



Digital Velocity Decoder

D-VD-2N-12

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
- 12 velocity measuring ranges
- Frequency range: 0 Hz - 1 MHz
- Max. velocity up to 12 m/s
- Resolution down to 1.7 nm s⁻¹/√Hz
- Max. linearity error: 0.5 %

High-Precision Sense Speed 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-12 velocity decoder has been specially developed to register even the smallest mechanical vibrations and motions. It has 12 velocity measuring ranges from 2.45 mm/s to 12 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* $\mu\text{m s}^{-1} / \sqrt{\text{Hz}}$ | 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 | 4.9 | 0.50 | 1,000 | 3,100,000 |
| 12 | 12 | 0.60 | 1,000 | 7,600,000 |

* 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} .

