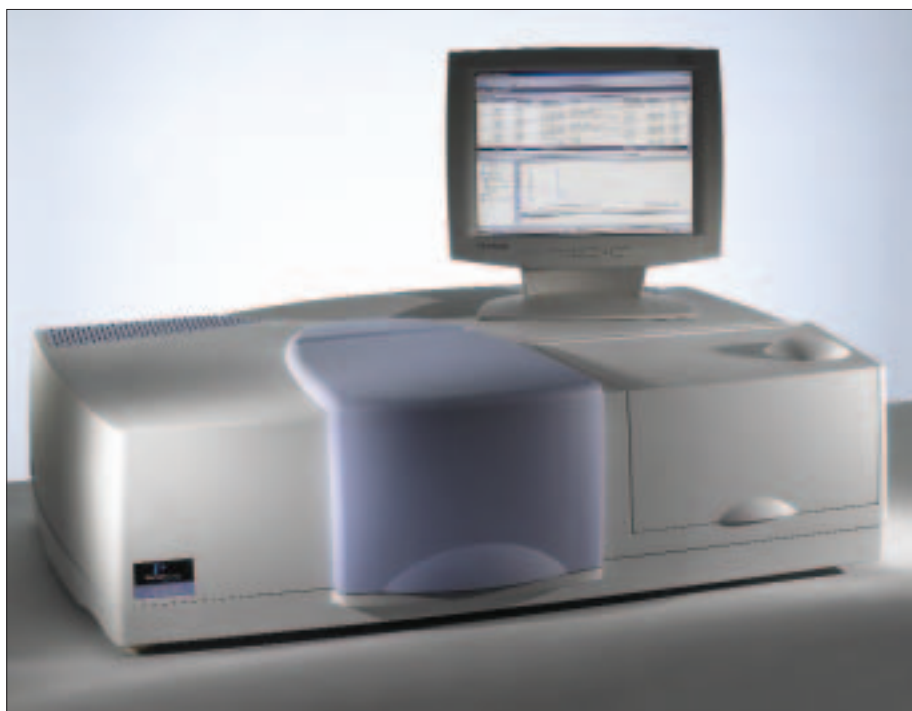


Technical Specifications for the LAMBDA 950 UV/Vis/NIR and LAMBDA 850 UV/Vis Spectrophotometers



Introduction

PerkinElmer UV/Vis and UV/Vis/NIR spectrophotometers are built to the highest ISO-9001 manufacturing standards. This document presents guaranteed and typical performance specifications based on factory tests.

All instruments will meet or achieve better than the guaranteed specifications. The typical specifications are based on recent factory test data from over 100 instruments and are quoted as 4-sigma (standard deviations) from the mean value.

Technical Description and Specifications

	LAMBDA 950	LAMBDA 850
Principle	Double beam, double monochromator, ratio recording UV/Vis/NIR spectrophotometer with microcomputer electronics, controlled by DELL PC or compatible personal computer.	Double beam, double monochromator, ratio recording UV/Vis spectrophotometer with microcomputer electronics, controlled by DELL PC or compatible personal computer.
Optical System	All reflecting optical system (SiO ₂ coated) with holographic grating monochromator with 1440 Lines/mm UV/Vis blazed at 240 nm and 360 Lines/mm NIR blazed at 1100 nm, Littrow mounting, sample thickness compensated detector optics.	All reflecting optical system (SiO ₂ coated) with holographic grating monochromator with 1440 Lines/mm UV/Vis blazed at 240 nm, Littrow mounting, sample thickness compensated detector optics.
Beam Splitting System	Chopper (46+ Hz, Cycle: Dark/Sample/Dark/Reference, Chopper Segment Signal Correction CSSC).	Chopper (46+ Hz, Cycle: Dark/Sample/Dark/Reference, Chopper Segment Signal Correction CSSC).
Detector	Photomultiplier R6872 for high energy in the whole UV/Vis wavelength range. Peltier cooled PbS detector for NIR.	Photomultiplier R6872 for high energy in the whole UV/Vis wavelength range.
Source	Pre-aligned tungsten-halogen and deuterium.	Pre-aligned tungsten-halogen and deuterium.
Wavelength Range (N ₂ purge required below 185 nm)	175 nm–3300 nm	175 nm–900 nm
UV/Vis Resolution	≤ 0.05 nm	≤ 0.05 nm
NIR Resolution	≤ 0.20 nm	—
Stray Light		
At 200 nm (12 g/l KCl USP/DAP method)	> 2 A	> 2 A
At 220 nm (10 g/l NaI ASTM method)	≤ 0.00007 %T Typically ≤ 0.00005 %T	≤ 0.00007 %T Typically ≤ 0.00005 %T
At 340 nm (50 mg/l NaNO ₂ ASTM method)	≤ 0.00007 %T Typically ≤ 0.00002 %T	≤ 0.00007 %T Typically ≤ 0.00002 %T
At 370 nm (50 mg/l NaNO ₂ ASTM method)	≤ 0.00007 %T Typically ≤ 0.00003 %T	≤ 0.00007 %T Typically ≤ 0.00003 %T
At 1420 nm (H ₂ O 1-cm pathlength)	≤ 0.00040 %T Typically ≤ 0.00032 %T	—
At 1690 nm (CHCl ₃ 4-cm pathlength)	≤ 0.0015 %T Typically ≤ 0.00065 %T	—
At 2365 nm (CHCl ₃ 1-cm pathlength)	≤ .0005%T	—
Wavelength Accuracy	+/- 0.08 nm UV/Vis +/- 0.30 nm NIR	+/- 0.08 nm
Wavelength Reproducibility		
UV/Vis (Deuterium Lamp Lines)	≤ 0.020 nm	≤ 0.020 nm
NIR (Deuterium Lamp Lines)	≤ 0.080 nm	—
Standard deviation of 10 measurements UV/Vis	≤ 0.005 nm	≤ 0.005 nm
Standard deviation of 10 measurements NIR	≤ 0.020 nm	—
Photometric Accuracy		
Double Aperture Method 1 A	+/- 0.0006 A	+/- 0.0006 A
Double Aperture Method 0.5 A	+/- 0.0003 A	+/- 0.0003 A
NIST 1930D Filters 2 A	+/- 0.003 A	+/- 0.003 A
NIST 930D Filters 1 A	+/- 0.003 A	+/- 0.003 A
NIST 930D Filters 0.5 A	+/- 0.002 A	+/- 0.002 A
K ₂ Cr ₂ O ₇ -Solution USP/DAP method	+/- 0.010 A	+/- 0.010 A
Photometric Linearity (Addition of filters UV/Vis at 546.1 nm, Slit 2 nm, 1-sec. integration time)		
At 1.0 A	+/- 0.006 A	+/- 0.006 A
At 2.0 A	+/- 0.017 A	+/- 0.017 A
At 3.0A	+/- 0.020 A	+/- 0.020 A

Technical description and specifications

	LAMBDA 950	LAMBDA 850
Photometric Reproducibility		
1 A with NIST 930D Filter at 546.1-nm Standard Deviation for 10 measurements	≤ 0.00016 A	≤ 0.00016 A
0.5 A with NIST 930D Filter at 546.1-nm Standard Deviation for 10 measurements	≤ 0.00008 A	≤ 0.00008 A
0.3 A with NIST 930D Filter at 546.1-nm Standard Deviation for 10 measurements (2-nm Slit, 1-sec. integration time)	≤ 0.00008 A	≤ 0.00008 A
Photometric Range	8 A	8 A
Photometric Display	Unlimited	Unlimited
Bandpass	0.05 nm–5.00 nm in 0.01-nm increments UV/Vis range 0.20 nm–20.00 nm in 0.04-nm increments NIR range Fixed resolution, constant energy or slit programming.	0.05 nm–5.00 nm in 0.01-nm increments UV/Vis range Fixed resolution, constant energy or slit programming.
Photometric Stability (After warm-up at 500 nm, 0 A, 2-nm Slit, 2-sec. integration time, Peak to Peak)	≤ 0.0002 A/h	≤ 0.0002 A/h
Baseline Flatness (LAMBDA™ 950: 190 nm–3100 nm, 2-nm Slit, Gain 1 NIR, 0.20-sec. UV/Vis–0.24-sec. NIR integration time, no smoothing applied) (LAMBDA™ 850: 190 nm–860 nm, 2-nm Slit, 0.20-sec. integration time, no smoothing applied)	+/- 0.0008 A Typically +/- 0.0007 A	+/- 0.0008 A Typically +/- 0.0007 A
Photometric Noise RMS		
0 A and 190 nm	≤ 0.00010 A	≤ 0.00010 A
0 A and 500 nm	≤ 0.00005 A	≤ 0.00005 A
2 A and 500 nm	≤ 0.00020 A	≤ 0.00020 A
4 A and 500 nm	≤ 0.00100 A	≤ 0.00100 A
6 A and 500 nm	≤ 0.00500 A	≤ 0.00500 A
0 A and 1500 nm	≤ 0.00004 A	—
2 A and 1500 nm	≤ 0.00100 A	—
3 A and 1500 nm	≤ 0.00300 A Typically ≤ 0.00165 A	—
(2-nm Slit, 1-sec. integration time, Gain 1 NIR)		
Sample Compartment Instrument (W x D x H)	200 mm x 300 mm x 220 mm	200 mm x 300 mm x 220 mm
Purging		
Optics	YES	YES
Sample Compartment	YES	YES
Instrument Dimension (W x D x H)	1020 mm x 630 mm x 300 mm	1020 mm x 630 mm x 300 mm
Instrument Weight	~ 77 kg	~ 77 kg
Digital I/O	RS 232 C	RS 232 C
Light Beam	90 mm above the base plate 120 mm beam separation 3 mm–12 mm beam height	90 mm above the base plate 120 mm beam separation 3 mm–12 mm beam height
Instrument Requirements		
Power	90 VAC–250 VAC, 50/60 Hz; 400 VA	90 VAC–250 VAC, 50/60 Hz; 400 VA
Temperature	10°C–35°C	10°C–35°C
Recommended Humidity	10–70% relative humidity, non-condensing	10–70% relative humidity, non-condensing

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