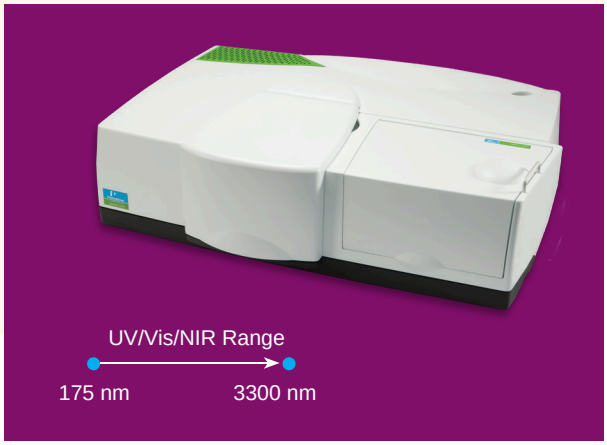
SPECIFICATIONS

Guaranteed Specifications of the High-Performance LAMBDA 1050+ UV/Vis/NIR Spectrophotometers

UV/Vis/NIR Spectroscopy



LAMBDA 1050+

Introduction

PerkinElmer® UV/Vis/NIR spectrophotometers are built to the highest ISO-9001 manufacturing standards. This document presents confirmed performance specifications based on factory tests. The instrument will meet or achieve better than the confirmed specifications, under normal conditions of use as described in the user manual.

The LAMBDA™ Series of spectrophotometer is the industry standard for high performance, flexibility and convenience. Each model includes the same range of modular components and snap-in accessories to tackle a range of tough applications. Whatever specifications are required, the LAMBDA Series provides best-in-class accuracy, precision and reproducibility.

Choose the LAMBDA 1050+ with its triple detector capability for ultra-high UV/Vis/NIR performance for wavelengths up to 3300 nm with extreme sensitivity in the NIR region (800-2500 nm) and higher energy throughput. For applications such as highly reflective and anti-reflective coatings, all types of glass from clear to highly absorbing safety glass, optical filters of all types from the deep UV through the NIR and many more applications requiring the best photo-dynamic range and the widest possible sampling capability.

Specifications	LAMBDA 1050+	
	Three Detector	Two Detector
Principle	Double beam, double monochromator, ratio recording UV/Vis/NIR spectrophotometers with microcomputer electronics. PC-controlled or compatible personal computer.	
Optical System	All reflecting optical system (SiO2, coated) with holographic grating monochromator with 1440 lines/mm UV/Vis blazed at 240 nm and 360 line/mm NIR blazed at 1100 nm, Littrow mounting, sample thickness compensated detector optics.	
Beam Splitting System	Chopper (46+ Hz, Cycle: Dark/Sample Dark/Reference, Chopper Segment Signal Correction).	
Detector	Photomultiplier R6872 for high energy in the entire UV/Vis wavelength range. Combination of high performance Peltier-cooled InGaAs detector, two options: Narrow band covering 860-1800 or wide band covering 800-2500 nm and Peltier-cooled PbS detector for 1800/2500-3300 nm in the NIR wavelength range.	Photomultiplier R6872 for high energy in the entire UV/Vis wavelength range. High performance Peltier-cooled PbS detector for the NIR wavelength range.
Source	Pre-aligned tungsten-halogen and deuterium. Utilizes a source doubling mirror for improved Vis/NIR energy.	
Wavelength Range N2 purge required below 185 nm.	175 nm – 3300 nm	
UV/Vis Resolution	≤ 0.05 nm	
NIR Resolution	≤ 0.20 nm	
Stray Light		
At 200 nm (12 g/L KCl)	>2 A	
At 220 nm (10 g/L NaI)	0.00007 %T	
At 340 nm (50 mg/L $NaNO_2$)	0.00007 %T	
At 370 nm (50 mg/L $NaNO_2$)	0.00007 %T	
At 1420 nm (H_2O 1 cm path length)	0.0004 %T	
At 2365 nm ($CHCl_3$ 1 cm path length)	0.0005 %T	
Wavelength Accuracy		
UV/Vis (656.1 nm)	± 0.080 nm	
NIR (1312.7 nm)	± 0.300 nm	
Wavelength Reproducibility		
UV/Vis (Deuterium Lamp Lines)	≤ 0.005 nm	≤ 0.020 nm
NIR (Deuterium Lamp Lines)	≤ 0.020 nm	≤ 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	≤ 0.020 nm

Specifications	LAMBDA 1050+	
	Three Detector	Two Detector
Photometric Accuracy		
Double Aperture 1 A Double Aperture 0.5 A NIST Filters 2 A NIST Filters 1 A NIST Filters 0.5 A	± 0.0003 A ± 0.0003 A ± 0.0030 A	± 0.0003 A ± 0.0003 A ± 0.0030 A
K2Cr2O7 Solution USP/DAP method 0.5 A Glass 1700 nm 1 A Glass 1700 nm	± 0.003 A ± 0.002 A ± 0.0080 A ± 0.002 A ± 0.003 A	± 0.003 A ± 0.002 A ± 0.0080 A ± 0.002 A ± 0.003 A
Photometric Linearity *Addition of filters UV/Vis at 546.1 nm, 2 nm slit, 1 second integration time*		
At 1.0 A	± 0.0006 A	± 0.0006 A
At 2.0 A	± 0.0170 A	± 0.0170 A
At 3.0 A	± 0.0200 A	± 0.0200 A
NIR At 1.0 A (1200 nm)	± 0.0005 A	
NIR At 2.0 A (1200 nm)	± 0.0010 A	
Photometric Reproducibility *Standard deviation for 10 measurements, 2 nm slit, 1 second integration time*		
1 A with NIST Filter at 546.1 nm	≤ 0.00016 A	
0.5 A with NIST Filter at 546.1 nm	≤ 0.00008 A	
0.3 A with NIST Filter at 546.1 nm	≤ 0.00008 A	
Photometric Range		
UV/Vis	8 A	8A
NIR	8A	6A
Photometric Display	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 split programming	
Photometric Stability *After warm-up at 500 nm, 0 A, 2 nm slit, 2 second integration time, peak to peak*	≤ 0.0002 A/h	
Baseline Flatness 190 – 860 nm, 2 nm slit, 2 second integration time, no smoothing applied	± 0.0008 A	

Specifications	LAMBDA 1050+	
	Three Detector	Two Detector
Photometric Noise RMS		
UV/Vis PMT		
0 A and 190 nm(1)	≤ 0.00010 A	≤ 0.00010 A
0 A and 500 nm(1)	≤ 0.00005 A	≤ 0.00005 A
2 A and 500 nm(1)	≤ 0.00020 A	≤ 0.00020 A
4 A and 500 nm(1)	≤ 0.0009 A ≤	≤ 0.0009 A ≤
6 A and 500 nm(1)	0.00500 A	0.00500 A
NIR Pbs		
0 A and 1500 nm(2)	≤ 0.00002 A	≤ 0.00002 A
2 A and 1500 nm(2)	≤ 0.00010 A	≤ 0.00010 A
3 A and 1500 nm(2)	≤ 0.00250 A	≤ 0.00250 A
NIR InGaAs		
0 A and 1500 nm(2)	≤ 0.00002 A ≤	
2 A and 1500 nm(2)	0.00010 A ≤	
3 A and 1500 nm (Wide Band)(2)	0.00010 A ≤	
3 A and 1500 nm (Narrow Band) (2)	0.000025 A	
(1)2 nm Fixed Slit		
(2)Servo Slit		
Primary Sample Compartment Dimensions (W x D x H)	200 mm x 300 mm x 220 mm	
Secondary Sample Compartment Dimensions (W x D x H)	480 mm x 300 mm x 220 mm	
Purging		
Optics	YES	
Sample Compartment	YES	
Instrument Dimensions (W x D x H)	1020 mm x 740 mm x 300 mm	
Instrument Weight	≈ 77 kg	
Digital I/O	RS-232 & USB	
Light Beam	90 mm above the base plate, 126 mm beam distance, 3 mm – 12 mm beam height	
Instrument Requirements	The LAMBDA 1050+ instrument should only be used indoors, and will meet performance specifications under the following conditions:	
Power	100 VAC – 240 VAC, 50/60 Hz, 250 VA	
Temperature	15 °C – 35 °C	
Recommended Humidity	80 % maximum, non-condensing	

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