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Varian Cary® 50 UV-Vis Spectrophotometer

TYPICAL SPECIFICATIONS

Introduction

Cary spectrophotometers are manufactured according to a Quality system that is certified to the ISO-9001. The specifications listed below represent the average results of the final acceptance tests performed in the factory. With a sample of over six hundred Cary 50 instruments, the specifications are indicative of the performance of Cary instruments. These specifications are not guaranteed. The guaranteed specifications are listed in a separate brochure and are based on the ±4 sigma statistical confidence level.

Design overview

Dual beam, Czerny-Turner monochromator, 190–1100 nm wavelength range, approximately 1.5 nm fixed spectral bandwidth, full spectrum Xe pulse lamp single source with exceptionally long life, dual Si diode detectors, quartz overcoated optics, scan rates up to 24000 nm/min, 80 data points per s maximum measurement rate, non-measurement phase stepping wavelength drive, room light immunity, central control by PC with Microsoft® Windows® operating system.

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	
UV-Vis limiting resolution (nm)	≤ 1.5	
Toluene/Hexane limiting resolution test	≥ 1.65	
Stray light (%T)	At 198 nm (12 g/L KCl, TGA and BP/EP method)	≤ 0.53%
	At 220 nm (10 g/L NaI ASTM method)	≤ 0.02%
	At 370 nm (50 mg/L $NaNO_2$)	≤ 0.018%
Wavelength range (nm)	190–1100	
Wavelength accuracy (nm)	± 0.07 at 541.94 nm, ± 0.24 at 260.54 nm	
Wavelength reproducibility (nm)	± 0.01	
Photometric accuracy (Abs)	Using NIST 930D filters at 1 Abs	± 0.0007
	At 0.2, 0.5 and 0.75 Abs (14.2% w/v KNO_3, TGA method)	± 0.01
	0.292 to 0.865 Abs (60.06 mg/L $K_2Cr_2O_7$, BP method)	± 0.01
	0.955 Abs (600.06 mg/L $K_2Cr_2O_7$, BP method)	± 0.012
Photometric range (Abs)	3.3	
Photometric display	± 9.9999 Abs, ± 200.00 %T	
Photometric reproducibility (Abs)	Using NIST 930D filters, at 465 nm, 2 s SAT	
	Maximum deviation at 1 Abs	< 0.004
	Standard deviation for 10 measurements	< 0.00050
	Using NIST 930D filters, at 546.1 nm, 2 s SAT	
	Maximum deviation at 0.5 Abs	< 0.003
	Standard deviation for 10 measurements	< 0.00030
Photometric stability (Abs/hour)	After 30 min warm-up, 500 nm, 10 s SAT	< 0.0004

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Photometric noise (Abs, RMS)		
500 nm, 1 s SAT	At 0 Abs	≤ 0.000063
	At 1 Abs	≤ 0.00014
	At 2 Abs	≤ 0.0018
260 nm, 1 s SAT	At 0 Abs	≤ 0.00015
Baseline flatness (Abs)	200 to 850 nm, smooth 21 filter applied, baseline corrected	± 0.0006
Compartment size (WxDxH)	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 50.	
Access	Top and front	
Instrument dimensions (WxDxH)	500 mm x 590 mm x 205 mm	
Instrument weight (kg)	21	

Recommended environmental conditions

Instrument storage	5–45 °C at 20–80% relative humidity, non-condensing, altitude < 2133 m.
Instrument operation	Below 853 m altitude: 10–35 °C, 8–80% relative humidity, non-condensing. Between 853 and 2133 m altitude: 10–25 °C, 8–80% relative humidity, non-condensing.
Instrument electrical requirements	Instrument draws maximum of 26 W of power from the host PC power supply. The power rating is +5 V DC <1 A, +12 V DC <1.5 A, -12 V DC <0.25 A. The Cary 50 interface card fits into a standard ISA slot in the host PC and requires a standard PC internal hard disk power supply connector. Operation of motor driven accessories may increase the +12 V requirement by a further 2 A (24 W maximum). The host PC must be certified to standard IEC 60950 or equivalent.

Operational

Spectral bandwidth (nm)	Fixed at 1.5
Signal averaging (s)	0.0125 to 999
Maximum scan rate (nm/min)	24000
Slew rate (nm/min)	24000
Data interval (nm)	0.15–5.0
Repetitive scanning	Maximum number of cycles: 999, Maximum cycle time (min): 999
Data collection rate	(Kinetic studies) points per min per cell
	1 cell = 4800, 6 cell = 6, 12 cell = 3, 18 cell = 2
	6 cells, 0.0375 SAT 0.38 s dwell time = 40 to 50
	12 cells, 0.0375 SAT 0.38 s dwell time = 20 to 30
	18 cells, 0.0375 SAT 0.38 s dwell time = 10 to 20
Temperature monitors	Temperature probe inside cuvette (using the Temperature Probe Accessory)
Minimum sample volume	Approximately 5.0 µL

Varian customer support policies

Warranty	Twelve (12) months, though this may vary according to location.
Hardware support period	Five (5) years from date of last unit manufacture. After this time, parts and supplies will be provided if available.
Software support	Telediagnostic capability is available for some instrument models. Availability of Telediagnostic support may vary according to location. Software upgrades to fix non-conformances or safety problems will be issued free of charge. Software upgrades to add additional functionality will require an additional fee.

Further details

For further details on the following:
- PC configurations
- GLP, 21 CFR Part 11 and Validation functionality
- Accessory specifications and application information
- Part numbers and other ordering information

please consult your Varian office or supplier, or our Web site at www.varianinc.com

Varian, Inc. reserves the right to revise these specifications without notification.

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