

# Vibration sensor

## VIM82PL-S1V16-22E-I422V19



- Suitable for SIL2/PId applications
- Rugged stainless steel housing
- Vibration velocity in mm/s (rms) acc. to DIN ISO 10816/20816
- Suitable for use in hazardous area up to Zone 2/21 with type of protection increased safety and for Class I/II and Division 2

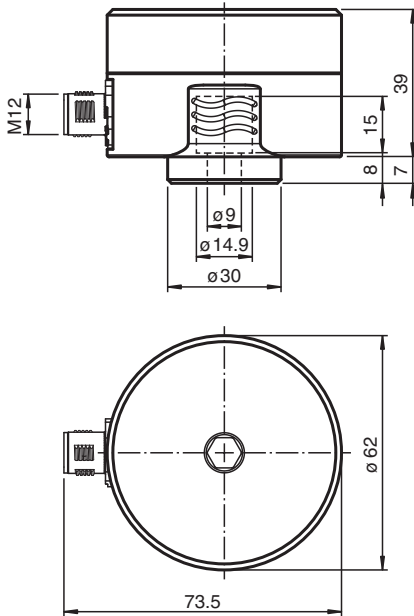
Vibration sensor with safety function both for the analog current output and for the 2 relay outputs with adjustable switching thresholds



### 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 vibration sensor has a safety integrity level (SIL 2) for usage in functional safety applications. For monitoring tasks within the scope of functional safety, 2 relay outputs with adjustable switching thresholds are available. With simultaneous evaluation of both relay outputs by a controller, monitoring of a pre-alarm and main alarm thus is possible, e.g. as part of Condition Monitoring. Furthermore there is an approval for the use of the sensor in hazardous areas.

### Dimensions



### Technical Data

#### General specifications

Type	Vibration sensor
Measuring technology	MEMS

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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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## Technical Data

Series	Performance Line	
Measured variable	Vibration velocity	
Measurement range		
Vibration velocity	v-rms	0 ... 16 mm/s
Measurement accuracy	± 0.1 mm/s (calibration point: 90% of the measuring range; 159.2 Hz) Complies with the tolerance requirements of DIN ISO 2954 for measurement range greater than 8 mm/s	
Cross-sensitivity	< 5 % of the partial lateral acceleration, which acts exactly 90° to the measuring axis	
Frequency range	10 ... 1000 Hz	
Averaging time	for v-rms: 2 s	
<b>Functional safety related parameters</b>		
Safety Integrity Level (SIL)	SIL 2	
Performance level (PL)	PL d	
Category	Cat. 2	
MTTF <sub>d</sub>	329 a	
Mission Time (T <sub>M</sub> )	10 a	
Diagnostic Coverage (DC)	min. 90 %	
<b>Indicators/operating means</b>		
Status indicator	6 LEDs for operating states	
Control elements	4 rotary switches and 1 push button for programming	
<b>Electrical specifications</b>		
Fusing	external fuse is required: 3 A , semi-time-lag , 30 V DC	
Operating voltage	U <sub>B</sub>	24 V DC + 7 % / - 10 %
Current consumption	max. 100 mA	
Power consumption	P <sub>0</sub>	2.6 W
Time delay before availability	t <sub>v</sub>	15 s (initially self-test functions are executed before safe measured values are available at the output)
Surge protection	up to 2 kV	
<b>Output 1</b>		
Output type	relay	
Switching function	Normally open (NO)	
Switching voltage	max. 30 V DC	
Switching current	max. 1 A	
<b>Output 2</b>		
Output type	relay	
Switching function	Normally open (NO)	
Switching voltage	max. 30 V DC	
Switching current	max. 1 A	
<b>Output 3</b>		
Output type	analog output, current output of the vibration variable	
Output current	4 ... 20 mA	
Load resistor	≤ 500 Ω	
<b>Standard conformity</b>		
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 ... 1000 Hz	
Vibration evaluation	DIN ISO 10816/20816	
Functional safety	DIN EN IEC 61508 , SIL 2 EN ISO 13849 , PL d	
<b>Approvals and certificates</b>		
IECEX approval		
Equipment protection level Gc	IECEX ULD 22.0031X	
Equipment protection level Dc	IECEX ULD 22.0031X	

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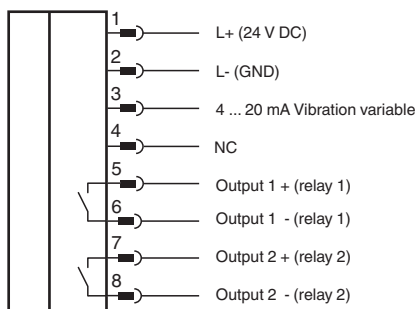
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## Technical Data

ATEX approval	
Equipment protection level Gc	UL 22 ATEX 2870 X
Equipment protection level Dc	UL 22 ATEX 2870 X
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
Hazardous Location	E106378
Maximum permissible ambient temperature	max. 60 °C (max. 140 °F)
Control drawing	116-0493
<b>Ambient conditions</b>	
Ambient temperature	-40 ... 60 °C (-40 ... 140 °F)
Measuring head temperature	-40 ... 85 °C (-40 ... 185 °F) directly at the mounting point
Storage temperature	-40 ... 60 °C (-40 ... 140 °F)
<b>Mechanical specifications</b>	
Connection type	plug
Housing material	Stainless steel 1.4305 / AISI 303
Degree of protection	IP66 / IP67 only in connected state and correctly mounted housing cover
Connector	
Threading	M12
Number of pins	8
Mass	approx. 500 g
Dimensions	
Height	46 mm
Width	62 mm
Length	73.5 mm
<b>General information</b>	
Scope of delivery	1 x allen head screw M8 x 20 1 x spring washer M8 1 x seal label
Use in the hazardous area	see instruction manuals Only use accessories specified by the manufacturer.

## Connection



## Accessories

Accessories for this product can be found on the internet at [www.pepperl-fuchs.com](http://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.

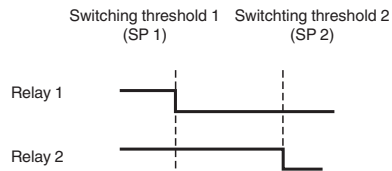
You can access the manual via the product detail page at [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

### 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.

## Programming

### Adjustable relay outputs



critical state = pre-alarm from SP1/main alarm from SP2 = relay is open = like de-energized state