

OFV-5000 Vibrometer Controller

The OFV-5000 Controller is the core of Polytec's latest state-of-the-art laser vibrometer systems. Its modular design allows the frequency, velocity and displacement capabilities to be tailored to your applications.

Both analogue and digital decoders are available, giving a frequency range from near DC to 24 MHz, with velocities to ± 10 m/s and displacements from the picometer to meter range.

In combination with an interferometric sensor head of the OFV series, this is an ultra-precise workhorse for non-contact vibration measurement.



Benefits:

- Measure displacement and velocity in real-time
- High resolution and bandwidth
- Flexible and future-proof
- Simple and comfortable operation thanks to touchscreen and remote control

OFV-5000 Vibrometer Controller

Non-contact Vibration Measurement

Datasheet



Technical Data



Controller Specifications

Analog signal outputs	BNC, $\pm 10\text{ V}$ ¹ : Velocity signal Displacement signal AUX output ² DSP output (velocity with DSP filter) ¹
Digital signal output	S/P-DIF optical and electrical (optional for VD-06)
Frequency range ³	DC to 24 MHz
Max. velocity ³	$\pm 10\text{ m/s}$
Filters	High pass filter: 100 Hz, off Low pass filter: 5 kHz, 20 kHz, 100 kHz, off
Trackingfilter	3 settings: slow, fast, off (depends on decoder configuration)
Adaptive filter module LF-02	DSP based: suppresses static noise, analog and digital signal output, frequency range 0...20 kHz (optional for decoder VD-06)
Signal level	Bargraph on touchscreen Output as DC voltage signal (BNC, 0 ... 5 V)
PC-Interface	RS-232, Remote control of the instrument settings

¹ Depends on decoder configuration.

² Velocity or displacement signal, depends on decoder configuration.

³ Notice: frequency range, max. velocity and measurement range depend on decoder configuration.

Sensor Head Compatibility

Single point sensor heads	OFV-505, OFV-503
Compact sensor head	OFV-534
Fiber optic sensor heads	OFV-551, OFV-552

General Specifications

Interface/Display	7" color touchscreen with interactive menu guidance
Dimensions	19" rack mounting, W x H x L: 450 mm x 360 mm x 150 mm (19", 84 TE/3 HE) without angle brackets
Weight	10 kg
Protection class	IP20
Operating 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
Power supply	100...240 VAC $\pm 10\%$, 50/60 Hz
Power consumption	max. 100 VA



Laser Radiation
Do not stare into beam
Class 2 Laser Product
According to IEC/EN 60825-1 (2008)
Complies with 21 CFR 1040.10 and 1040.11
except for deviations pursuant to
Laser Notice no. 50, dated 24 June 2007
 $P \leq 1\text{ mW/cm}^2$, $\lambda = 633\text{ nm}$

System configuration

Your Polytec sales engineer is glad to help you finding the components that suit your application best: sensor head, decoder, data acquisition and VibSoft software.

Signal decoders for Displacement and Velocity

Different analog and digital decoders ensure that the OFV-5000 Vibrometer Controller fits perfectly to your application. Up to 4 decoders are possible what makes the system very flexible. This flexibility guarantees that your OFV-5000 is not only fit for challenges of today but also for the future.

Velocity decoders					
Decoder	Description	No. of ranges	Best resolution ⁴	Max. velocity	Frequency bandwidth
VD-02	Analog, broadband universal decoder	4	0.15 $\mu\text{m/s}$	10 m/s	0.5 Hz - 1.5 MHz
VD-04	Analog decoder required for DD-400	3	0.20 $\mu\text{m/s}$	10 m/s	0.5 Hz - 250 kHz
VD-05	Analog decoder for ultrasonic applications	2	<3 $\mu\text{m/s}$	2.5 m/s	0.5 Hz - 10 MHz
VD-06	Digital high-precision velocity decoder	4	0.01 $\mu\text{m/s}$	0.5 m/s	0 Hz - 350 kHz
VD-08 ⁵	Digital high-precision velocity decoder	8	0.005 $\mu\text{m/s}$	0.5 m/s	0 Hz - 25 kHz
VD-09	Digital velocity decoder	14	0.02 $\mu\text{m/s}$	10 m/s	0 Hz - 2.5 MHz

⁴ Noise-limited resolution in the smallest measurement range. 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).

⁵ In combination with DD-500 only specific measurement ranges of the VD-08 can be used.

Displacement decoders					
Decoder	Description	No. of ranges	Best resolution ⁴	Max. displacement	Frequency bandwidth
DD-300	Analog displacement decoder for ultrasonic applications	1	0.1 pm	± 75 nm	30 kHz - 24 MHz
DD-400	Integrating displacement decoder (requires VD-04)	3	-	± 1 nm	10 Hz - 250 kHz
DD-500	Digital high-end displacement decoder 16-Bit-DSP (requires VD-06)	16	15 pm	± 50 mm	0 Hz - 250 kHz
DD-600	I&Q converter for data processing with VibSoft VDD	-	2 pm	-	0 - 2 MHz
DD-900	Broadband digital displacement decoder (requires VD-09)	16	15 pm	± 50 mm	0 Hz - 2.5 MHz

Decoder selection

Depending on the measurement range, the OFV-5000 Vibrometer Controller combines up to four different signal decoders. Therefore the OFV-5000 contains four slots: two for velocity decoders, one for the displacement decoder und one additional auxiliary slot for a velocity or a displacement decoder.

Possible configuration ⁶ of the slots		
Slot	Measurand	Possible decoders
Slot 1	Velocity	VD-02, VD-04, VD-09
Slot 2	Velocity	VD-06, VD-08
Slot 3	Displacement	DD-500, DD-600, DD-900
Slot 4	Velocity or displacement	VD-05, DD-300, DD-400

⁶ Every slot contains one decoder. Not all combinations are possible. Ask your Polytec sales engineer.

Applied standards	
Laser safety	IEC/EN 60825-1:2008-05 (Safety of Laser Products, complies to US 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice no. 50, dated 24 June 2007)
Electrical safety	IEC/EN 61010-1:2011-07 (Safety requirements for electrical equipment for measurement, control, and laboratory use)
EMC	IEC/EN 61326-1:2006-10 (EMC requirements on Emission and Immunity - Electrical equipment for measurement, control, and laboratory use) Emission: Limit Class B IEC/EN 61000-3-2 and 61000-3-3 Immunity: IEC/EN 61000-4-2 to 61000-4-6 and IEC/EN 61000-4-11

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

Polytec GmbH (Germany)
Vertriebs- und Beratungsbüro
Schwarzschildstraße 1
12489 Berlin
Tel. +49 30 6392-5140

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

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

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

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

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

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

 **Polytec South-East Asia Pte Ltd**
Blk 4010 Ang Mo Kio Ave 10
#06-06 TechPlace 1
Singapore 569626
Tel. +65 64510886
info@polytec-sea.com

 **Polytec China Ltd.**
Room 1026, Hanwei Plaza
No. 7 Guanghua Road
Chaoyang District
100004 Beijing
Tel. +86 10 65682591
info-cn@polytec.com