

OFV-551/552 Fiber-Optic Interferometer



MODULAR VIBROMETER SYSTEM

- OFV-5000
Vibrometer Controller
– Velocity Decoder
– Displacement Decoder
- OFV-505/503
Standard Sensor Heads
- OFV-551/552
Fiber Interferometer

FLEXIBLE VIBRATION MEASUREMENT

Polytec Laser Doppler Vibrometers (LDVs) are precision tools for non-contact vibration measurement. Designed to be quick, easy to operate and free from cross-talk or feedback problems, these instruments determine vibrational velocity and displacement from the Doppler shift of back-scattered laser light. Fiber-optic LDV systems simplify the placement of single-point and differential laser probes by delivering the laser light through flexible fiber-optic cables terminated by mini-lenses.

Designed for Sophisticated Measurements

The flexibility and small size of fiber delivery enables vibration measurement where physical access is difficult, close stand-off-distances are required, and when relative motions between two points must be measured directly. Fiber-optic vibrometers are composed of the controller and an OFV-551 or OFV-552 Fiber Interferometer. The OFV-551 sensor head utilizes flexible fiber-optics terminated with a focusing lens to deliver the laser probe to the measurement point and to collect the reflected light as an input to the interferometer. The specially designed, dual-fiber OFV-552 sensor head permits the direct measurement of differential movements between two monitored points.

Polytec's fiber-optic vibrometers are widely used in the electronics industry for measurements on circuit boards, fine bonding wires, mobile phones and hard disc drive components. Other applications are found in micro structures, medicine, zoology, and automotive manufacturing.

Key Features and Benefits

- Single-point (OFV-551) or differential (OFV-552) sensor head designs
- High efficiency delivery and collection optics produce usable signals from poorly reflecting surfaces up to 1 m away
- High spatial resolution
- Typical spot size only 16 μm with standard lens, 3 μm with optional micro-spot sensor head and down to 1 μm through microscopes
- Rugged optical design prevents internal misalignment
- Integrated power dimmer adjusts output intensity (optional)
- Compact and robust housing
- Compatible with entire family of Polytec vibrometer controllers and microscope based systems

OFV-551/552 Technical Data

Optics Specifications				
Laser wavelength	633 nm He-Ne laser, visible red laser beam			
Laser protection class	Class II, < 1 mW, eye-safe			
Available fiber lengths	1000 mm (only OFV-551); 2000 mm; 3000 mm (only OFV-552)			
Characteristics				
Sensor head	Mini sensor ¹⁾	OFV-102 ²⁾	OFV-130-3 ²⁾	OFV-130-5 ²⁾
Focal length, mm	16	20	60	80
Min. stand-off distance, mm	60	80	55 ± 2	76 ± 2
Aperture diameter 1/e ² , mm	3.2	4	16	16
Typical Spot Size, μm				
@ 55 mm	–	–	3	–
@ 76 mm	16	–	–	4
@ 100 mm	20	21	–	–
@ 300 mm	66	51	–	–
@ 1000 mm	223	180	–	–
@ each additional meter plus	211	180	–	–
Coherence Properties				
Sensor head	Maxima of visibility			
OFV-551	135 mm ³⁾ + n · 204 mm; n = 0; 1; 2; ...			
OFV-552 (differential measurement)	0 mm + n · 204 mm			
OFV-552 (single point measurement) ⁴⁾	63 mm + n · 204 mm			

¹⁾included as standard ²⁾optional ³⁾also 33 mm for microscope systems ⁴⁾with reference head

General Specifications	
Ambient temperature	0 °C ... 40 °C (32 °F...104 °F)
Storage temperature	–15 °C ... 65 °C (5 °F...149 °F)
Relative humidity	20 % ... 80 %, non-condensing
Housing protection	IP 40 standard (NEMA 1)
Dimensions	235 mm x 355 mm x 140 mm (92.5 in x 14 in x 5.5 in)
Weight	8 kg
Power	max. 15 W

Accessories	
OFV-102 Sensor Head	High precision, compact sensor head, 23 mm outside diameter, f = 20 mm front lens, centering to 0.5 mrad
OFV-130-5 Micro-Spot Sensor Head	for model OFV-552 ¹⁾ . 25 mm outside diameter, 130 mm length, stand-off distance 76 mm ± 2 mm, spot diameter 4 μm
OFV-130-3 Micro-Spot Sensor Head	25 mm outside diameter, 135 mm length, stand-off distance 56 mm ± 2 mm, spot diameter 3 μm ¹⁾
OFV-153 Adjustable Reference Head	for optimizing the coherence position when using the OFV-552 in single beam mode. Model OFV-153 requires OFV-102 compact sensor head

¹⁾ Optimum performance is obtained when used with model OFV-552 fiber interferometer and model OFV-153 adjustable reference head.

For more information visit our website www.polytec.com or contact your local Polytec sales/application engineer.



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