SensorsX

SX-MAPEA Series

Piezoelectric Accelerometer with Temperature Measurement

Combined vibration and temperature sensing through a single 3-pin connection



±80 g Accelerometer Range	**100 mV/g** Sensitivity	**1%** Nonlinearity
3 – Pin MIL-C-5015 Connector	**−40 to +125 °C** Temperature Measurement Range	**304 Stainless Steel** Housing Material

■ OVERVIEW

The SX-MAPEA Series combines piezoelectric acceleration sensing and temperature measurement in a single sensor for industrial machinery monitoring. The acceleration channel has a nominal sensitivity of 100 mV/g and a measurement range of ±80 g. A separate temperature channel provides a sensitivity of 10 mV/°C, with an output of 500 mV at 0 °C. Both channels use a 3-pin MIL-C-5015 connector with a shared return.



■ KEY FEATURES

◆ Combined Vibration and Temperature Measurement	◆ Integrated Piezoelectric Acceleration Sensing
◆ Separate Temperature Output Channel	◆ 100 mV/g Acceleration Sensitivity
◆ 3-Pin MIL-C-5015 Electrical Connector	◆ 1/4-28 UNF Female Mounting Connection

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■ TYPICAL APPLICATIONS

- Motor and Pump Condition Monitoring
- Bearing and Gearbox Monitoring
- Industrial Machinery Vibration and Temperature Trending
- Machinery Condition Monitoring and Predictive Maintenance

■ SPECIFICATION LIST

Test Conditions: 25 °C, 4 mA, 160 Hz

■ VIBRATION PERFORMANCE

Parameter	Specification
Measurement Range	±80 g
Sensitivity (±10%)	100 mV/g
Frequency Response, ±5%	1–5,000 Hz
Frequency Response, ±3 dB	0.4–15,000 Hz
Mounted Resonant Frequency	20,000 Hz
Maximum Transverse Sensitivity	<5%
Temperature Response (-40–125 °C)	±10%
Nonlinearity	≤1%
Noise (rms)	≤100μV
Peak Shock Limit	3,000 g
Stabilization Time	<4 s

■ ELECTRICAL CHARACTERISTICS

Parameter	Specification
Output Bias Voltage	12 ± 2 V DC
Output Impedance	<100 Ω
Insulation Resistance at 100 V DC	>100 MΩ
Excitation Voltage	18–28 V DC
Constant-Current Excitation	2–10 mA
Operating Temperature	-40–120°C

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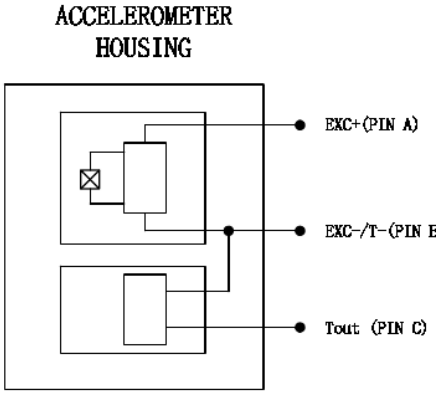
■ TEMPERATURE SENSOR PARAMETERS

Parameter	Specification
Sensitivity	10 mV/°C
Output Voltage at 0 °C	500 mV
Temperature Error	±1°C
Temperature Measurement Range	-40–125°C

■ MATERIAL PARAMETERS

Parameter	Specification
Sealing Method	Laser welding
Housing Material	304 stainless steel
Sensing Material	Piezoelectric ceramic
Electrical Connector	3-pin MIL-C-5015
Shielding and Isolation	Internally shielded and isolated
Weight	Approximately 90 g
Mounting Adapter	1/4-28 to M6

■ INTERNAL WIRING

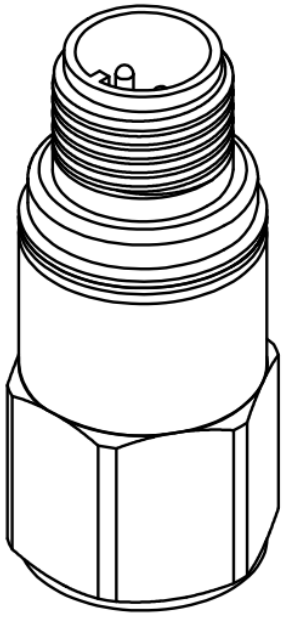


PIN A: EXC+; PIN B: EXC−/T−; PIN C: TOUT

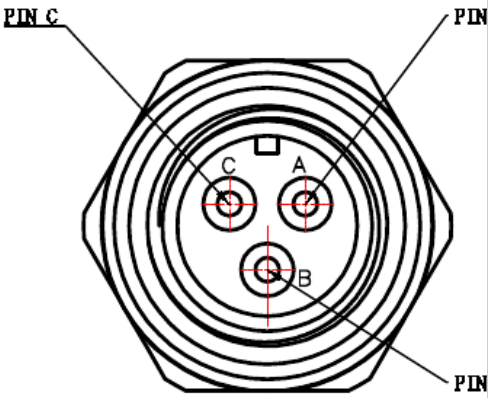
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■ MECHANICAL DIMENSIONS

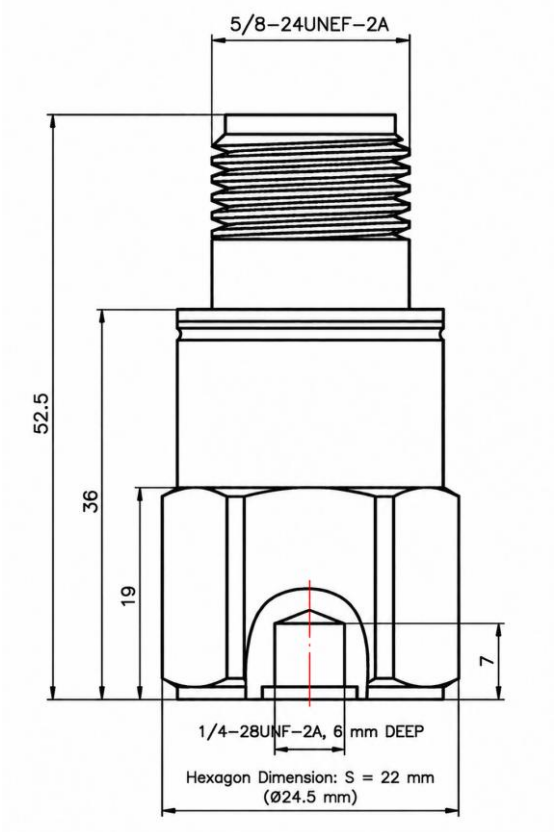
The mechanical drawing below shows the sensor profile and mounting interfaces. All dimensions are in millimeters unless otherwise specified.



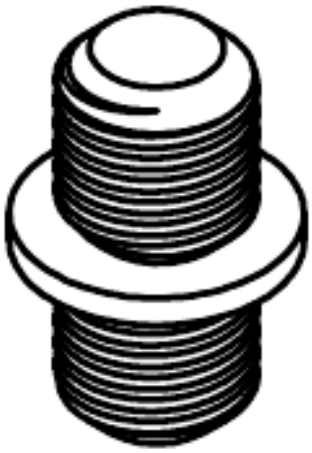
Product Configuration



3-Pin Terminal View (Pins A, B and C)



Mechanical Dimensions (unit: mm)



1/4-28 to M6 Adapter

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Parameter	Specification
Overall Height	52.5 mm
Housing Height	36 mm
Hex Height	19 mm
Bottom Feature Height	7 mm
Connector Thread	5/8-24 UNEF-2A
Mounting Thread	1/4-28 UNF-Female
Across Flats	S = 22 (Ø24.5) mm

■ ORDERING INFORMATION

SX-MAPEA Series

Ordering Code: SX-MAPEA-1112131

Example: SX-MAPEA-1112131 illustrates a configuration with a ±80 g acceleration range, 1% nonlinearity, a −40 to +125 °C temperature measurement range, a 1/4-28 UNF female mounting connection, 100 mV/g sensitivity, a 3-pin MIL-C-5015 connector, and a 304 stainless steel housing.

Model	
SX-MAPEA	
Accelerometer Measurement Range	
1	±80 g
Nonlinearity Accuracy	
1	1%
Temperature Measurement Range	
1	-40–125 °C
Connection	
2	1/4-28 UNF-Female
Sensitivity (Output)	
1	100 mV/g
Electrical Connection	
3	MIL-C-5015, 3-pin
Housing Material	
1	304 Stainless Steel
Customization Options	
D	Custom Configuration — Specify Requirements When Ordering

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