Polytec

OFV-2570 HF Vibrometer Controller

Special Purpose Vibrometers

- Differential Vibrometers
- Rotational Vibrometers
- In-Plane Vibrometers
- Tri-Axial Vibrometers
- High Speed Vibrometers
- **High Frequency Vibrometers**

Measurement of Ultrasonic Vibrations up to 24 MHz

The OFV-2570 HF Vibrometer Controller is a compact and non-contact sensor for high-frequency vibration measurements in ultrasonic transducer development, ultrasonic non-destructive testing (NDT), measurement of high frequency dynamics of MEMS and wave propagation research. It demodulates velocities and displacements in the nanometer range and can be used with either standard or fiber-optic sensor heads as well as the OFV-534 Compact Sensor Head with optional integrated color video camera and microscope lens.

Designed for HF Vibration Measurement

The OFV-2570 High-Frequency Vibrometer Controller incorporates a 2-range velocity decoder with up to 10 MHz bandwidth and a single range displacement decoder with up to 24 MHz bandwidth. Both decoders can be operated simultaneously with separate outputs and enable measurement of vibration velocities up to 3 m/s (peak) and displacements up to ±75 nm. The instrument includes an LED display for control settings, signal level display and RS-232 interface for external communication and programming user-defined settings. Robust enough for an industrial environment and precise enough for a measurement lab, it satisfies applications where accurate measurements of high frequency vibration response, phase, linearity and amplitude are needed:

- High frequency transducer development and quality control (e.g. medical ultrasonic devices, wirebonders)
- Non-contact receiver for ultrasonic waves (e.g. for non-destructive laser ultrasonic thickness measurement, scanning laser ultrasonic microscopy)
- Measurement of transient and steady-state dynamics on MEMS devices

Key Benefits

- Simple, affordable measurement solution for ultrasonic vibration measurements
- Effortless operation through user-friendly front panel display or via remote control interfaces
- Non-contact, non-loading measurement on any type of surface
- Small measurement spot size (down to 1.5 microns)
- Insensitive to ambient vibration in displacement mode through automatic suppression of low-frequency background bandwidth vibrations
- Measures transients (shocks, pulses, steps) as well as steady-state vibrations

Compatible Sensor Heads

The controller is designed to connect to Polytec's full-line of single-point laser-Doppler vibrometer heads, including the OFV-50x, OFV-55x and OFV-534 Sensor Heads (see separate data sheets or visit www.polytec.com/usa/vibrometers). For single-point characterization of microstructures, the OFV-2570 controller can be combined with the OFV-534 Sensor Head equipped with a microscope objective to deliver a 1.5 micron measurement spot.

Modular and Scanning HF Vibrometers

If more flexibility is needed, the modular, high-end OFV-5000 Vibrometer Controller can be equipped with a 24 MHz DD-300 displacement decoder, or a 10 MHz velocity decoder. For more information, see the OFV-5000 data sheet and decoder guidelines or visit www.polytec.com/vibrometers. For full-field and 3-D vibration measurements of up to 24 MHz, Polytec provides the PSV-400-M2-20 and PSV-400-3D-M Scanning Vibrometers (www.polytec.com/psv400) and the MSA-500 for microstructures (www.polytec.com/microsystems).

OFV-2570 Technical Data

General Specifications	
Dimensions (L x W x H)	235 mm x 320 mm x 150 mm ($^1/_2$ 19"-rack, 42 HP/3 U)
Weight	6 kg (13.2 lbs)
Power	100 VAC ... 240 VAC ±10 %, 50/60 Hz, max. 75 W
Ambient temperature	+5 °C ... +40 °C (41 °F ... 104 °F)
Storage temperature	–10 °C ... +65 °C (14 °F ... 149 °F)
Relative humidity	max. 80 %, non-condensing
Compatibility	OFV-505/503, OFV-551/552, OFV-534 Sensor Heads
Analog signal outputs	Velocity, Displacement, Signal Strength
Digital interface	RS-232

Performance Specifications		
Velocity Decoder		
Measurement range	100 mm s^{-1}/V	500 mm s^{-1}/V
Full scale (peak)	0.6 m/s	3 m/s
Signal frequency range	0.5 Hz ... 10 MHz	0.5 Hz ... 10 MHz
Typical resolution[1)]	3 µm $s^{-1}/\sqrt{Hz}$	3 µm $s^{-1}/\sqrt{Hz}$
Max. acceleration	3.2 x 10^6 g	16.0 x 10^6 g
Linearity error	2 %	2 %
Displacement Decoder		
Measurement range	50 nm/V	
Full scale	±75 nm	
Frequency range	30 kHz ... 24 MHz (–3 dB)	
Resolution	< 0.02 pm/$\sqrt{Hz}$ with 100 % reflectivity < 0.05 pm/$\sqrt{Hz}$ when measuring on reflective film	
Linearity error	< 2 % (up to 60 nm peak)	

1) The noise-limited resolution is defined as the signal amplitude (rms) at which the signal-to-noise ratio is 0 dB with 1 Hz spectral resolution, measured on 3M Scotchlite Tape® (reflective film). The attainable resolution is frequency-dependent.

Compliance with Standards	
Laser safety	IEC/EN 60825-1 (CFR 1040.10, CFR 1040.11)
Electrical safety	IEC/EN 61010
EMC	IEC/EN 61326

For more technical information and applications of Polytec High Frequency Vibrometers, please contact your local Polytec sales engineer or visit our website at **www.polytec.com/vibrometers.**

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

Polytec France S.A.S.
Bâtiment Orion – 1er étage
39, rue Louveau
92320 Châtillon
Tel. +33 1 496569-00
Fax +33 1 57214068
info@polytec.fr

Polytec Ltd.
(Great Britain)
Lambda House, Batford Mill
Harpenden, Herts AL5 5BZ
Tel. +44 1582 711670
Fax +44 1582 712084
info@polytec-ltd.co.uk

Polytec Japan
Arena Tower, 13th floor
3-1-9, Shinyokohama,
Kohoku-ku, Yokohama-shi,
Kanagawa, 222-0033
Tel. +81 45 478-6980
Fax +81 45 478-6981
info@polytec.co.jp

Polytec, Inc. (USA)
North American Headquarters
16400 Bake Parkway
Suites 150 & 200
Irvine, CA 92618
Tel. +1 949 943-3033
Fax +1 949 679-0463
info@polytec.com

Central Office
1046 Baker Road
Dexter, MI 48130
Tel. +1 734 253-9428
Fax +1 734 424-9304

East Coast Office
25 South Street, Suite A
Hopkinton, MA 01748
Tel. +1 508 417-1040
Fax +1 508 544-1225

www.polytec.com