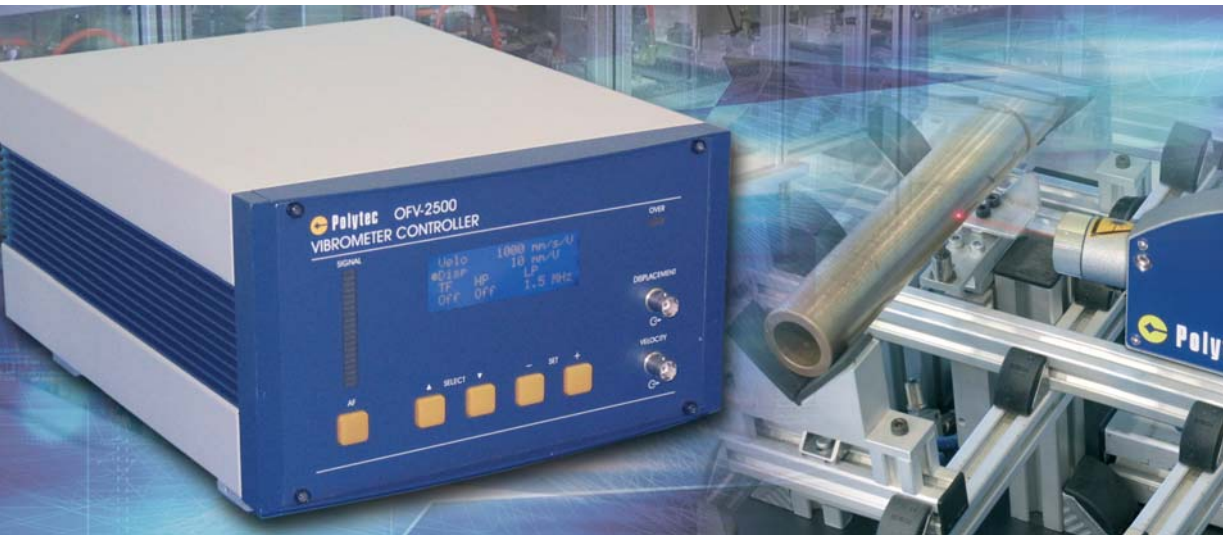


# OFV-2500 *Vibrometer Controller*



## POLYTEC INDUSTRIAL VIBROMETERS

- OFV-2500 Series Vibrometer Controllers
- OFV-534 Compact Sensor Head
- IVS-200 Industrial Vibration Sensor
- IVS-300 Digital Industrial Vibration Sensor
- VIB-A-100 Beam Deflector

## DESIGNED FOR COMMERCIAL VIBRATION MEASUREMENTS

*The OFV-2500 Vibrometer Controllers are compact and flexible solutions for challenging vibration measurements in production environments, in component testing and in tasks that require a very high frequency bandwidth. They can be used with either single point 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 Challenging Vibration Measurement Tasks

Polytec Laser Doppler Vibrometers are used to precisely measure mechanical vibrations, quickly, easily and free from mass-loading or feedback problems. They operate on the Doppler principle, measuring the frequency shift of back-scattered laser light from a vibrating structure to determine its instantaneous velocity and displacement.

Polytec is offering a selection of specialized vibrometer controllers that complement the versatile, high-end OFV-5000 Vibrometer Controller. The OFV-2500 Series Controllers are each specially designed for challenging vibration measurements in production environments, in component testing and in tasks that require a very high frequency bandwidth.

The basic model is the OFV-2500-1 Vibrometer Controller offering an affordable alternative to the flagship OFV-5000 Controller. It features velocity demodulation up to 10 m/s in a frequency range

up to 1.5 MHz, while the OFV-2510 Displacement Controller features displacement demodulation up to 250 kHz.

For two measurement points, Polytec provides an OFV-2502 dual-head controller; and, for ultrasonic frequencies, the OFV-2570 Controller is available (see separate data sheet).

### Key Features and Benefits

- Simple, affordable, task specific measurement solution
- Effortless operation through user friendly front panel display or remote control interfaces
- Many velocity and displacement configurations are available
- Can make single-point or differential measurements
- Single or dual channel controller configurations

## The OFV-2500 Vibrometer Controller Series

### OFV-2500-1 Vibrometer Controller

Basic model featuring vibration velocity demodulation up to 10 m/s in a frequency range up to 1.5 MHz. Using an optional analog integrator module, a displacement signal up to 250 kHz can be computed from the velocity signal.

### OFV-2510 Vibrometer Controller

Displacement version featuring displacement demodulation based on fringe counting, for industrial test and inspection setups that require measurement of displacement or vibration amplitudes in a frequency range up to 250 kHz.

### OFV-2502 Vibrometer Controller

Special version with velocity demodulation to connect and simultaneously operate 2 sensor heads, frequency range up to 1.5 MHz.



## Industrial and Laboratory Applications



### Increasing Challenges

Today's products are smaller and more complicated than before. Structures are continuously decreasing in size, and incorporate more sub-systems. Inspection of these small structures is a big challenge to test engineers managing the quality and process control.

### Polytec's Solutions for Vibration Measurement

The OFV-2500 Vibrometer Controllers, together with one of Polytec's compact and rugged interferometric sensors, can cope with the special conditions of an industrial environment. Easy integration with the process controller, non-contact measurement, flexible stand-off distance and static fixturing are features that suggest low maintenance requirements, as no wear and tear on mechanical components is expected.

### Automotive, Data Storage and other Industries

Polytec Vibrometers are widely used by NVH engineers for vibration measurements on automotive parts, and by major manufacturers of electrical parts and components for non-contact, on-line production testing enabling 100% quality control. In the data storage industry, Polytec Vibrometers are used for critical resonance testing on data storage components such as disk drive suspensions and bearings.

## Compatible Sensor Heads

The new controllers can be used with these sensor heads (see separate data sheets):

- OFV-534 Compact Sensor Head with optional integrated color video camera and microscope lenses. Excellent for measurement positions which are difficult to access, production applications and small objects
- OFV-503 and OFV-505 Single-point Sensor Heads, particularly suitable for large measurement distances
- OFV-551 and OFV-552 Fiber-Optic Interferometers, preferential for short measurement distances, small objects and microscope integration



## Technical Data Series OFV-2500 Vibrometer Controllers

OFV-2500-1 Performance Specifications			
<b>Velocity Decoder</b>			
Measurement range	10 mm s <sup>-1</sup> /V	100 mm s <sup>-1</sup> /V	1000 mm s <sup>-1</sup> /V
Full scale (peak)	0.1 m/s	1 m/s	10 m/s
Signal frequency range	0.5 Hz ... 250 kHz	0.5 Hz ... 1.5 MHz	0.5 Hz ... 1.5 MHz
Resolution <sup>1)</sup>	0.2 μm s <sup>-1</sup> /√Hz	0.5 μm s <sup>-1</sup> /√Hz	2.5 μm s <sup>-1</sup> /√Hz
Max. acceleration	16,000 g	960,000 g	9,600,000 g
Linearity error	1 %	1 %	1 %
<b>Displacement Decoder (Integrator Option)</b>			
Displacement ranges (±10 V max)	0.01 μm/V	0.1 μm/V	1 μm/V
	0.1 μm/V	1 μm/V	10 μm/V
	1 μm/V	10 μm/V	100 μm/V
	10 μm/V	100 μm/V	1,000 μm/V
	100 μm/V	1,000 μm/V	10,000 μm/V
Frequency range	10 Hz ... 250 kHz (velocity and displacement range dependent)		

OFV-2502 Performance Specifications			
Measurement range	5 mm s <sup>-1</sup> /V	25 mm s <sup>-1</sup> /V	125 mm s <sup>-1</sup> /V
Full scale (peak)	0.05 m/s	0.25 m/s	1.25 m/s
Signal frequency range	0.5 Hz ... 250 kHz	0.5 Hz ... 1.5 MHz	0.5 Hz ... 1.5 MHz
Resolution <sup>1)</sup>	0.1 μm s <sup>-1</sup> /√Hz	0.3 μm s <sup>-1</sup> /√Hz	0.4 μm s <sup>-1</sup> /√Hz
Max. acceleration	8,000 g	240,000 g	1,200,000 g
Linearity error	1 %	1.5 %	1 %

<sup>1)</sup> The noise-limited resolution is defined as the signal amplitude (rms) at which the signal-to-noise ratio is 0dB with 1 Hz spectral resolution, measured on 3M Scotchlite Tape® (reflective film). The typical value refers to the center of the operating frequency range.

### OFV-2510 Performance Specifications

Frequency range	0 ... 250 kHz (for amplitudes < 1 µm)							
Meas. range µm/V	80	160	320	640	1,280	2,560	5,120	
Full scale (p-p) <sup>1)</sup> µm	1,280	2,560	5,120	10,240	20,480	40,960	81,920	
Resolution <sup>2)</sup> µm/count	0.08	0.16	0.32	0.64	1.28	2.56	5.12	
Lower amplitude limit (p-p) µm	0.4	0.8	1.5	3	6	12	25	
Max. frequency <sup>3)</sup> Hz	800	400	200	100	50	25	12	
Max. velocity	1.7 m/s							
Max. acceleration	14,500 g							

- 1) Full scale values correspond to ±8 V maximum output voltage.  
 2) The resolution is defined as 1 increment of the fringe counter output, which corresponds to an output voltage step of 1 mV.  
 3) Maximum frequency at 50% of full scale amplitude. The decoder frequency limit which is valid for vibration amplitudes up to 1 µm is 250 kHz.

### General Specifications

Controller type	OFV-2500-1	OFV-2510	OFV-2502
Dimensions (L x W x H)	235 mm x 320 mm x 150 mm ( ½ 19", 42 HP/3 U)	235 mm x 320 mm x 150 mm ( ½ 19", 42 HP/3 U)	450 mm x 360 mm x 150 mm (19", 84 HP/3 U)
Analog signal outputs	<ul style="list-style-type: none"> <li>■ Velocity</li> <li>■ Displacement (integrator option)</li> <li>■ Signal strength (0 ... +5 V)</li> </ul>	<ul style="list-style-type: none"> <li>■ Displacement</li> <li>■ Signal strength (0 ... +5 V)</li> </ul>	<ul style="list-style-type: none"> <li>■ Velocity channel A/ channel B</li> <li>■ Signal strength A/B (0 ... +5 V)</li> </ul>
Digital interfaces	<ul style="list-style-type: none"> <li>■ RS-232</li> </ul>	<ul style="list-style-type: none"> <li>■ RS-232</li> <li>■ TTL interface to external fringe counter</li> <li>■ TTL trigger input</li> </ul>	<ul style="list-style-type: none"> <li>■ USB 1.1 interface to control the vibrometer</li> </ul>
Weight	5.6 kg (12.3 lbs)	5.5 kg (12.1 lbs)	9 kg (19.8 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 <sup>1)</sup> Sensor Heads		

- 1) When operating the OFV-534 Sensor Head with the OFV-2510 and OFV-2502 Controllers, the signal level display on the sensor is not available.

### Compliance with Standards

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

For more information, please visit our website [www.polytec.com/usa/vibrometers](http://www.polytec.com/usa/vibrometers) or contact your local Polytec sales/application engineer.

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