

## LASER WAVELENGTH METER

## 872 Series



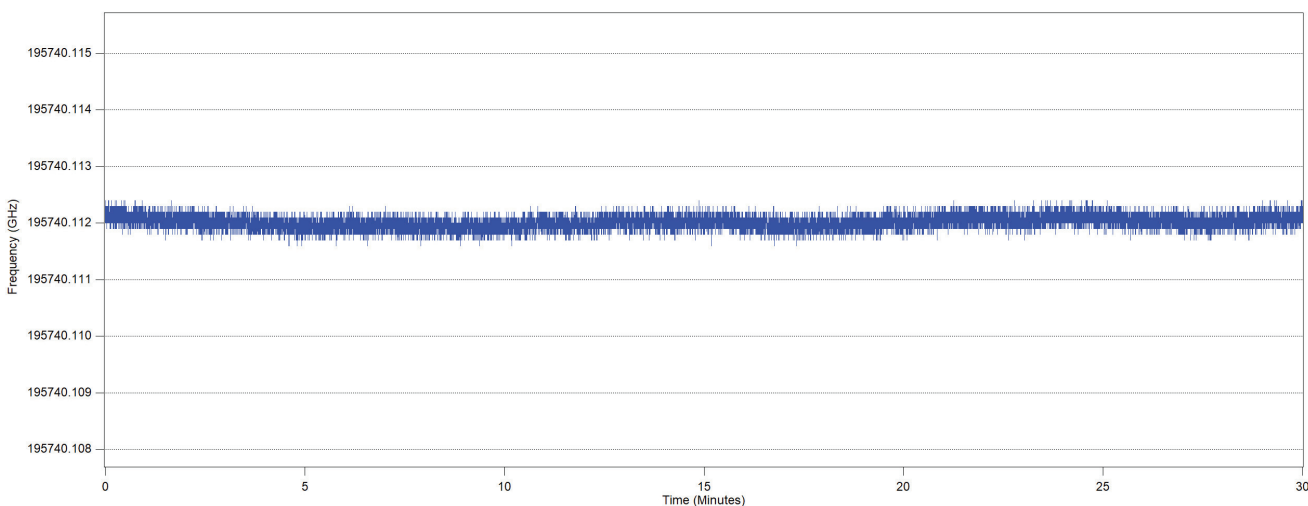
### High-Resolution Wavelength Measurement

The 872 Series Laser Wavelength Meter from Bristol Instruments builds upon our unique Fizeau etalon technology to offer very high measurement resolution. This results in exceptional sensitivity to wavelength deviations making the 872 system ideal for the frequency stabilization of lasers.

Two versions of the 872 Laser Wavelength Meter are available. The model 872A-VIS operates over the range of 375 to 1100 nm, and the model 872A-NIR works from 630 to 1700 nm. These instruments both provide wavelength accuracy of  $\pm 0.2$  parts per million ( $\pm 60$  MHz at 1000 nm) and frequency resolution of 1.0 part per billion (300 kHz at 1000 nm). Automatic calibration with a built-in wavelength standard guarantees this performance to ensure the most meaningful experimental results.

#### Key Features:

- Measurement resolution as fine as 200 kHz.
- Wavelength accuracy up to  $\pm 0.0001$  nm.
- Automatic calibration with a built-in wavelength standard.
- Operation available from 375 to 1700 nm.
- Sustained measurement rate of 1 kHz.
- Convenient pre-aligned fiber-optic input.
- Built-in PID controller for precise laser stabilization.
- Optional Fiber-Optic Switch accessory enables the characterization of up to 8 lasers with a single instrument.
- Five-year warranty covers all parts and labor.



Model 872A-NIR wavelength measurement results for a 1532 nm acetylene-locked laser over a 30-minute time period. Standard Deviation is 191 kHz.

# SPECIFICATIONS

872 Series

<b>MODEL</b>	872A
<b>LASER TYPE</b>	Pulsed and CW
<b>WAVELENGTH</b>	
Range	VIS: 375 - 1100 nm NIR: 630 - 1700 nm
Accuracy <sup>1, 2, 3</sup>	± 0.2 ppm (single-mode fiber) ± 0.0002 nm @ 1000 nm ± 60 MHz @ 300,000 GHz
Measurement Resolution <sup>3, 4</sup>	0.001 ppm (1.0 ppb) 0.001 pm @ 1000 nm 300 kHz @ 300,000 GHz
Calibration <sup>5</sup>	Automatic with built-in wavelength standard
Display Resolution	9 digits
Units <sup>6</sup>	nm, μm, cm <sup>-1</sup> , GHz, THz
<b>OPTICAL INPUT SIGNAL</b>	
Maximum Bandwidth (FWHM)	1 GHz
Minimum Input <sup>7, 8, 9, 10</sup>	VIS: 3 - 300 nJ NIR: 50 - 600 nJ
Maximum Input	CW: 10 mW Pulsed: 0.5 mJ (10 ns duration)
<b>MEASUREMENT RATE</b>	1 kHz
<b>INPUTS/OUTPUTS</b>	
Optical Input <sup>11, 12</sup>	Pre-aligned FC/PC fiber connector (optional free beam-to-fiber coupler)
Instrument Interface	USB and Ethernet interface with Windows-based display program, and browser-based display application Streaming via RS-422 (internal or external TTL trigger) Internal data storage for up to 1 million measurements Library of commands (SCPI) for custom and LabVIEW programming using any PC operating system PID controller (± 5 V output)
<b>COMPUTER REQUIREMENTS <sup>13</sup></b>	PC running Windows 10, 1 GB available RAM, USB 2.0 (or later) port, monitor, pointing device
<b>ENVIRONMENTAL<sup>7</sup></b>	
Warm-Up Time	< 15 minutes
Temperature   Pressure   Humidity	+15°C to +30°C (-10°C to +70°C storage)   500 - 900 mm Hg   ≤ 90% R.H. at + 40°C (no condensation)
<b>DIMENSIONS AND WEIGHT</b>	
Dimensions (H x W x D)	3.5" x 17.0" x 15.0" (89 mm x 432 mm x 381 mm) Includes mounting hardware for 19-inch racks
Weight	17 lbs (7.65 kg)
<b>POWER REQUIREMENTS</b>	90 - 264 VAC, 47 - 63 Hz, 50 VA max
<b>WARRANTY</b>	5 Years (parts and labor)

- (1) Defined as measurement uncertainty, or maximum wavelength error, with a confidence level of ≥ 99.7%.
- (2) Traceable to accepted physical standards.
- (3) Single-mode input fiber must have single-mode performance at the wavelength of the laser under test.
- (4) Standard deviation.
- (5) For VIS version, stabilized single-frequency HeNe laser. For NIR version, laser diode locked to acetylene absorption (NIST Special Publication 260-133).
- (6) Data in units of nm, μm, and cm<sup>-1</sup> are given as vacuum values.
- (7) Characteristic performance, but non-warranted.
- (8) Required minimum energy from a single laser pulse. Greater sensitivity is achieved by increasing the length of the measurement window to allow for the integration of a greater number of laser pulses.
- (9) Required minimum power is approximated by multiplying the required minimum energy by the selected measurement rate.
- (10) Sensitivity at specific wavelengths can be determined from graphs that are provided in the 871 Series Product Details brochure.
- (11) Visual inspection and optimization of the interference fringe pattern is not required.
- (12) An FC/PC terminated input fiber is required. System will not operate with FC/APC terminated fiber.
- (13) For use with Windows-based display program. Interfacing via SCPI can be done using any PC operating system.



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