LASER WAVELENGTH METER

621 Series

Reliable Accuracy Gives You Greater Confidence In Your Experimental Results Anywhere From The Visible To Mid-Infrared.

Wavelength information is critical for applications such as laser spectroscopy, photochemistry, cooling/trapping, and optical sensing. The best way to accurately measure laser wavelength is with the ***621 Series*** **Laser Wavelength Meter.** Continuous calibration with a built-in wavelength standard guarantees the reliable accuracy that is required for the most demanding experiments.

Highest guaranteed wavelength accuracy

The 621 Laser Wavelength Meter uses a proven Michelson interferometer-based design to measure the absolute wavelength of CW and quasi-CW lasers. Two versions are available. The model 621A is the most precise, measuring wavelength to an accuracy of ± 0.2 parts per million (± 0.0002 nm at 1000 nm). For experiments that are less exacting, the model 621B is a lower-priced alternative with an accuracy of ± 0.75 parts per million (± 0.0008 nm at 1000 nm).

Continuous calibration for reliable accuracy

To achieve the reliable accuracy that is expected from Bristol Instruments, the 621 Laser Wavelength Meter is continuously calibrated with a built-in HeNe laser. This is an ideal reference source because its wavelength is well-known and fixed by fundamental atomic structure. To achieve the highest accuracy, the 621A system uses a single-frequency HeNe laser that is stabilized using a precise balanced longitudinal mode technique. A standard HeNe laser is used as the wavelength reference in the model 621B.

Broad wavelength coverage and straightforward operation

The 621 Laser Wavelength Meter is available in four broad wavelength configurations to satisfy virtually any experimental requirement. These ranges are the VIS (375 – 1100 nm), NIR (520 – 1700 nm), IR (1 – 5 µm), and MIR (2 – 12 µm). The system operates with a PC, running under Windows, via a USB interface. Software is provided to control measurement parameters and to report data, or the system can become part of an experiment using a library of commands for custom or LabVIEW programming.

FEATURES

- Absolute wavelength measured to an accuracy as high as ± 0.0001 nm
- Continuous calibration with a built-in wavelength standard
- Operation available from 375 nm to 12 µm
- Simultaneous measurement of total optical power
- Input power requirement as low as 25 µW
- Measurement rate as high as 10 Hz
- Integrates into experiment for automatic wavelength reporting and control

Bristol Instruments

The Power of Precision

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SPECIFICATIONS

		621A		621B
LASER TYPE		CW and quasi-CW (repetition rate >10 MHz)		
WAVELENGTH				
Range		VIS: 375 - 1100 nm NIR: 520 - 1700 nm IR: 1 - 5 µm		VIS: 375 - 1100 nm NIR: 520 - 1700 nm IR: 1 – 5 µm MIR: 2 - 12 µm
Absolute Accuracy [1]		± 0.2 ppm ± 0.0002 nm @ 1000 nm ± 0.002 cm^{-1} @ 10,000 cm^{-1} ± 60 MHz @ 300,000 GHz		± 0.75 ppm (± 1 ppm for MIR) ± 0.0008 nm @ 1000 nm ± 0.008 cm^{-1} @ 10,000 cm^{-1} ± 225 MHz @ 300,000 GHz
Repeatability [2, 3]	VIS / NIR IR MIR	± 0.03 ppm (± 0.00003 nm @ 1000 nm) ± 0.06 ppm (± 0.0002 nm @ 3 µm) N/A		± 0.1 ppm (± 0.0001 nm @ 1000 nm)
Calibration		Continuous - built-in stabilized single-frequency HeNe laser		Continuous - built-in standard HeNe laser
Display Resolution		9 digits		8 digits
Units		nm or cm^{-1} (vacuum), GHz		
POWER (VIS / NIR) [4]				
Calibration Accuracy		± 15%		
Resolution		2%		
Units		mW, µW, dBm		
OPTICAL INPUT SIGNAL				
Maximum Bandwidth [5]		1 GHz		10 GHz
Minimum Input [6]	VIS NIR IR MIR	500 µW (375 nm) 500 µW (520 nm) 600 µW (1.0 µm) 800 µW (2.0 µm)	30 µW (750 nm) 25 µW (1100 nm) 80 µW (3.0 µm) 200 µW (7.0 µm)	75 µW (1100 nm) 50 µW (1700 nm) 800 µW (5.0 µm) 1 mW (12.0 µm)
MEASUREMENT RATE				
	VIS / NIR IR / MIR	4 Hz 2.5 Hz		10 Hz 2.5 Hz
INPUTS/OUTPUTS				
Optical Input	VIS / NIR IR / MIR	Pre-aligned FC/UPC connector (9/125 µm core diameter) - optional free beam-to-fiber coupler Collimated beam, 2-3 mm diameter aperture, visible tracer beam to facilitate alignment		
Instrument Interface		High-speed USB 2.0 interface with Windows-based display program Library of commands for custom and LabVIEW programming		
COMPUTER REQUIREMENTS		PC running Windows 7, 8, or XP with 1 GHz or higher microprocessor, at least 1 GB of available RAM, USB 1.1/2.0 port, monitor (resolution 1200x800 or greater), mouse or other pointing device		
ENVIRONMENTAL [7]				
Warm-Up Time		< 15 minutes		None
Temperature		+15°C to +30°C (-10°C to +70°C storage)		
Pressure		500 - 900 mm Hg		
Humidity		≤ 90% R.H. at + 40°C (no condensation)		
DIMENSIONS AND WEIGHT				
Dimensions (H x W x L)	VIS / NIR IR / MIR [8]	5.6" x 6.5" x 15.0" (142 mm x 165 mm x 381 mm) 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) Confidence level of 3σ (≥99.6%) and traceable to accepted physical standards.
(2) Standard deviation for a 5 minute measurement period after the instrument has reached thermal equilibrium.
(3) Wavelength resolution is approximately two times repeatability.
(4) The IR / MIR versions do not measure absolute power. A bar graph meter displays relative power.
(5) Bandwidth is FWHM. When bandwidth is greater, wavelength accuracy is reduced.
(6) Sensitivity at other wavelengths can be determined from a graph that is available upon request.
(7) Typical.
(8) Instrument height is adjustable (7.25 ± 0.25") for alignment purposes.

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