©ICP Triaxial Accelerometer Model 131

Main Characteristics

- ©ICP transmission mode
- Annular shear mode (better than obsolete compression design)
- Dual case isolation with internal Faraday shield (suitable for permanent installation, no need for insulation pad, no ground loop)
- Low, medium and high frequency version (10, 50, 100, 500, 1000 mV/g)
- Hermetically sealed (laser welded)

Competitive advantage

- Compare to obsolete compression design, annular shear piezoelectric sensors feature better frequency response, improved base strain, lower noise, smaller size, thermal transient immunity and insensitivity to cable motion. Annular shear mode is also less susceptible to transverse vibrations and better immune to electronic saturation at high frequency.
- Improved dynamic range (thanks to exceptional bias stability) at elevated temperatures.
- Resistant to shock (magnet mounting) thanks to Jfet transistor input.
- ESD and reverse wiring protection.
- The glass seal hermetic connector protects the piezoelectric disc and the electronic from harmful environmental influences, significantly increasing their reliability and lifetime. Associated with low cost IP68 overmolded M12 cable assembly it is a perfect solution for submersible application down to 150 metres. Sensors with epoxi seal will leak after few temperature cycles.
- M12 connector offers compatibility with numerous sensors used in automation. M12 overmolded cable assemblies are available from many cable manufacturers around the world. Mil cordset are expensive because they are only available from vibration sensor manufacturer.

Description

The hermetic sealed triaxial industrial piezoelectric accelerometer model 131 is design to monitor the vibration in harsh industrial environment. It uses the industry standard ©ICP 2-wire voltage transmission technique with a 2 mA minimum constant current supply. Signal ground is isolated from the mounting surface and outer case to prevent ground loops. Faraday shielding will limit sensitivity to ESD to a minimum. Annular shear mode design will prevent from thermal transient and from spurious signal from high transverse vibrations. Low noise electronic and a temperature compensated design will give you accurate result over the complete temperature range. Large choice of frequency range will help to fit almost every customer requirements. Low frequency accelerometers (A=9X, 0X) incorporate a low-pass filter within the conditioning electronics. This filter attenuate the sensor mechanical resonance and the associated distortion and overload.

Typical applications

Vibrations measurement in the rugged environments of industrial machinery monitoring. High frequency version will monitor the vibration on roller bearing, pumps cavitation, .... Medium frequency version will monitor overall vibration on pumps, motors, fans, ... Low frequency model is used in the petrochemical, machine tool, and paper industries for monitoring of slow speed agitators, cooling towers, ....

Ordering information Model 131.01
To order, specify model number, options, accessories and suffix :

131.01- AA - B - MM - YY

AA : Sensitivity
3 : 10 mV/g ±5 % (high frequency)
Specifications (24°C)

Dynamic

Frequency response (≤ 3 dB)
- A=3X (Z axis) .......................... 0.5 to 11000 Hz
- A=5X, 6X (Z axis) ...................... 0.5 to 10000 Hz
- A=9X, 0X (Z axis) ...................... 0.2 to 3700 Hz

Resonant frequency
- A=3X ........................................... 16 kHz Nom
- A=5X ........................................... 25 kHz Nom
- A=6X ........................................... 25 kHz Nom

Electrical

Mounting torque (M6, M7 suffix) .................................................... 2.4 N.m (21 in-lbs)

Material ........................................................... AISI 316L, DIN 1.4404 (Stainless steel)

Connector

Weight with connector
- Design ............................................. Ceramic, annular shear mode

Accessories, supplied

Calibration supplied ................................................................. No frequency response

Accessories, not supplied

Cable assembly B=2 (M12 connector)
- Polyurethane cable ........................................ 10.01-E02-A01-Length

Accessories, spares part

Mounting Stud
- M6 machine thread ........................................... 193.31-06-1
- 1/4" 28 UNF machine thread ................................ 193.31-16-1

Repair

Consult factory for replacement of connector in case of broken or bended pins.

(1) Guaranteed if using accessories listed in this product datasheet only

Drawings

[Diagram of piezoelectric accelerometer]

Accessories, supplied

Pin 1  Pin 2  Pin 3  Pin 4

Connectors

X  Y  GND  Z

Pinout:

M12 Cable Wiring
- 10.01-E02-XXX-Length

EMC immunity (1) ......................................................... EN 50821-1, EN 50821-2

Temperature, operating continuous : (max. current = 4mA)
- Voltage : +22 to +28 VDC
- Protection : Overvoltage .................................................. Yes
- : Reverse polarity ......................................................... Yes

Environmental

Temperature, operating continuous : (-55 to 125 °C)
- A=3X, 5X, 6X .................................. -55 to 125 °C
- A=9X ............................................. -55 to 90 °C
- A=0X ............................................. -55 to 70 °C

Humidity / Enclosure
- B=2 ................................................. Not affected, hermetically sealed, 1E-8torr/l/s

Acceleration limit : 5000g peak

Mean time between failure (MTBF) ............................................. 10 Years Nom

ESD Protection ................................................................. > 40 V

Safety ................................................................. EN 61010-1 and IEC 1010-1

EMC emission ............................................................. EN 50081-1, EN 50081-2

Physical

Dimensions
- B=2 ................................................. Fig. 1b

Design ............................................................... Ceramic, annular shear mode

Weight with connector
- A=3X ........................................... 228 g Nom (8.0 Oz)
- A=5X, 6X ...................................... 238 g Nom (8.4 Oz)
- A=9X, 0X ...................................... 275 g Nom (9.7 Oz)

Connector
- B=2 ................................................. M12 glass seal, IEC 69047-5-2

Material ........................................................... AISI 316L, DIN 1.4404 (Stainless steel)

Mounting torque (M6, M7 suffix) ........................................... 2.4 N.m (21 in-lbs)