



Digital Velocity Decoder

D-VD-0-F

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 - 100 kHz
- Max. velocity up to 2 m/s
- Resolution down to 6 nm s⁻¹/VHz
- Max. linearity error: 0.5 %

Start 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-0-F 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 100 kHz 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* $\mu\text{m s}^{-1} / \sqrt{\text{Hz}}$ | Signal Frequency Range kHz | Max. Acceleration g |
|------|---------------------------------|--|-------------------------------|------------------------|
| 1 | 0.01 | 0.006 | 25 | 160 |
| 2 | 0.02 | 0.008 | 50 | 640 |
| 3 | 0.05 | 0.015 | 100 | 3,200 |
| 4 | 0.1 | 0.035 | 100 | 6,400 |
| 5 | 0.2 | 0.08 | 100 | 12,800 |
| 6 | 0.5 | 0.20 | 100 | 32,000 |
| 7 | 1 | 0.26 | 100 | 64,000 |
| 8 | 2 | 0.35 | 100 | 128,000 |

* 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} .

