

## PDV-100 Portable Digital Vibrometer

The PDV-100 Portable Digital Vibrometer is the lightest, truly portable, battery-powered digital laser vibrometer. It is designed to remotely, and without contact, measure a sample's vibrational velocities in the frequency range up to 22 kHz. The instrument is both rugged enough for field studies and sensitive enough to resolve emerging signal anomalies when used as a condition monitor of operating machines and facilities. By packaging high resolution vibrational velocity measurement ( $0.02 \mu\text{m/s}$ ) with precise linearity across the entire frequency range, the PDV-100 provides an accurate, rugged and reliable mobile vibration analysis tool.

The PDV-100 Plus bundle includes the sensor and the VibSoft-20 USB data acquisition and analysis software. The practical Education Kit adds exciting experiments for technical training at colleges and universities.



### Highlights

- Non-contact vibration measurement in the field or in the lab
- A truly portable, robust and reliable sensor with laser precision
- Versatile measurements from up to 22 kHz
- Variable stand-off distances from 0.09 to ca. 30 m
- Eye-safe, visible laser for easy positioning and adjustment

## PDV-100 Portable Digital Vibrometer

### Truly Portable Laser Vibration Measurement Datasheet



# Technical Data



## Metrological Specifications

Decoder type	Digital velocity decoder, 3 measurement ranges		
Frequency range	0.5 Hz - 22 kHz		
Measurement range (mm/s/V)	5	25	125
Full scale output (peak, mm/s)	20	100	500
Velocity resolution <sup>1</sup> ( $\mu\text{m s}^{-1}/\sqrt{\text{Hz}}$ )	<0.02	<0.02	<0.1
Analog output	Velocity, $\pm 4$ V, 24-bit DAC		
Connector	BNC		
Dynamic range <sup>2</sup>	>90 dB		
Calibration accuracy	$\pm 1$ % (20 Hz ... 22 kHz)		
Output impedance	50 $\Omega$		
Filters	Digital low pass filter (FIR type): 1 kHz, 5 kHz, 22 kHz ( $\pm 0.1$ dB), roll-off 120 dB/dec Analog high pass filter: 100 Hz (-3dB), roll-off 60 dB/dec		

## Optical Specifications

Laser type	Helium Neon (HeNe)
Laser class	Class 2, < 1 mW output power, eye-safe
Laser wavelength	633 nm, visible red laser beam
Focus	Manual
Stand-off distance <sup>3</sup>	90 mm ... ~ 30 m
Visibility maxima	96 mm + n · 138 mm; n = 0, 1, 2, 3, ...

## General Specifications

Operating temperature	+5 ... +40 °C (41 °F...104 °F)
Relative humidity	max. 80 %, non-condensing
Dimensions L x W x H	300 mm x 64 mm x 129 mm (11.8 in x 2.5 in x 5.1 in)
Weight	2.6 kg
Display	LCD, 3-line, with background lighting
Protection class	IP64 (dust and spray water protected)
Power supply	11 V ... 14.5 V DC, max. 15 W or 100 ... 240 VAC $\pm 10$ %, 50/60 Hz with included AC/DC power supply

<sup>1</sup> The resolution is defined as the signal amplitude (rms) at which the signal-to-noise ratio is 0 dB in a 1 Hz spectral bandwidth (RBW), measured on 3M Scotchlite® tape.

<sup>2</sup> Defined as spurious free dynamic range (SFDR).

<sup>3</sup> The maximum stand-off distance depends on the surface properties of the object.



PDV-100 Transportation bag

Options and Accessories				
	PDV-100 Portable Digital Vibrometer	PDV-100 Education Kit	PDV-100 plus	
			Economy Package	University Package
PDV-100 Portable Digital Vibrometer	S	S	S	S
Lightweight tripod with pan/tilt head	–	S	–	–
VIB-A-T02 Tripod with pan/tilt head	O	–	O	O
VIB-A-T05 Tripod with geared pan/tilt head for fine adjustment	O	–	O	O
AC/DC power adapter (100 – 240 V AC, 50/60 Hz)	S	S	S	S
VIB-E-220 USB Junction Box for connecting the Vibrometer to a computer	O	S	S	S
VibSoft-20 Data acquisition and analysis software <sup>1</sup>	O	S	S	S
Signal Processor for easy post- processing of the measured data	O	S	O	O
VibSoft DeskSoft analysis software (premium version for 3 computers) <sup>2</sup>	O	S	S	S
Connection cables	–	S	S	S
VibSoft Theory Manual – introduction to vibration measurement	–	S	O	S
Material for experiments (Euler disk and loud-speaker for characterization)	–	S	–	–
Teaching aids (experiment instructions, Laser-Doppler-Vibrometry poster)	–	S	–	–
Sturdy transport case	–	S	–	–
PDV-100 Transportation bag	S	–	S	S
Retroreflecive tape	S	S	S	S
PDV-PS Mobile Power Supply Kit for 4..5 hours of operation (PDV-LI Rechargeable LiOH Battery, PDV-CH Battery Charger and carrying bag)	O	O	O	O
PDV-LI Rechargeable LiOH Battery (additional battery for extended mobile operation)	O	O	O	O
PDV-CH Battery Charger (100-240 V AC, 50/60 Hz)	O	O	O	O
PDV-DC cable for operating PDV-100 from a 12 V vehicle power outlet or cigarette lighter socket (Length 5 m)	O	O	O	O



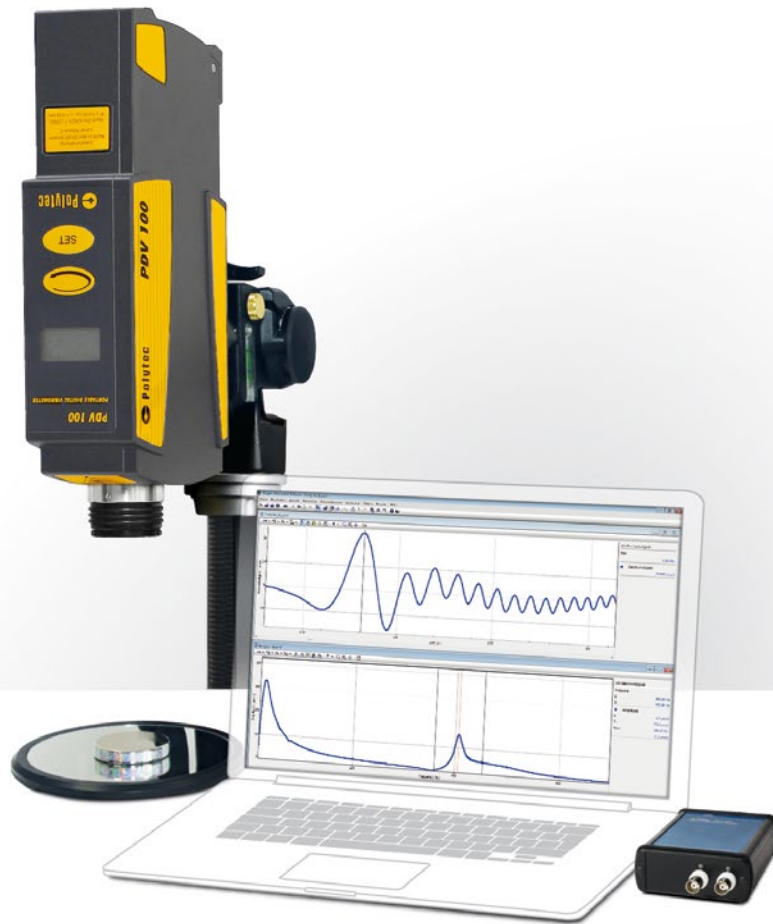
S: Standard;  
O: Option;  
–: Not available



Laser Radiation  
Do not stare into beam  
Class 2 Laser Product  
According to IEC/EN 60825-1 (2014)  
Complies with CEI 1040-10 and  
1040-11 except for deviations pursuant to  
Laser Notice no. 10, dated 24 June 2007  
P = 1 mW @ 633 nm

<sup>1</sup> Minimum system requirement: processor with SSE2 instruction set like AMD® Athlon™ 64 3500, Intel® Pentium™ 4, Intel® Celeron™ D, 1 GByte RAM with operating system Windows 10 64-Bit or Windows 7 64-Bit (SP1).


<sup>2</sup> The Desktop versions of VibSoft Software can be installed on the following operating systems (64 or 32-Bit): Windows 10, Windows 8, Windows 7 (SP1).



*The comprehensive package PDV-100 Education Kit with the truly portable laser sensor enables quick, non-contact vibration measurements in the field and in the lab.*

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