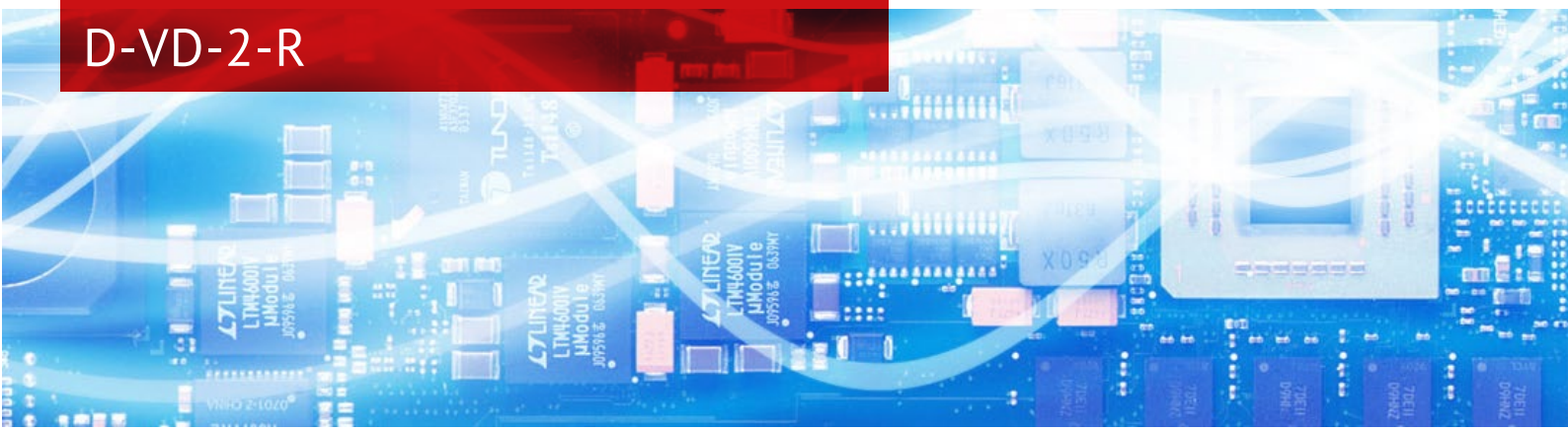
optomet.
LASER VIBROMETRY

Digital Velocity Decoder

D-VD-2-R



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 - 25 kHz
- Max. velocity up to 2 m/s
- Resolution down to 1.3 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-2-R velocity decoder has been specially developed to register even the smallest mechanical vibrations and motions. It has 11 velocity measuring ranges from 1 mm/s to 2 m/s and is not only ultrasensitive in detecting tiny vibrations up to 1.3 nm/s.

Technical data

Pos.	Full Scale Output (Peak) m/s	Typical Resolution* µm s $^{-1}$ / √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	25	320
6	0.05	0.015	25	800
7	0.1	0.035	25	1,600
8	0.2	0.08	25	3,200
9	0.5	0.20	25	8,000
10	1	0.26	25	16,000
11	2	0.35	25	32,000

* 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