

Piezotron® Sensor

Type 8141B...

Vibration Sensor

Rugged, hermetically sealed, ground-insulated accelerometer sensor with integral impedance converter for a low impedance voltage output of ± 5 V. Its compact design allows it to be mounted close to the process. The sensor is easily surface mounted with only one M6 or 1/4-28 inch screw. The measuring chain is suitable for recording and monitoring vibrations in machine structures for machine condition monitoring.

- Rugged, hermetically sealed and ground isolated
- Metal-protected cable (option)
- Conforming to CE

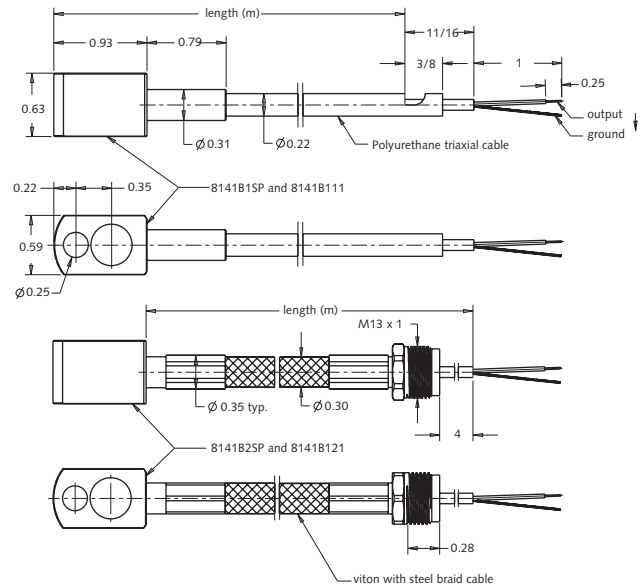
Description

The measuring element consists of piezoelectric ceramic in shear mode. This type of design achieves low sensitivity to temperature changes and base strain. The charge produced is converted to a low impedance output signal by an integral Piezotron impedance converter. A Piezotron coupler or an appropriate circuit added directly to the machine control system is used to supply power and signal conditioning. The rugged construction of the accelerometer makes it suitable for industrial use in severe environments that are contaminated with lubricants.

Application

Recording and monitoring of vibrations and machinery oscillations such as shaft bearings and foundations of:

- machine tools
- motors
- turbines
- rollers



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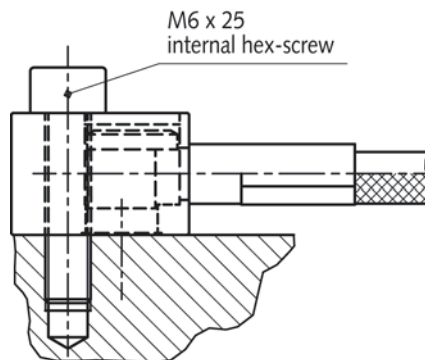
Technical Data

Specification	Unit	8141B
Vibration range	g	±50
Threshold (noise 22 µVrms)	grms	0.00022
Sensitivity, ±15 %	mV/g	100
Resonant frequency mounted, nom.	kHz	50
Frequency response, ±10 %	Hz	0.5 ... 8000
Frequency Response, ±3 dB	Hz	0.2 ... 15000
Time Constant nom.	s	1
Transverse Sensitivity, max.	%	5
Environmental:		
Base strain sensitivity @ 250 µε	g/µε	0.002
Random vibration max.	grms	±1000
Shock limit	gpk	5000
Temperature coeff. of sensitivity	%/°F	0.028
Temperature range operating	°F	-65...195
Output:		
Bias nom.	VDC	11
Impedance	Ω	<100
Voltage full scale	V	±5
Source:		
Voltage	VDC	20 ... 30
Constant current	mA	2 ... 20
Construction:		
Sensing element		Ceramic
Housing/base	material	St. Stl.
Connection	type	pigtails
Cable bend radius	in	0.6
Case Isolation min.	MΩ	10
Weight (head without cable)	grams	30
Mounting hole	in	1/4-28
Mounting torque	lbf-in	40 ±5
Degree of Protection (DIN 40057)		
cable with PUR		IP 65
Cable with Viton/steel braid		IP 67

1 g = 9.80665 m/s², 1 inch = 25.4 mm, 1 gram = 0.03527 oz, 1 lbf-in = 0.113 Nm

Mounting

The surface of the structure should be cleanly machined, flat and rigid. Mounting of the sensor is extremely simple using only one M6 or 1/4 inch screw.



Accessories Included

- Mounting screw, 1/4-28 x 1"
- Mounting screw, M6 x 25 mm

Type/Art. No.

- 431-0500-001
- 431-0497-001

Optional Accessories

- Piezotron coupler

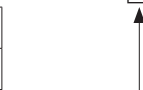
Type

5127

Ordering Key

Cable details	
PUR, 5m	111
PUR, cable length sp = 0.3 ... 10 m	1sp
Viton with steel braid, 2 m	121
Viton with steel braid cable length sp = 0.3 ... 3 m	2sp

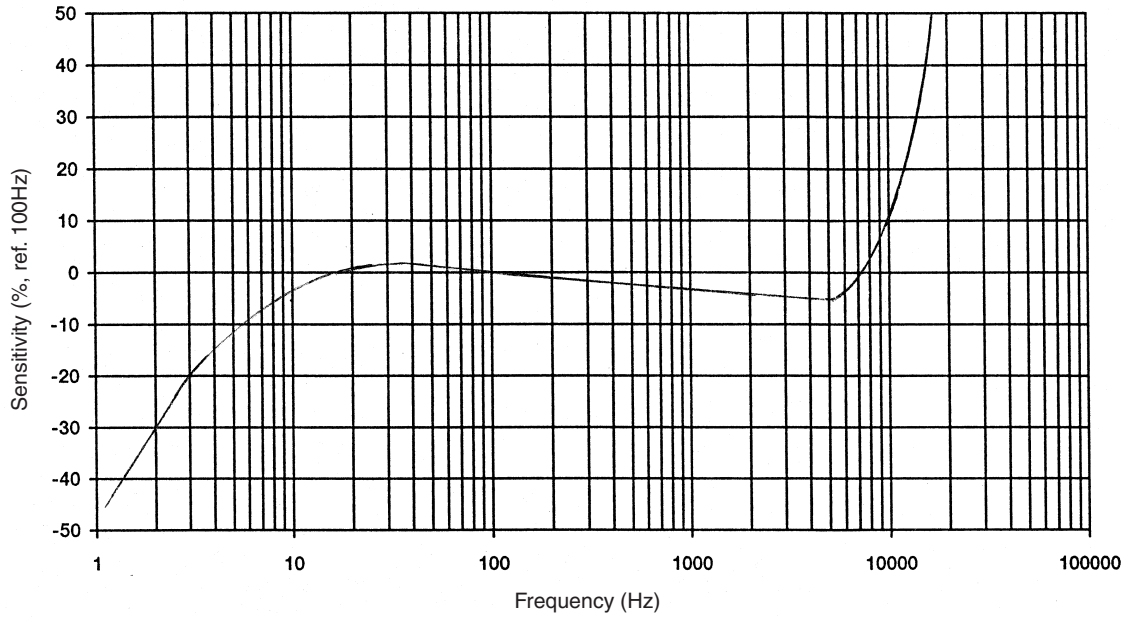
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Measuring Results

The vibration signals can be amplified and filtered by the Piezotron coupler Type 5127B.... The acceleration signal and its RMS value are available at the output.

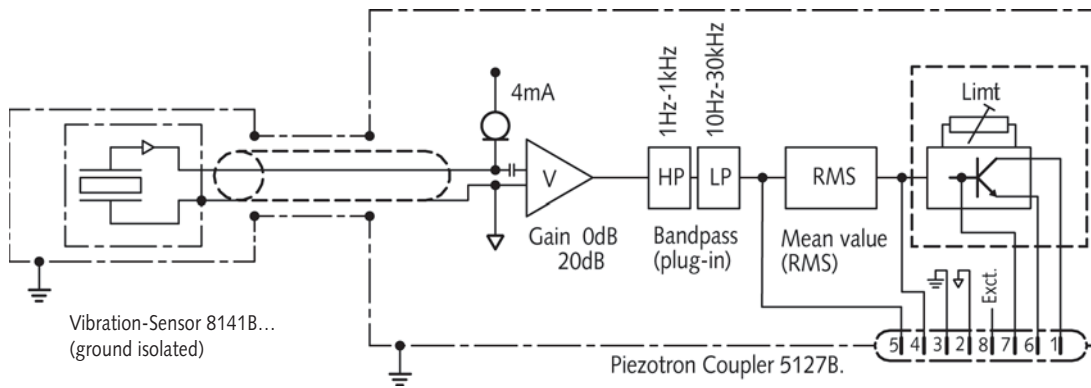


Measuring Chain

- 1 Low impedance sensor
- 2 Piezotron coupler

Type

- 8141B...
- 5127B...



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