OFV-551/552 *Fiber-Optic Interferometer*

MODULAR VIBROMETER SYSTEM

- OFV-5000
  Vibrometer Controller
  – Velocity Decoders
  – Displacement Decoders
- OFV-505/503
  Standard Sensor Heads
- **OFV-551/552**
  Fiber Interferometers

FLEXIBLE VIBRATION MEASUREMENT

Polytec Laser Doppler Vibrometers (LDVs) are precision tools for easy, non-contact vibration measurement. They 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.

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 OFV-5000 Vibrometer 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 auto-motive 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 2, < 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.

Polytec GmbH
Polytec-Platz 1-7
76337 Waldbronn
Germany
Tel. + 49 (0) 7243 604-0
Fax + 49 (0) 7243 69944
info@polytec.de

Polytec-PI, S.A. (France)
32 rue Délizy
93694 Pantin
Tel. + 33 (0) 1 48 10 39 34
Fax + 33 (0) 1 48 10 09 66
info@polytec-pi.fr

Lambda Photometrics Ltd. (Great Britain)
Lambda House, Batford Mill
Harpenden, Herts AL5 5BZ
Tel. + 44 (0) 1582 764334
Fax + 44 (0) 1582 712084
info@lambdaphoto.co.uk

Polytec KK (Japan)
Hakusan High Tech Park
1-18-2 Hakusan, Midori-ku
Yokohama-shi, 226-0006
Kanagawa-ken
Tel. +81 (0) 45 938-4960
Fax +81 (0) 45 938-4961
info@polytec.co.jp

Polytec, Inc. (USA)
North American Headquarters
1342 Bell Avenue, Suite 3-A
Tustin, CA 92780
Tel. +1 714 850 1835
Fax +1 714 850 1831
info@polytec.com

Midwest Office
3915 Research Park Dr., #A12
Ann Arbor, MI 48108
Tel. +1 734 662 4900
Fax +1 734 662 4451

East Coast Office
16 Albert Street
Auburn, MA 01501
Tel. +1 508 832 0501
Fax +1 508 832 4667