

®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 epoxy 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,



Model 131.01

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 $\pm 5\%$ (high frequency)

3D : 10 mV/g $\pm 10\%$ (high frequency)

5 : 50 mV/g $\pm 5\%$ (high to medium frequency)

5D : 50 mV/g $\pm 10\%$ (high to medium frequency)

6 : 100 mV/g $\pm 5\%$ (medium frequency, general purpose)

6D : 100 mV/g $\pm 10\%$ (medium frequency, general purpose)

6Q : 100 mV/g $\pm 15\%$ (medium frequency, general purpose)

9 : 500 mV/g $\pm 5\%$ (low frequency down to 0.2 Hz)

9D : 500 mV/g $\pm 10\%$ (low frequency down to 0.2 Hz)

0 : 1000 mV/g $\pm 5\%$ (low frequency down to 0.2 Hz)

0D : 1000 mV/g $\pm 10\%$ (low frequency down to 0.2 Hz)

Available suffix : N, negative polarity

B : Connector

2 : M12 glass seal

MM : Captive screw

M6 : M6x1

M7 : 1/4" 28 UNF 2A

YY : Agency Approval

omitted : no agency approval

Y1 : Atex approved (please call for availability)

Special Engraving :

Add ZXX at the end of the part number.

XX is a number supplied by VibraSens

* Most Popular model :

131.01-6D-2-M6 / 131.01-9-2-M6



Specifications (24°C)

Dynamic

Frequency response (±3 dB)	
A=3X (Z axis)	0.5 to 11000 Hz
(X, Y axis)	0.5 to 8000 Hz
A=5X, 6X (Z axis)	0.5 to 10000 Hz
(X, Y axis)	0.5 to 7000 Hz
A=9X (X, Y, Z axis)	0.2 to 3700 Hz
A=0X (X, Y, Z axis)	0.2 to 3700 Hz
Mounted Resonant frequency	
A=3X	35 kHz Nom
A=5X	25 kHz Nom
A=6X	25 kHz Nom
A=9X, 0X	16 kHz Nom
Dynamic range	
A=3X	800 g pk
A=5X	160 g pk
A=6X	80 g pk
A=9X	16 g pk
A=0X	8 g pk
Transverse response sensitivity (20Hz, 5g)	<5%
Temperature response	-10% at -50°C
	+6% at 120 °C
Polarity	see figure 1b
Linearity	±1% Max
Warm up time (Typical)	
A=3X, 6X	< 1Sec
A=9X, 0X	< 10 Sec

Electrical

Electrical Grounding	Isolated from machine ground
	Internal Faraday shielding (fig. 1)
Isolation(Case to shield)	100 MΩ Min
Output impedance	50 ΩNom
DC output bias, 4mA supply (AA=3X, 6X)	12 VDC Nom (Fig 2)
DC output Bias, 4 mA supply (AA=9X, 0X)	10 VDC Nom (Fig 2)
DC temperature response	+5% at -50 °C
	-15% at max operating temperature

Residual noise (24°C) : A=3X

1 Hz	120 ug /√Hz
10 Hz	30 ug /√Hz
100 Hz	5 ug /√Hz
1000 Hz	3 ug /√Hz

Residual noise (24°C) : A=5X

1 Hz	tbd ug /√Hz
10 Hz	tbd ug /√Hz
100 Hz	tbd ug /√Hz
1000 Hz	tbd ug /√Hz

Residual noise (24°C) : A=6X

1 Hz	25 ug /√Hz
10 Hz	8 ug /√Hz
100 Hz	5 ug /√Hz
1000 Hz	5 ug /√Hz

Residual noise (24°C) : A=9X

0.2 Hz	8 ug /√Hz
1 Hz	16 ug /√Hz
10 Hz	3 ug /√Hz
100 Hz	0.8 ug /√Hz
1000 Hz	0.5 ug /√Hz

Residual noise (24°C) : A=0X

0.2 Hz	5 ug /√Hz
1 Hz	9 ug /√Hz
10 Hz	4 ug /√Hz
100 Hz	0.5 ug /√Hz
1000 Hz	0.4 ug /√Hz

Power requirements Constant current : +2 to +10mA DC

Voltage : +22 to +28 VDC

Protection : Overvoltage Yes
: Reverse polarity Yes

Environmental

Temperature, operating continuous : (max. current =4mA)

A= 3X, 5X, 6X	-55 to 120 °C (-65 to 250 °F)
A=9X	-55 to 90 °C (-65 to 212 °F)
A=0X	-55 to 70 °C (-65 to 158 °F)

Humidity / Enclosure

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

Acceleration limit : Shock 5 000g peak
: Continuous vibration 500g peak

Temp. transient sens. (3Hz, LLF, 20dB/dec) 5 mg/°C

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
EMC Immunity (1)	EN 50082-1, EN 50082-2
Dimensions	

B=2.....	Fig. 1b
Design	Ceramic, annular shear mode
Weight with connector	
A=3X.....	228 gr Nom (8.0 Oz)
A=5X, 6X.....	238 gr Nom (8.4 Oz)
A=9X, 0X.....	275 gr Nom (9.7 Oz)

B=2	M12 glass seal, IEC 60947-5-2
Material.....	AISI 316L, DIN 1.4404 (Stainless steel)
Mounting torque (M6, M7 suffix).....	2,4 N.m (21 in-lbs)

Accessories, supplied

Calibration supplied	Sensitivity (5g, 160 Hz)
	No frequency response

Accessories, not supplied

Cable assembly B=2 (M12 connector)	
Polyurethane cable	10.01-A01-E02-31-Length
For more cable option see Model 10.01 (specific cable harness).	

Accessories, spares part

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

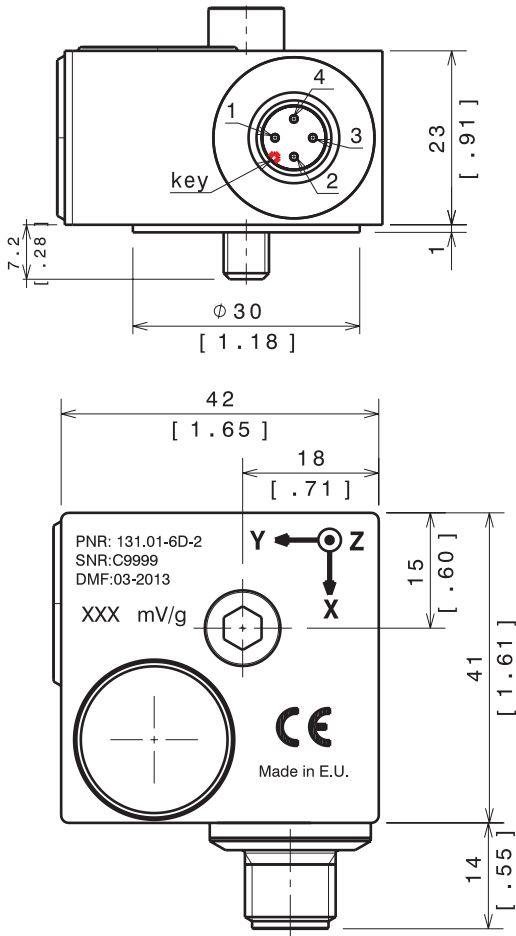
Repair

Consult factory for replacement of connector in case of broken or bended pins. Repair of electronic is not possible.

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



Drawings



	Pin 1	Pin 2	Pin 3	Pin 4
Connector Wiring	X	Y	GND	Z
M12 Cable Wiring 10.01-E02-XXX-31-Length	Brown	White	Blue	Black

Fig 1b : Outline drawing

