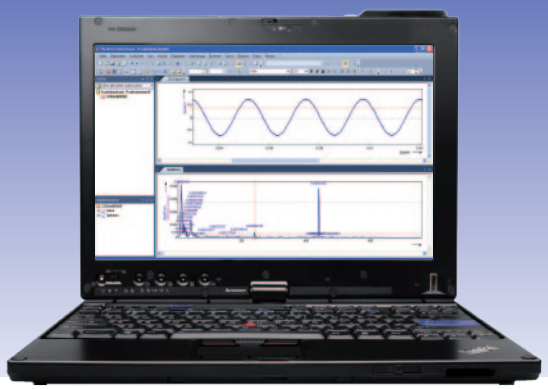
OptoMET
non-contact Optical Metrology

Vibration measurement

Laser Doppler Vibrometer

- non-contact
- fast
- digital signal processing
- accurate
- high resolution
- high sensitivity



Ultra fast digital signal processing (UltraDSP)

Bandwidth up to 10 MHz digital real-time

excellent resolution up to 2.5 nm/s and 15 pm

high optical sensitivity

Variable working distances from 45 mm to > 100 m

- resonance analysis
- modal analysis
- frequency analysis
- order analysis

non-contact Optical Metrology

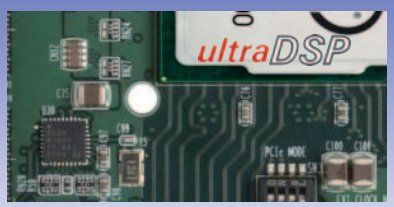
Laser Doppler Vibrometer

Compact design with:

- Laser, Interferometer
- Vibrometer controller
- up to three decoder

Digital Signal Processing:

- highest resolution
- up to 10 MHz bandwidth
- excellent linearity



Easy to use:

- color touch screen
- control knobs
- up to 3 outputs

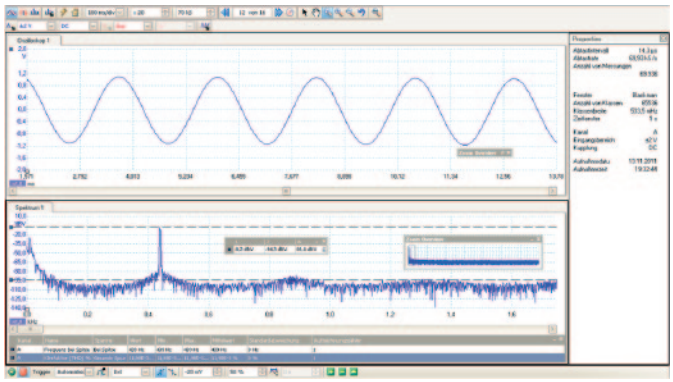
OptoMET Laser Doppler Vibrometers (LDV) are fast and easy to operate. They are used for precise, non-contact, and non-reactive measurements of mechanical and acoustic parameters such as vibration displacement amplitude, velocity, and acceleration.

With the launch of the LDV Vector-Series, OptoMET has taken the lead in digital broadband real-time laser Doppler vibrometers. OptoMET developed the ultrafast digital signal processing technology (ultraDSP) for these vibrometers in order to achieve extremely fine resolutions of up to 2.5 nm/s (velocity) and 15 pm (displacement), excellent bandwidth (up to 10 MHz) and a wide dynamic range up to ± 10 m/s and ± 32 million g.

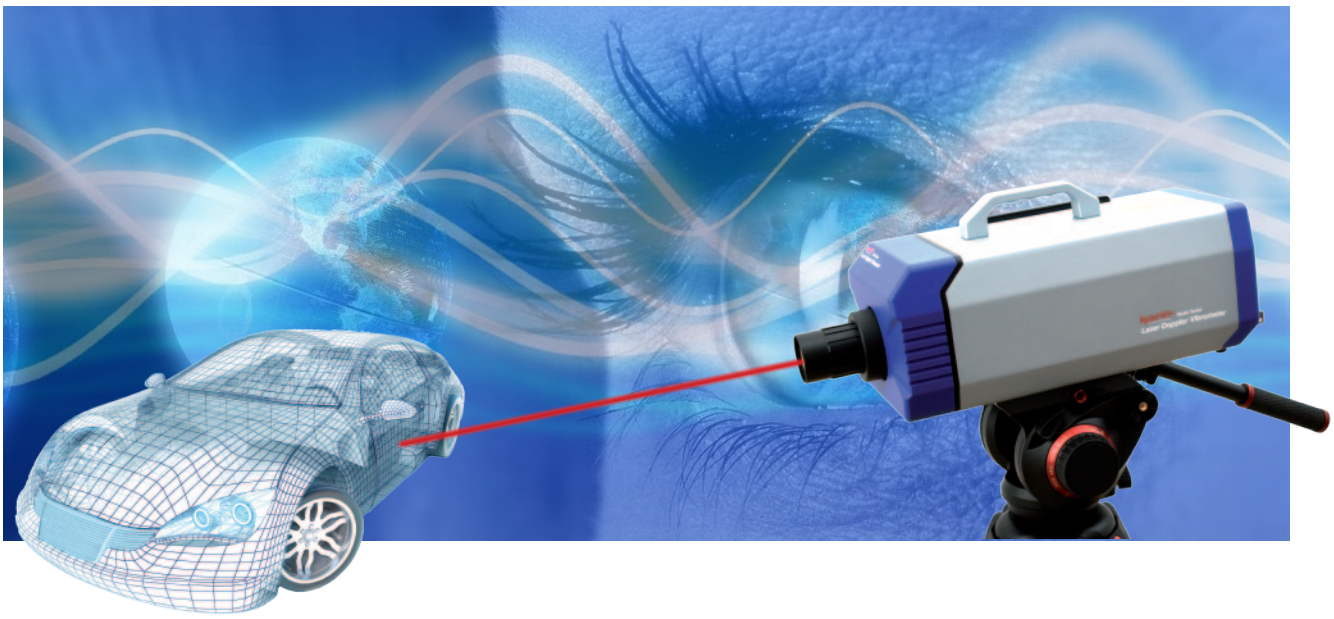
Compact yet extremely powerful

- Ultrafast digital signal processing (ultraDSP)
- Highest bandwidth up to 10 MHz for real-time digital LDV
- Excellent resolution up to 2.5 nm/s and 15 pm
- Easy and quick-change objective lenses for optimum working distance
- Compact design optics (interferometer) and electronics (decoder) in a single housing
- Variety of different decoders (displacement, velocity and acceleration)
- Excellent linearity and measuring accuracy
- High optical sensitivity
- User friendly interface with color touch screen and knobs
- Up to 3 Analog voltage outputs via standard BNC connectors

Application



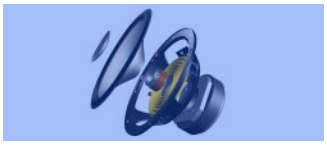
Vibration / Motion Measurement



These powerful measuring systems are suitable for challenging metrological tasks in research, development, and production. Applications include frequency/resonance analysis (e.g. machines, civil engineering structures, and automotive components), order analysis of engines, testing of materials, and quality assurance.

In addition, the instruments can be set up and made ready for operation very quickly, both in the laboratory and in the field, vibrations can be visualized in just a few minutes.

Automotive
drives, engine, brake, body parts, exhaust piezo actuators

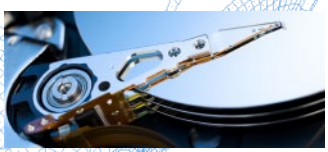


Acoustic & Ultrasonic
Noise testing of power tools, home appliances, ...
Loudspeaker Design

Aerospace industry
construction verification, materials characterization, FEM-model validation

Material Testing
crack Detection, structure test, Natural frequency-measurement

Product Development & Manufacturing
development tools, end-of-line inspection electric-motors, pumps, Fans, gear boxes



MEMS / Microstructures
optimizing the frequency response, Vibrational analysis, Dynamic characterization

Set up / Measurement / Analyze

optical signal acquisition

- non-contact
- laser-based
- Doppler effect
- Interferometer

raw signal

digital signal processing

- ultraDSP: ultra-fast "digital signal processing" technology
- displacement decoder (resolution up to 15 pm)
- velocity decoder (resolution up to 2.5 nm/s)
- acceleration decoder (up to 32000000 g)
- upper frequency limit 10 MHz

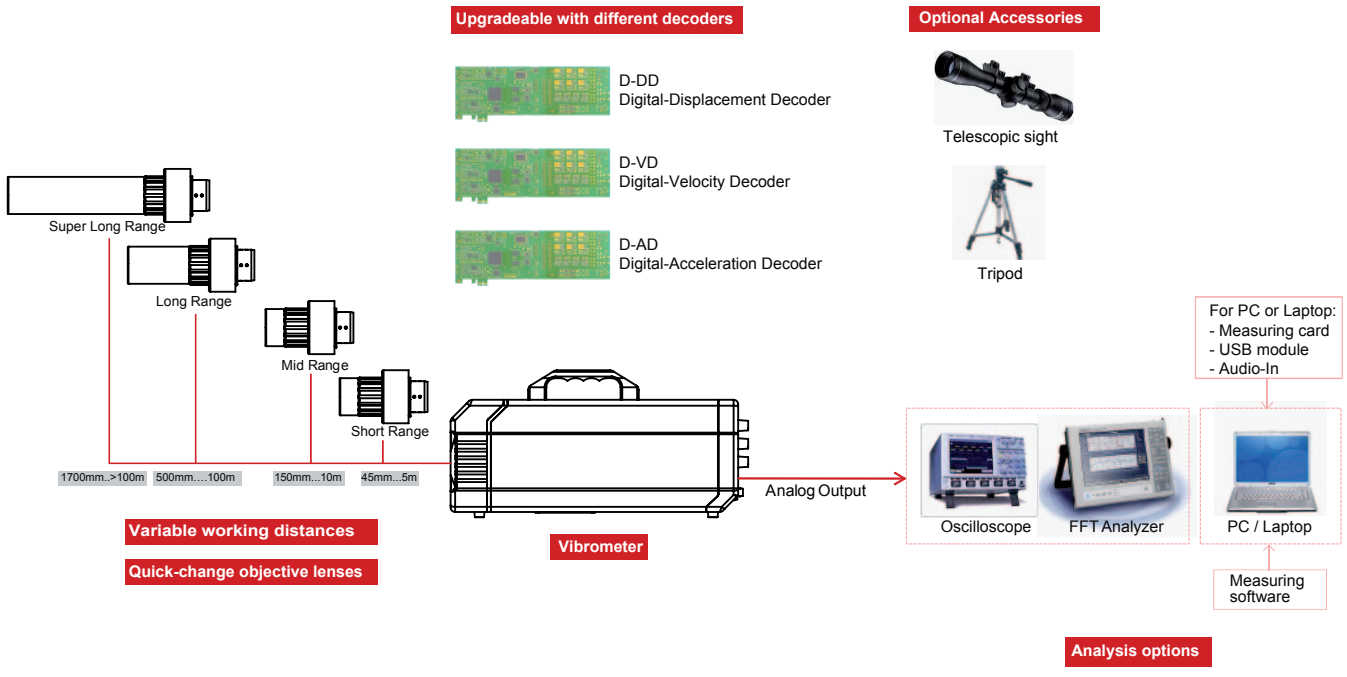
Displacement

Velocity

Acceleration

Analyze

- resonance analysis
- modal analysis
- frequency analysis
- order analysis



Technical data

General data	
measured quantity	velocity, displacement and acceleration
signal processing	digital (OptoMET UltraDSP Technology)
measuring Range vibration velocity	0 to 10 m/s
number of Ranges vibration velocity	up to 14 (0.001 / 0.002 / 0.005 / 0.01 / 0.02 / 0.05 / 0.1 / 0.2 / 0.5 / 1 / 2 / 5 / 8 / 10 m/s)
vibration velocity resolution	up to 2.5 nm/s
frequency range	DC - 10 MHz
output signal	analog, standard BNC connector
output voltage range	± 2V @ 1 MOhm / ± 1V @ 50 Ohm
source impedance	50 Ohm
working distance	Variable working distance from 45 mm to >100 m 4 exchangeable lenses
laser wavelength	633 nm, visible, red laser beam
laser safety class	Output power: 1 mW eye safe, Class II
user interface output	color screen 3.5 "+ 20 segment LED bargraph
user interface input	touch screen, knobs with push-button, key switch (power), switch (laser ON/OFF)
dimensions	length x width x height (excluding handle and lens): 370 x 120 x 100 mm
weight	11 kg
power supply	110 -240V AC (50-60Hz) or 24V DC

Vector-Series Configuration

type	Decoder	measuring ranges	Full Scale (Peak) m/s	frequency range	resolution
Vector-Basis	D-VD-1	8	2	DC - 500 kHz	10 nm/s
Vector-Sense	D-VD-2	11	2	DC - 1 MHz	2.5 nm/s
	D-DD-2	16		DC - 1 MHz	15 pm
Vector-Speed	D-VD-3	11	10	DC - 2.5 MHz	10 nm/s
	D-DD-3	16		DC - 2.5 MHz	15 pm
Vector-HF	D-VD-4	9	5	DC - 10 MHz	10 nm/s
	D-DD-4	16		DC - 10 MHz	15 pm
Vector-Master	D-VD-5	14	10	DC - 10 MHz	2.5 nm/s
	D-DD-5	16		DC - 10 MHz	15 pm
	D-AD-5	14		DC - 10 MHz	0.5 µg
Vector-Individually	Decoders options: D-VD-1 to 5, D-DD-1 to 5, D-AD-1 to 5				

The OptoMET GmbH is located in Darmstadt, a scientific City in the central of Germany. Only 30 kilometers away from Frankfurt airport.

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