



## Digital Velocity Decoder

D-VD-1N

### Ultrafast FPGA-based Digital Signal Processing

Optomet Vibrometers feature an end-to-end FPGA-based digital signal processing allowing a fully digital read-out of the measurement data. Digital signal processing avoids any drawbacks of analog demodulation which may result from component aging, temperature dependencies, noise and non-linearities. Significantly higher sensitivity, better resolution, and stability are the benefits of OptoMET's end-to-end digital signal processing. Extremely low noise levels produce precise results even from poorly reflecting measurement objects.



#### HIGHLIGHTS:

- Digital decoder
- 8 velocity measuring ranges
- Frequency range: 0 Hz - 500 kHz\*2
- Max. velocity up to 5 m/s
- Resolution down to 12 nm s<sup>-1</sup>/√Hz
- Max. linearity error: 0.5 %

### Universal Basis Velocity Decoder

All vibrometers series feature by default a velocity decoder and can be supplemented with a suitable displacement and/or acceleration decoder.

The D-VD-1N velocity decoder is the versatile solution for various types of non-contact vibration metrology tasks. With its 8 velocity measuring ranges, it can measure up to 500 kHz\*2 and thus well above the audible acoustic range. Digital signal processing provides excellent linearity and measuring accuracy.

## Technical data

Pos.	Full Scale Output (Peak) m/s	Typical Resolution* <sup>1</sup> $\mu\text{m s}^{-1} / \sqrt{\text{Hz}}$	Signal Frequency Range kHz	Max. Acceleration g
1	0.0245	0.012	25	392
2	0.049	0.018	50	1,560
3	0.1225	0.024	100 <sup>*2</sup>	7,800 (6,200 <sup>*3</sup> )
4	0.245	0.05	250 <sup>*2</sup>	39,200 (12,500 <sup>*3</sup> )
5	0.49	0.10	500 <sup>*2</sup>	156,000 (25,000 <sup>*3</sup> )
6	1.225	0.20	500 <sup>*2</sup>	392,000 (62,700 <sup>*3</sup> )
7	2.45	0.29	500 <sup>*2</sup>	784,000 (125,000 <sup>*3</sup> )
8	5	0.50	500 <sup>*2</sup>	1,600,000 (256,000 <sup>*3</sup> )

\*<sup>1</sup> The resolution is defined as the signal amplitude (rms) that produces 0 dB signal/noise ratio with 1 Hz spectral resolution at 50 %  $f_{\text{max}}$ .

\*<sup>2</sup> In Scan-Mode: max. frequency 100 kHz

\*<sup>3</sup> In Scan-Mode

