Vibration sensor

VIM82PL-S1V16-2CE-I422C28

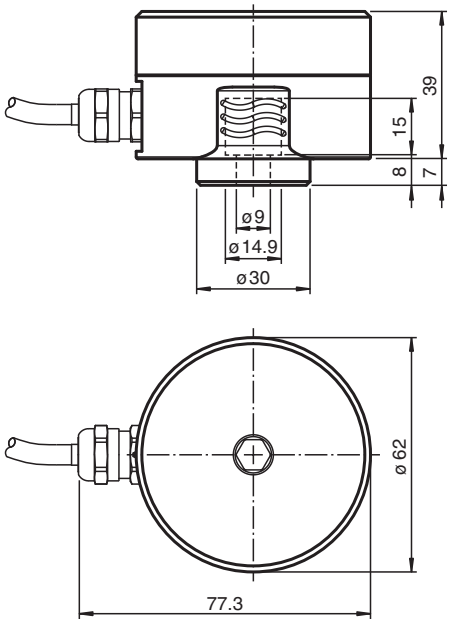
- Suitable for SIL2/PId applications
- Rugged stainless steel housing
- Vibration velocity in mm/s via root mean square formation (rms)
- Suitable for use in harzadous area up to Zone 2/21 with type of protection increased safety and for Class I/II and Division 2

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

Function

The vibration sensor determines the vibration quantity using rms (root meas 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

Technical Data

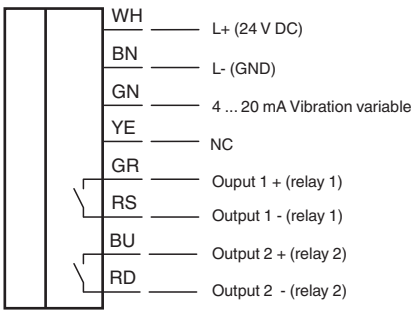
Series		Performance Line
Measured variable		Vibration velocity
Measurement range		
Vibration velocity	v-rms	0 ... 16 mm/s
Measurement accuracy		± 0.1 mm/s (calibration point: 90% of the measuring range; 159.2 Hz) Complies with the tolerance requirements of DIN ISO 2954 for measurement range greater than 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
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 2
Performance level (PL)		PL d
Category		Cat. 2
$MTTF_d$		329 a
Mission Time (T_M)		10 a
Diagnostic Coverage (DC)		min. 90 %
Indicators/operating means		
Status indicator		6 LEDs for operating states
Control elements		4 rotary switches and 1 push button for programming
Electrical specifications		
Fusing		external fuse is required: 3 A , semi-time-lag , 30 V DC
Operating voltage	U_B	24 V DC + 7 % / - 10 %
Current consumption		max. 100 mA
Power consumption	P_0	2.6 W
Time delay before availability	t_v	15 s (initially self-test functions are executed before safe measured values are available at the output)
Surge protection		up to 2 kV
Output 1		
Output type		relay
Switching function		Normally open (NO)
Switching voltage		max. 30 V DC
Switching current		max. 1 A
Output 2		
Output type		relay
Switching function		Normally open (NO)
Switching voltage		max. 30 V DC
Switching current		max. 1 A
Output 3		
Output type		analog output, current output of the vibration variable
Output current		4 ... 20 mA
Load resistor		≤ 500 Ω
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 ... 1000 Hz
Functional safety		DIN EN IEC 61508 , SIL 2 EN ISO 13849 , PL d
Approvals and certificates		
IECEx approval		
Equipment protection level Gc		IECEx ULD 22.0031X
Equipment protection level Dc		IECEx ULD 22.0031X
ATEX approval		

Release date: 2023-10-25 Date of issue: 2023-10-25 Filename: 70141684-100009_eng.pdf

Technical Data

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
Ambient conditions		
Ambient temperature		-35 ... 60 °C (-31 ... 140 °F)
Measuring head temperature		-35 ... 125 °C (-31 ... 257 °F) directly at the mounting point
Storage temperature		-35 ... 60 °C (-31 ... 140 °F)
Mechanical specifications		
Connection type		cable
Housing material		Stainless steel 1.4305 / AISI 303
Housing length		77.3 mm
Housing width		62 mm
Housing height		46 mm
Degree of protection		IP66 / IP67 only in connected state and correctly mounted housing cover
Cable		
Number of cores		8
Length	L	2 m
Mass		880 g
General information		
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.

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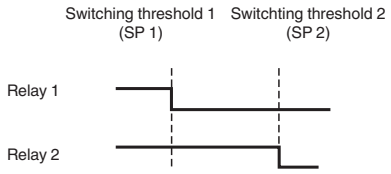
Installation

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.

Programming

Adjustable relay outputs



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

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