aligned measurement geometry, and Cary UV Workstation software.

Key parameter	Cary 3500 Compact
Instrument type	Double-beam UV-Vis spectrophotometer
Measurement configuration	Single sample + reference; 2 cuvette positions
Wavelength range	190–1100 nm
Light source	Full-spectrum xenon flash lamp, 250 Hz
Maximum scan rate	150,000 nm/min
Data collection rate	Up to 250 data points/s
Spectral bandwidth	0.1–5.0 nm, adjustable in 0.01 nm intervals
Photometric range	4.0 Abs
Operational Z-height	15 mm
Dimensions	445 W × 435 D × 280 H mm
Current product-page weight	24 kg
Power	100–240 VAC, 50/60 Hz

2. Optical Architecture

The Cary 3500 optical engine uses a double-beam configuration with rear beam access and a double out-of-plane Littrow monochromator. Silicon photodiode detectors support simultaneous measurement of the available channels. The measurement modules are designed without moving parts and use permanent optical alignment. The tightly controlled beam geometry is specified at less than 1.5 mm at the sample interface, supporting measurements with small-aperture cuvettes and microvolume samples.

Optical parameter	Specification
Photometric system	Double beam with rear beam access
Monochromator	Double out-of-plane Littrow monochromator
Detector	Silicon photodiode detectors
Beam dimension at sample interface	< 1.5 mm
Limiting resolution	0.1 nm
Wavelength accuracy	±0.2 nm
Wavelength reproducibility	< 0.025 nm

3. Photometric & Spectral Performance

Performance metric	Agilent specification
Photometric accuracy	±0.005 Abs at 1 Abs using NIST 930E filter
Photometric range	4.0 Abs
Photometric reproducibility	0.005 Abs
Photometric stability	0.0003 Abs/hour
Photometric noise at 500 nm, 0 Abs	< 0.0001 Abs (RMS)
Photometric noise at 500 nm, 1 Abs	< 0.0002 Abs (RMS)
Spectral bandwidth	0.1–5.0 nm, 0.01 nm increments
Data interval	0.01–10 nm
Maximum scan rate	150,000 nm/min
Data collection rate	250 data points/s

4. Stray-Light Test Values

Test wavelength	Method / material	Reported value
198 nm	12 g/L KCl, BP/EP method	< 1.0 %
220 nm	10 g/L NaI, ASTM method	< 0.003
300 nm	Acetone	< 0.005
370 nm	50 mg/L NaNO ₂	< 0.003

These values are reproduced from Agilent data sheet 5994-0446EN and should be interpreted in the context of the stated test methods.

5. Xenon Flash-Lamp Technology

The Cary 3500 platform uses a full-spectrum xenon flash lamp operating at 250 Hz. Agilent describes the lamp as illuminating the sample when data are acquired, which removes the normal daily warm-up burden and can reduce unnecessary exposure of light-sensitive samples. The current Agilent product page specifies a 10-year replacement warranty for new Cary 3500 instruments purchased from Agilent or participating partners.

Parameter	Specification
Source	Full-spectrum xenon flash lamp
Flash rate	250 Hz
Typical lamp lifetime in 2019 data sheet	10 years
Current warranty statement	10-year replacement warranty on new instruments, subject to purchase conditions

6. Ambient and Peltier Temperature-Controlled Configurations

The Compact module is documented in both ambient and temperature-controlled forms. The Peltier configuration uses a self-contained, integrated, air-cooled, waterless Peltier system. The 2019 technical data sheet reports water-free temperature cycling from 0 to 110 °C, while the current Agilent product page states temperature-controlled experiments from -5 to 110 °C. Because these values belong to different documentation generations, the applicable specification should be confirmed against the exact instrument configuration and revision before being used as a contractual specification.

Peltier parameter	2019 data sheet specification
Temperature range	0–110 °C
Independently controlled zones	1
Temperature monitoring/control points	2
Peltier block probe accuracy	±0.5 °C
Sample probe accuracy	±0.25 °C, 25–60 °C range
Cell-to-cell variation	< ±0.15 °C
Maximum ramp rate	40.0 °C/min
Minimum ramp rate	0.1 °C/min

Current Agilent page: the current product page states -5 to 110 °C for temperature-controlled experiments and up to 40 °C/min thermal ramping.

7. Software, Data Handling & Compliance

Cary UV Workstation provides application-specific workflows for wavelength reads, wavelength scanning, concentration measurements, kinetics, and temperature-based measurements. Agilent states that the software includes more than 50 built-in calculations and supports customized calculations that can be saved in methods. The platform can be configured with Agilent OpenLab for secure data acquisition, storage, user administration, electronic signatures, and audit-trail capabilities.

Software capability	Description
Control software	Cary UV Workstation
Compliance software	OpenLab Software Suite (optional/configuration dependent)
Measurement workflows	Wavelength reads, scanning, concentration, kinetics, temperature-based measurements
Calculations	50+ built-in calculations plus customized calculations
Data integrity controls	Secure storage, access control, electronic signatures and enhanced audit-trail review when configured with OpenLab
Referenced regulatory frameworks	FDA 21 CFR Part 11, EU Annex 11, GAMP5, ISO/IEC 17025, EPA 40 CFR Part 160
Pharmacopeial OQ references	USP <857>, Ph. Eur. 2.2.25, Japanese Pharmacopoeia 2.24

8. Physical, Electrical & Environmental Specifications

Parameter	Cary 3500 Compact
Width	445 mm (17.5 in)
Depth	435 mm (17.1 in)
Height	280 mm (11 in)
Current product-page weight	24 kg
2019 data-sheet weight	21.7 kg
Operational Z-height	15 mm
Electrical supply	100–240 VAC, 50–60 Hz
Recommended operating conditions in 2019 data sheet	15–35 °C; 15–80% RH, non-condensing; altitude 0–3100 m

The 24 kg weight is taken from the current Agilent product page. The 21.7 kg figure is retained only as a historical value from data sheet 5994-0446EN (2019).

9. Configuration Boundary: Compact vs. Other Cary 3500 Modules

Characteristic	Compact	Multicell	Flexible
Primary sample format	Cuvette-based	Cuvette-based	Liquid and solid samples
Simultaneous positions	2	8	Single sample + reference
Compact depth	435 mm	700 mm	700 mm
Photometric range on current product pages	4 Abs	4 Abs	6 Abs

This comparison is included to prevent specifications from the Cary 3500 Flexible or Multicell modules from being incorrectly attributed to the Compact model.

10. Source Documents

Document	Reference
Current Agilent product page	Cary 3500 Compact UV-Vis Spectrophotometer; current specifications and configuration information
Agilent Cary 3500 UV-Vis Brochure	Document 5994-0335EN; English brochure, 16 pages, published/updated 04 Sep 2024
Agilent Cary 3500 UV-Vis Data Sheet	Document 5994-0446EN; English data sheet, 4 pages, printed 17 Jan 2019

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