



The Power of Precision in Wavelength Measurement

LASER WAVELENGTH METER

671 Series

Reliable accuracy gives you greater confidence in your experimental results anywhere from the visible to mid-IR.

Wavelength information is critical for applications such as high-resolution laser spectroscopy, photochemistry, cooling/trapping, and optical sensing. The best way to accurately measure laser wavelength is with the 671 Series Laser Wavelength Meter. This system uses a proven Michelson interferometer-based design to measure the wavelengths of CW lasers to an accuracy as high as ± 0.2 parts per million. Continuous calibration with a built-in wavelength standard guarantees the reliable accuracy that is required for the most meaningful experimental results.



KEY FEATURES

- Wavelength measured to an accuracy as high as ± 0.0001 nm.
- Continuous calibration with a built-in wavelength standard.
- Simultaneous measurement of total optical power to an accuracy of $\pm 15\%$.
- Operation available from 375 nm to 12 μm .
- Input power requirement as low as 10 μW .
- Measurement rate as high as 10 Hz.
- Convenient pre-aligned fiber-optic input for visible and near-IR wavelengths.
- Free-space aperture input with visible alignment aid for IR and mid-IR wavelengths.
- Straightforward operation with PC using USB or Ethernet interfaces.
- Windows-based software provided to control measurement parameters and to report wavelength data.
- Convenient tablet/smart phone application to report wavelength data anywhere in the laboratory.
- Automatic wavelength reporting using custom or LabVIEW programming eliminates the need for a dedicated PC.

It's Our Business to be Exact!

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SPECIFICATIONS

671 Series

MODEL	671A		671B	
LASER TYPE	CW and quasi-CW (repetition rate > 10 MHz)			
WAVELENGTH				
Range	VIS: 375 - 1100 nm NIR: 520 - 1700 nm IR: 1 - 5 μ m		VIS: 375 - 1100 nm NIR: 520 - 1700 nm IR: 1 - 5 μ m MIR: 1.5 - 12 μ m	
Accuracy ^{1, 2}	\pm 0.2 ppm \pm 0.0002 nm @ 1000 nm \pm 0.002 cm^{-1} @ 10,000 cm^{-1} \pm 60 MHz @ 300,000 GHz		\pm 0.75 ppm (\pm 1 ppm for MIR) \pm 0.0008 nm @ 1000 nm \pm 0.008 cm^{-1} @ 10,000 cm^{-1} \pm 225 MHz @ 300,000 GHz	
Repeatability ^{3, 4}	VIS / NIR: \pm 0.03 ppm (\pm 0.03 μ m @ 1 μ m) IR: \pm 0.06 ppm (\pm 0.2 μ m @ 3 μ m)		\pm 0.1 ppm (\pm 0.1 μ m @ 1000 nm)	
Calibration	Continuous - built-in stabilized single-frequency HeNe laser		Continuous - built-in standard HeNe laser	
Display Resolution	9 digits		8 digits	
Units ⁵	nm, μ m, cm^{-1} , GHz, THz			
POWER (VIS/NIR) ⁶				
Calibration Accuracy	\pm 15%			
Resolution	2%			
Units	mW, μ W, dBm			
OPTICAL INPUT SIGNAL				
Maximum Bandwidth ⁷	1 GHz		10 GHz	
Minimum Input ^{8, 9, 10}	VIS: 250 μ W (375 nm) NIR: 500 μ W (520 nm) IR: 550 μ W (1 μ m) MIR: 750 μ W (1.5 μ m)	30 μ W (750 nm) 25 μ W (1100 nm) 80 μ W (3 μ m) 150 μ W (7 μ m)	125 μ W (1100 nm) 50 μ W (1700 nm) 750 μ W (5 μ m) 950 μ W (12 μ m)	
MEASUREMENT RATE	4 Hz (VIS / NIR) 2.5 Hz (IR)		10 Hz (VIS / NIR) 2.5 Hz (IR / MIR)	
INPUTS/OUTPUTS				
Optical Input ¹¹	VIS / NIR: IR / MIR:	Pre-aligned FC/UPC connector (9 μ m core diameter) - optional free beam-to-fiber coupler Collimated beam, 2-3 mm diameter aperture, visible tracer beam to facilitate alignment		
Instrument Interface	USB and Ethernet with Windows-based display program Browser-based display application Library of commands (SCPI) for custom and LabVIEW programming			
COMPUTER REQUIREMENTS	PC running Windows 7, 8, or 10, 1 GB available RAM, USB 2.0 (or later) port, monitor, pointing device			
ENVIRONMENTAL ⁸				
Warm-Up Time	< 15 minutes		None	
Temperature	+15°C to +30°C (-10°C to +70°C storage)			
Pressure	500 - 900 mm Hg			
Humidity	\leq 90% R.H. at +40°C (no condensation)			
DIMENSIONS AND WEIGHT				
Dimensions (H x W x L)	VIS / NIR: 5.6" x 6.5" x 15.0" (142 mm x 165 mm x 381 mm)	IR / MIR: 7.5" x 6.5" x 15.0" (191 mm x 165 mm x 381 mm)		
Weight	14 lbs (6.3 kg)			
POWER REQUIREMENTS	90 - 264 VAC, 47 - 63 Hz, 50 VA max			

- (1) Defined as measurement uncertainty, or maximum wavelength error, using a coverage factor of 3 providing a confidence level of \geq 99.7%.
- (2) Traceable to accepted physical standards.
- (3) Standard deviation for a 5 minute measurement period after the instrument has reached thermal equilibrium.
- (4) Wavelength resolution is approximately two times repeatability.
- (5) Data in units of nm, μ m, and cm^{-1} are given as vacuum values.
- (6) The IR and MIR versions do not measure absolute power. An intensity meter displays relative power.
- (7) Bandwidth is FWHM. When bandwidth is greater, wavelength accuracy is reduced.
- (8) Characteristic performance, but non-warranted.
- (9) For 671B-VIS and 671B-NIR, required input power is about half of values given.
- (10) Sensitivity at other wavelengths can be determined from graphs that are available upon request.
- (11) IR and MIR required beam height is 5.4 \pm 0.25".
- (12) IR and MIR instrument height is adjustable (7.25 \pm 0.25") for alignment purposes.



Bristol Instruments reserves the right to change the detail specifications as may be required to permit improvements in the design of its products. Specifications are subject to change without notice.