

Vibration sensor

VIM32PP-E7DC8-0RE-IO-1V1401

- Raw data for vibration acceleration a-Raw by means of BLOB transfer
- Frequency range up to 12 kHz with sampling rate up to 64 kHz
- Bearing status parameter according to DIN ISO 13373
- Vibration velocity in mm/s (rms) acc. to DIN ISO 10816/20816
- Vibration acceleration in g (rms) acc. to DIN ISO 10816/20816
- Additional temperature value output
- IO-Link Interface for process data, parameterization and diagnosis
- Rugged stainless steel housing

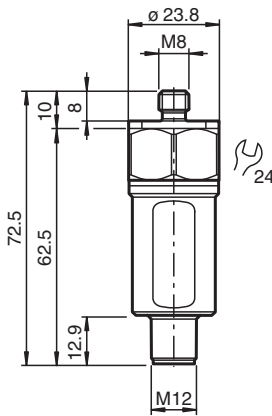
Vibration sensor with IO-Link and programmable switching output or analog current output



Function

The vibration sensor determines the vibration quantity using rms (root mean square) averaging. This form of quadratic averaging or pre-filtering enables precise trend statements about the condition of the application. The integrated IO-Link interface provides an optimal adaption to different applications through parameterization and process data transmission for condition monitoring. Using BLOB transfer, larger amounts of data can be transferred, which enables high-frequency vibration acceleration measurements. You can use this measured data as the basis for a frequency analysis using a fast Fourier transform (FFT). The simple mounting allows for commissioning in any application.

Dimensions



Technical Data

General specifications		
Type	Vibration sensor	
Measuring technology	MEMS capacitive	
Series	Performance Plus Line	
Measured variable	Vibration velocity Vibration acceleration Bearing status parameter Crest factor Temperature	
Measuring range		
Vibration velocity	v-rms	0 ... 128 mm/s
Vibration acceleration	a-rms	0 ... 34 g rms

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Technical Data

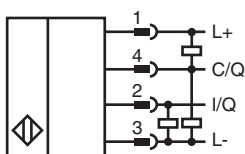
Vibration acceleration	a- Peak	0 ... 48 g peak value per 1 s
Vibration acceleration	a- Raw	-48 ... 48 g by means of BLOB transfer
Bearing status parameter		1 ... 4 see section characteristic curve
Crest factor		0 ... 100
Temperature		-40 ... 85 °C (-40 ... 185 °F)
Measurement accuracy		Vibration velocity: ± 0.1 mm/s (calibration point: 90% of the measuring range; 159.2 Hz) Complies with the tolerance requirements of DIN ISO 2954 for measuring range greater than 8 mm/s Vibration acceleration: ± 0.01 g (calibration point: 90% of the measuring range; 159.2 Hz) Complies with the tolerance requirements of DIN ISO 2954
Cross-sensitivity		< 5 % of the partial lateral acceleration, which acts exactly 90° to the measuring axis
Resolution		Vibration velocity: 0.01 mm/s Vibration acceleration: 0.01 g Bearing status parameter: 0.01
Frequency range		Vibration acceleration a-raw: 1 ... 12 kHz , by means of BLOB transfer Vibration velocity rms: 10 ... 1000 Hz , acc. to DIN ISO 10816/20816 , programmable Vibration acceleration rms: 1 ... 1000 Hz , acc. to DIN ISO 10816/20816 , programmable Vibration acceleration a-peak: 10 ... 10 kHz Crest factor: 10 ... 10 kHz Bearing status parameter: 10 ... 10 kHz , acc. to DIN ISO 13373-3
Averaging time		for v-rms: 2 s for a-rms: 2 s
Sampling rate		Vibration acceleration a-raw: 64 kHz , programmable Vibration velocity rms: 8 kHz Vibration acceleration rms: 8 kHz Vibration acceleration a-peak: 32 kHz Crest factor: 32 kHz Bearing status parameter: 32 kHz
Functional safety related parameters		
MTTF _d		329 a
Mission Time (T _M)		20 a
Diagnostic Coverage (DC)		0 %
Electrical specifications		
Fusing		external fuse is required: 1 A , fast acting , 30 V DC
Operating voltage	U _B	18 ... 30 V DC
Current consumption		max. 320 mA
Power consumption	P ₀	max. 10 W
Time delay before availability	t _v	≤ 3.6 s
Surge protection		up to 2 kV
Interface		
Interface type		IO-Link (via C/Q = Pin 4)
IO-Link revision		1.1
Device profile		Identification and Diagnosis - I&D , BLOB transfer
Process data		Input 24 Byte measurement channels: - rms value velocity - peak value acceleration - rms value acceleration - temperature - crest factor - bearing status parameter per measurement channel: - measurement value 2 Byte - scaling 8 Bit - switching signals 2 Bit status data
Vendor ID		1 (0x0001)
Device ID		5308673 (0x510101)
Transfer rate		COM3 (230.4 kbits/s)
Min. cycle time		3.8 ms
SIO mode support		yes

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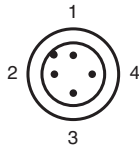
Technical Data

Compatible master port type	Class A Class B (use 3-pole adapter or 3-wire cable)
BLOB size	1.28 MByte , programmable
BLOB segments	200 Byte per request and BLOB segment respectively
Output 1	
Output type	C/Q - Pin 4 in SIO mode (switching signal of the measured variable is programmable)
Switching function	Normally open/closed (NO/NC)
Operating current	≤ 100 mA
Short-circuit protection	yes
Output 2	
Output type	I/Q - pin 2 (parameterizable as analog current output or switching signal) - I: analog output for the measured variable, current 4 ... 20 mA - Q: switching signal of the measured variable is parameterizable, PNP normally open
Switching function	Normally open/closed (NO/NC)
Operating current	≤ 120 mA for switching signal
Voltage drop	< 2 V
Output current	4 ... 20 mA at analog output
Load resistor	≤ 500 Ω at analog output
Short-circuit protection	yes
Standard conformity	
Degree of protection	DIN EN 60529, IP66, IP67
Shock resistance	DIN EN 60068-2-27, 60 g, 6 ms
Vibration resistance	DIN EN 60068-2-6, 16.5 g, 10 ... 12000 Hz
Vibration evaluation	DIN ISO 10816/20816 , DIN ISO 13373-3
Approvals and certificates	
UL approval	
Ordinary Location	E468231 cULus Listed, Class III Power Source and limited energy , if UL marking is marked on the product. For use in NFPA 70 Applications only. adapters providing field wiring on request
Maximum permissible ambient temperature	max. 80 °C (max. 176 °F)
Ambient conditions	
Ambient temperature	-40 ... 85 °C (-40 ... 185 °F)
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)
Mechanical specifications	
Connection type	plug
Housing material	Stainless steel 1.4305 / AISI 303
Degree of protection	IP66 / IP67 only in connected state
Connector	
Threading	M12
Number of pins	4
Mass	approx. 100 g
Dimensions	
Length	72.5 mm
Diameter	23.8 mm

Connection



Connection Assignment



Accessories

Accessories for this product can be found on the internet at www.pepperl-fuchs.com.

Installation

Further Documentation

The sensor manual is also available as detailed overall documentation. Among other things, installation, grounding concepts and mounting are described there in detail.

You can access the manual via the product detail page at www.pepperl-fuchs.com.

Note

The correct electrical connection and the selection of the appropriate grounding concept are crucial for malfunction-free operation of the sensor. For detailed information you may refer to the manual of the sensor.

Characteristic Curve

Bearing status parameter dependent on vibration

