LEOI-51
He-Ne Laser Mode Analyzer

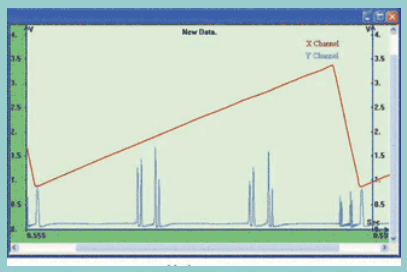
- *High Resolution*
- *Easy Operation*
- *USB Interfaced Software*
- *Observed by Oscilloscope*
- *Flexible Solutions*

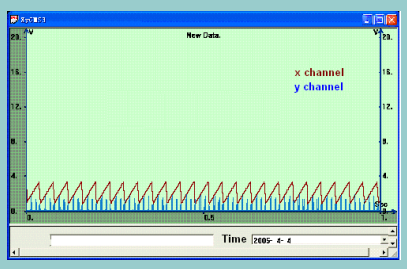
The laser is a very important optical tool that has found widespread use in science and industry. Some of the characteristics of a laser, like mode, make different lasers appropriate for different tasks.

Mode analysis is done through performing a series of experiments and obtaining various parameters from which we can determine how the laser diode is performing. It is then possible to establish whether the laser diode meets the desired specifications.

This device allows users to quantitatively assess the mode characteristics of a laser. Users may perform laser mode analysis on a computer and may also observe mode spectrum with an oscilloscope.

Theoretical and practical descriptions supplied with the device will assist you by removing time consuming, irritating preparation.



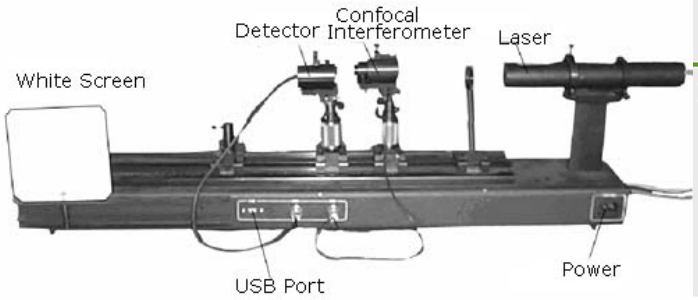


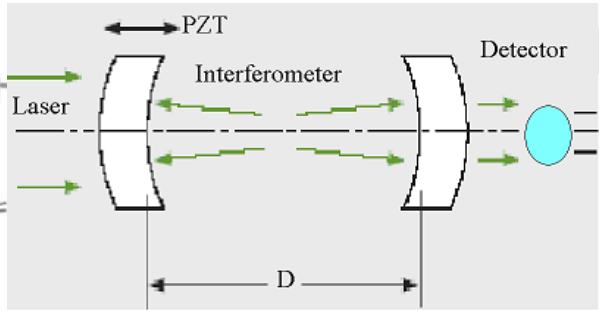
Specifications

He-Ne Laser	
Cavity Length	246 mm
Center Wavelength	632.8 nm
Scanning Confocal Interferometer	
Cavity Length	20 mm
Curvature of Concave Mirror	20 mm
Reflectivity of Concave Mirror	99%
Finesse	〉200
Free Spectral Range (FSR)	4 GHz
Mode Spacing Error	〈 20 MHz

Experimental setup

The laser modal analyzer utilizes a scanning confocal interferometer cavity with two concave mirrors. The separation distance between the mirrors is varied slightly using a piezoelectric ceramics ring driven by a ramp scanning voltage. The variation in the mirror spacing changes the cavity resonant spectral frequency. Light is then transmitted though the cavity to a detector when the resonant frequency is equal to the frequency of this laser mode.





An oscilloscope can be synchronized to the cavity scan rate to display the detected laser mode structure as a function of frequency. The concave mirrors in scanning interferometer are shown in the figure above.

The software communicates with the device through a USB cable and also offers powerful functions enabling the user to perform mode analysis, graphically display and print it.

Experimental Examples

- Familiar with principle and operation of confocal spherical scanning interferometer
- Observation of longitudinal and transverse modes distribution.
- Observation of several of modes of different lasers
- Determination of mode structure by calculating modes spacing of the laser

Parts included

Description	Qty
Optical Rail and Carriers	1
Two-axis Adjustable Holder	2
Four-axis Adjustable Holder	2
He-Ne Laser Holder	1
808nm Semiconductor Laser	1
632.8nm He-Ne Laser	1
KTP Crystal	1
Nd:YVO_4 Crystal	1
Output Mirror	1

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