VibroMet™ MB-LDV MultiBeam Laser Doppler Vibrometer

Specifications

Velocity Range[1]	5 µm/s to 500 mm/s in two ranges
Vibration Frequency Range[2]	DC to >20 kHz
Working Distance[3]	0.5 m to 1.5 m or 2 m to 6 m
Optics[4]	Fixed, interchangeable or zoom capabilities
Beam Configuration[5]	Fixed or variable beam pattern Scanning Array
Surface preparation requirements	Typically none
Signal Output	Analog Demodulated and Analog Frequency Modulated (FM)
Dimensions – Laser Head	43 x 28 x 24 cm
Dimensions – Electronics Case	90 x 56 x 64 cm
Weight – Laser Head	20 kg
Weight – Electronics	25 kg
Low Pass Filters	4, 10, 20 kHz (configurable)
Output Voltage (max)	± 5 Volts
Laser[6]	532 nm, 200 mW, Class IIIb
Power Requirement	110V at 60 Hz (220V option available)
Power Consumption	20 Amps
Temperature Range	3 – 45°C

1 Velocity Range can be customized for specific applications.
2 Vibration Frequency Range can be customized for specific applications.
3 Working Distance can be varied depending on the optics, and can be substantially extended by enhancing surface reflectivity.
4 Custom optical designs are available in each category.
5 Number of beams and their configuration can be customized for specific applications.
6 Laser output power can be changed by using different lasers.

Consult a MetroLaser Applications Engineer for details about your project.

Description

The VibroMet MB-LDV is based on an innovative electro-optical configuration developed by MetroLaser (patent allowed). The MB-LDV consists of three components:

Optical Head:

The optical head contains a solid state laser, optical components that generate the beam array or matrix and focus the beams on the target, and a scanning module that translates the entire beam array.

Electronic Controller:

The electronic controller receives the signals from the optical head, and outputs the velocity data for each beam to the computer. The velocity data for any beam is also easily accessible for viewing on an oscilloscope or spectrum analyzer.

Computer and Software:

The computer acquires the data from the electronic controller, and displays the velocity, displacement, or acceleration spectra for each beam. The computer also controls the scanning module, and displays a live image of the target during the scan. The scanned data can be viewed in 2-D or 3-D displays.

Visible Laser Radiation — Avoid Direct Exposure
Class IIIb Laser Product at 532 nm

About MetroLaser:

MetroLaser Inc. was founded in 1988 by Dr. James Trolinger and Dr. Cecil Hess to develop and commercialize new laser-based measurement and diagnostic technologies. From imaging diesel turbine combustion processes to measuring crystal growth onboard the Space Shuttle, MetroLaser's scientists deliver state-of-the-art optical diagnostic solutions to a broad range of applications and industries. MetroLaser has been awarded the National Small Business Prime Contractor of the Year award.

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VibroMet™ MB-LDV

MultiBeam Laser Doppler Vibrometer

The Only Scanning MultiBeam Laser Doppler Vibrometer

Whole Field Vibration Measurement

- **Customizable Beam Pattern**
- **Scanning Beam Array**

MetroLaser, Inc.

Non-Contact Measurement for Modal and Structural Analysis

Key Benefits

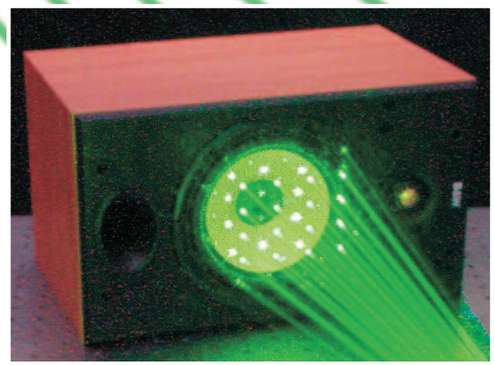
- Faster Data Acquisition
- Custom System Configurations
- Easy to Cover Large Areas

Key Features

- Simultaneous Measurements at all Points
- Customizable Beam and Optics Configuration
- High Measurement Sensitivity
- Rugged Field Tested Design
- Single Shot Phase Measurement
- Optional Linear Scanner

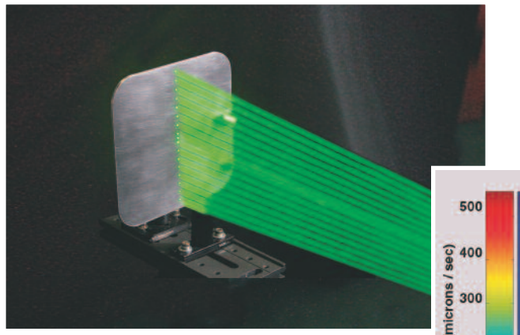
Aerospace Applications

A linear array of 16 beams measures vibration modes on a turbine blade.



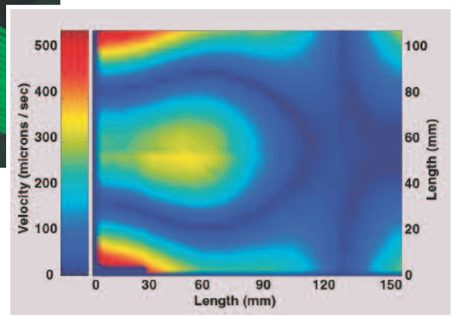
Audio applications

Multiple simultaneous beams measure vibration modes on a speaker.



Standards Testing

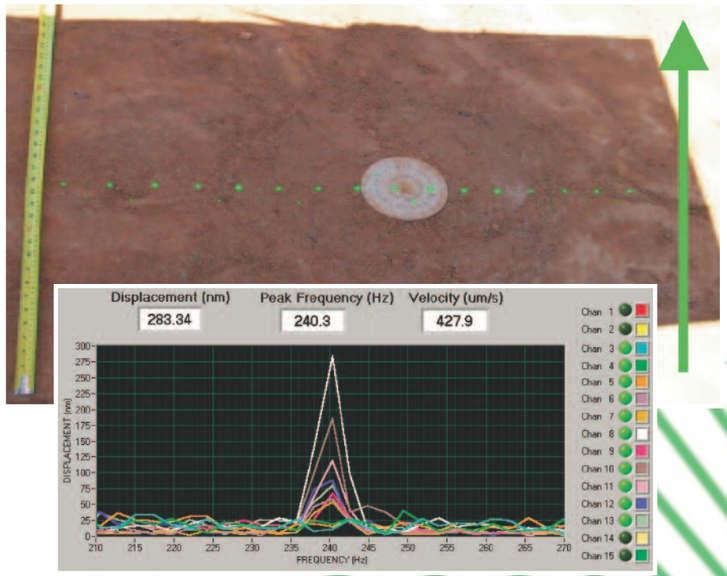
An array of 16 beams scans across an aluminum plate and measures the vibrational modes.



Versatile Configuration and Applications

The VibroMet™ MultiBeam Laser Doppler Vibrometer (MB-LDV) is an easy-to-use, non-contact instrument capable of simultaneously measuring vibrations at multiple (typically 16) locations on a target, with extremely high sensitivity.

Since all the multiple points are measured at the same time, transient events can be accurately measured. In addition, the relative phase between measurement locations can be used to generate modal vibration patterns in a single shot.



Landmine Detection

Measures the velocity profile of a surface excited either acoustically or with a shaker. The presence of buried landmines is manifested by changes in the surface velocity.

Automotive Vibrations

Characterizes automotive engines to quantify vehicle vibrations.