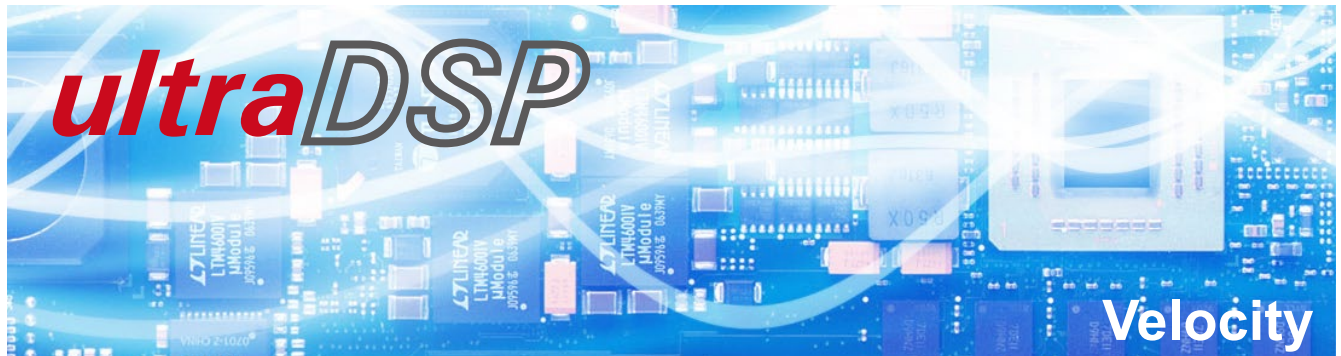# Digital Velocity Decoder D-VD-5

ultraDSP Technology - Ultrafast digital signal processing (ultraDSP)

OptoMET offer a complete line of vibrometer digital decoders. Compared to their analog counterparts, digital decoders offer much better precision, resolution, aging resistance, and sensitivity. The user can thus measure vibrations / dynamic motion (even very small amplitudes) with high precision. Practical applications also benefit from the excellent low-noise digital signal processing that allows measurements on nearly all types of surfaces and from a large distance.

OptoMET has implemented its ultrafast digital signal processing technology (ultraDSP), which combines efficient algorithms with extremely powerful hardware, to achieve exceptional velocity resolution, high frequency bandwidths and extremely large dynamic range of up to 9 decades for velocity measurements (nm/s - m/s).

Velocity decoders

OptoMET offers a wide range of digital decoder options allowing customers to tailor any vibrometer model to their unique measurement requirements.

All vibrometers have at least one velocity decoder, which can be supplemented with a suitable displacement and/or acceleration decoder.

The choice of velocity decoder defines not only the minimum and maximum measurable velocity, but also the maximum permissible acceleration and vibration frequency.

D-VD-5 Features:

- Digital Decoder
- 14 velocity measuring ranges
- Frequency range DC to 10 MHz
- Max. vibration velocity 10 m/s
- Resolution down to 1.3 nm $s^{-1}/\sqrt{Hz}$
- Max. permissible acceleration of the measured object 32,000,000 g

Technical data

The D-VD-5 velocity decoder is extremely powerful. With its dynamic range from 1.3 nm/s to 10 m/s, a maximum permissible acceleration of 32,000,000 g, and a bandwidth of 10 MHz, the D-VD-5 decoder is the ideal tool for challenging applications in research and development.

Pos.	Full Scale Output (Peak) m/s	Typical Resolution* $\mu m\ s^{-1}$ / $\sqrt{Hz}$	Signal Frequency Range kHz	Max. Acceleration g
1	0.001	0.0013	2.5	1.6
2	0.002	0.0026	5	6.4
3	0.005	0.004	10	32
4	0.01	0.006	25	160
5	0.02	0.008	50	640
6	0.05	0.015	100	3,200
7	0.1	0.035	250	16,000
8	0.2	0.08	500	64,000
9	0.5	0.20	1,000	320,000
10	1	0.26	1,500	960,000
11	2	0.35	2,500	3,200,000
12	5	1.43	10,000	32,000,000
13	8	0.70	5,000	25,600,000
14	10	0.38	2,500	16,000,000

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