



Digital Velocity Decoder D-VD-5N-24

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
- 14 velocity measuring ranges
- Frequency range: 0 Hz - 24 MHz
- Max. velocity up to 25 m/s
- Resolution down to $1.7 \text{ nm s}^{-1}/\sqrt{\text{Hz}}$

High-End Master Velocity Decoder 24 MHz

All vibrometers series feature by default a velocity decoder and can be supplemented with a suitable displacement and/or acceleration decoder.

The D-VD-5N-24 velocity decoder expands the frequency bandwidth up to 24 MHz, is especially used for ultrasonic applications. It is compatible with displacement decoder D-DD-5N-24.

Technical data

Pos.	Full Scale Output (Peak) m/s	Typical Resolution* ¹ $\mu\text{m s}^{-1} / \sqrt{\text{Hz}}$	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	1,500	2,350,000
11	4.9	0.47	2,500	7,840,000
12	12.25* ²	2.4	24,000	78,400,000* ³
13	19.6	1.2	5,000	62,700,000
14	25	0.64	2,500	39,200,000

*¹ 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} .

*² Velocity limited to 1 m/s at frequencies above 10 MHz.

*³ Acceleration limited to 15,300,000 g at frequencies above 10 MHz.

