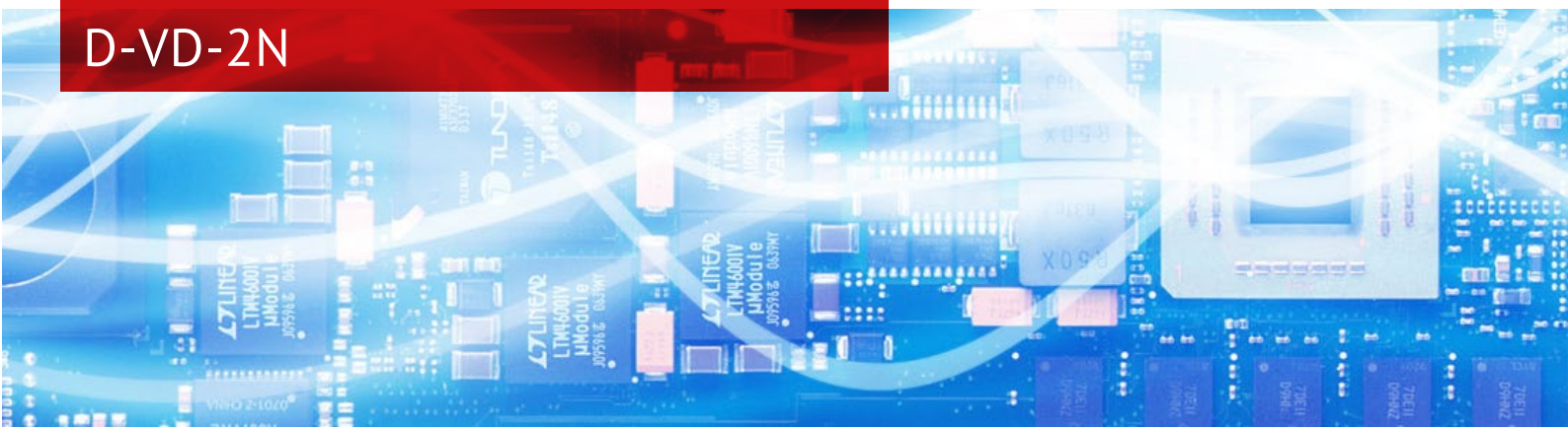
optomet.
LASER VIBROMETRY

Digital Velocity Decoder

D-VD-2N



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
- 11 velocity measuring ranges
- Frequency range: 0 Hz - 1 MHz
- Max. velocity up to 5 m/s
- Resolution down to 1.7 nm $s^{-1}/\sqrt{Hz}$
- Max. linearity error: 0.5 %

High-Precision Sense 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-2N velocity decoder has been specially developed to register even the smallest mechanical vibrations and motions. It has 11 velocity measuring ranges from 2.45 mm/s to 5 m/s and is not only ultrasensitive in detecting tiny vibrations up to 1.7 nm/s, but is also ideal for standard vibration measurements in the acoustic and ultrasonic ranges (up to 1 MHz).

Technical data

Pos.	Full Scale Output (Peak) m/s	Typical Resolution* µm s $^{-1}$ / √Hz	Signal Frequency Range kHz	Max. Acceleration g
1	0.00245	0.0017	2.5	3.9
2	0.0049	0.002	5	15.6
3	0.01225	0.003	10	78
4	0.0245	0.012	25	392
5	0.049	0.018	50	1,560
6	0.1225	0.024	100	7,800
7	0.245	0.05	250	39,200
8	0.49	0.10	500	156,000
9	1.225	0.20	1,000	784,000
10	2.45	0.29	1,000	1,560,000
11	5	0.50	1,000	3,200,000

* 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}.

Range diagram