

®ICP Accelerometer, Model 108 Premium, Top Connector

Main Characteristics

- Low size
- -55°C to 120 °C (-67°F to 248°F)
- @ICP transmission mode
- Annular shear mode
- Low, medium and high frequency version
- IP67 with associated cable (B=2 only)

Competitive advantage

- Annular shear mode is less susceptible to transverse vibrations and better immune to electronic saturation at high frequency.
- Exceptional bias voltage stability at elevated temperatures.
- Low cost IP67 overmolded M12 cable assembly
- ESD and reverse wiring protection.
- M12 overmolded cable assembly is available through local electronic distributor
- M12 offers compatibility with sensors used in automation.

Description

The epoxy sealed industrial piezoelectric accelerometer model 108 is designed to monitor the vibration in harsh industrial environment. It uses the industry standard @ICP 2-wire voltage transmission technique with a 4 mA standard constant current supply. Signal ground is isolated from the mounting surface and outer case to prevent ground loops. 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=9) incorporate a low-pass filter within the conditioning electronic. This filter attenuates the sensor mechanical resonance and the associated distortion and overload.

Revision History

May 2003 : Released
Dec 2014 : electronic upgrade
Sept 2016 : improved case electrical isolation



Model 108.01-A-4

Typical applications

Vibrations measurement in the rugged environments of industrial machinery monitoring. High frequency version monitor the vibration on roller bearing, pumps cavitation, Medium frequency version 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 108 sensors are not recommended for permanent monitoring because they have external faraday shield subject to loss of isolation. For such applications, Models 101, 103, 104, 105, 107 with internal faraday shield are preferred.

Approvals



Ordering information

To order, specify model number, options, accessories and suffix :

108.01- A - B - Options - Accessories

A : Sensitivity

3	.....	*10 mV/g (high frequency)
6	.....	*100 mV/g (medium frequency, general purpose)
9	.....	*500 mV/g (low frequency)

Available suffix : N, negative polarity

B : Connector

1	.....	MIL-C-5015, glass seal
2	.....	M12 glass seal
4	.....	*TNC epoxy seal

Options :

Special Agency Approval

none

Accessories (Machine thread):

M2	.....	10-32 UNF 2A mounting stud
M5	.....	M5x0.8 mounting stud

Special Engraving :

Add ZXX at the end of the part number.
XX is a number supplied by VibraSens

* Popular model (in stock) :

108.01-3-4 / 108.01-6-4 / 108.01-9-4

Ordering example :

108.01-6-4 M5 Accelerometer, TNC top connector, 100 mV/g, M5 machine thread.

Specifications (24°C)

Dynamic

Sensitivity

A=3	.....	10 mV/g ±5%
A=6	.....	100 mV/g ±5%
A=9	.....	500 mV/g ±5%

Frequency response

A=3	.....	±10 % : 1 to 11000 Hz
	.....	±3 dB : 0.5 to 16000 Hz
A=6	.....	±10 % : 1 to 9000 Hz
	.....	±3 dB : 0.5 to 14000 Hz
A=9	.....	±10 % : 0.4 to 1600 Hz
	.....	±3 dB : 0.2 to 3700 Hz

Mounted Resonant frequency

A=3	.....	32 kHz Nom.
A=6	.....	25 kHz Nom.
A=9	.....	16 kHz Nom.

Dynamic range	
A=3	500 g pk
A=6	80 g pk
A=9	10 g pk
Transverse response sensitivity (20Hz, 5g) <5%	
Temperature response see fig. 3	
Polarity (fig. 1) Suffix dependant	
Linearity ±1% Max	
Warm up time (Typical)	
A=3, 6	< 1Sec
A=9	< 10 Sec

Electrical

Electrical Grounding	Isolated from machine ground
Isolation(Case to shield)	100 MΩ Min
Capacitance to ground	70 pF Nom
Output impedance	50 Ω Nom
DC output bias, 4mA supply	12 VDC Nom (Fig; 2)
Residual noise (24°C) : A=3X (10 mV/g)	
1 Hz	200 ug /√ Hz
10 Hz	30 ug /√ Hz
100 Hz	10 ug /√ Hz
1000 Hz	10 ug /√ Hz
Residual noise (24°C) : A=6X (100 mV/g)	
1 Hz	30 ug /√ Hz
10 Hz	6 ug /√ Hz
100 Hz	5 ug /√ Hz
1000 Hz	5 ug /√ Hz
Residual noise (24°C) : A=9X (500 mV/g)	
0.1 Hz	20 ug /√ Hz
1 Hz	6 ug /√ Hz
10 Hz	2 ug /√ Hz
100 Hz	2 ug /√ Hz
1000 Hz	2 ug /√ Hz
Residual noise (24°C) : A=0X (1000 mV/g)	
0.1 Hz	20 ug /√ Hz
1 Hz	5 ug /√ Hz
10 Hz	1 ug /√ Hz
100 Hz	0.5 ug /√ Hz
1000 Hz	0.5 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= 3, 6	-55 to 120 °C (-65 to 250 °F)
A=9	-55 to 90 °C (-65 to 212 °F)

Humidity / Enclosure	IP67, epoxy sealed
Acceleration limit : Shock	5000 g peak
Continuous vibration	500 g peak
Base strain sensitivity	0.0002 g pk/u strain
Temp. transient sens. (3Hz, LLF, 20dB/dec)	5 mg/°C
Acoustic sensitivity (164 dBSP)	0.5 mg
Electromagnetic sens. (50Hz, 0.03 T)	0.2 g
Mean time between failure (MTBF)	10 Years Nom
ESD Protection	> 40V
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

Physical

Design	Ceramic, annular shear mode
Weight	
A=3	34 gr Nom (2.8 Oz)
A=6	39 gr Nom (3.0 Oz)
A=9	44 gr Nom (3.4 Oz)
Connector	
B=1	MIL-C-5015 glass seal, Type MS3143 10SL-4P
B=2	M12 glass seal, IEC 60947-5-2
B=4	TNC
Material	AISI 316L, DIN 1.4435 (Stainless steel)
	AISI 303, DIN 1.4301 (Stainless steel)
Mounting torque (M2, M5 suffix)	1.8 N.m (16 in-lbs)

Accessories, supplied

Calibration supplied	Sensitivity (5g, 160 Hz)
.....	Frequency response (20 Hz to 10 kHz)

Accessories, not supplied

Cable assembly	
MIL (B=1), Polyurethane cable dia 5mm	10.01-B01-A01-01-Length
M12 (B=2)Polyurethane cable dia 5mm	10.01-E01-A01-31-Length
TNC (B=4) PVC RG 174 dia 2.8	10.01-T02-F02-51-Length
TNC (B=4) PVC RG 58 dia 5	10.01-T02-F02-52-Length
Mounting Stud	
M5	191.01-15-05-1
10-32 UNF 2A	191.01-15-15-1

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.

Configurations

Model Number	Pin A	Pin B
Standard	(+)	(-)

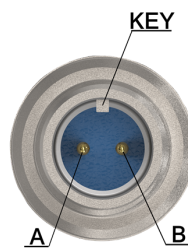
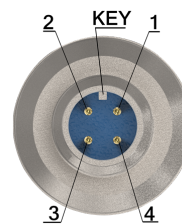


Fig 1a : Electrical layout, N=1 (MIL-C-5015)

Model Number	Pin 1	Pin 2	Pin 3	Pin 4
Standard, no option	NC	NC	(-)	(+)



(NC) : Not connected

Fig. 1b : Electrical layout, B=2 (M12 glass seal)

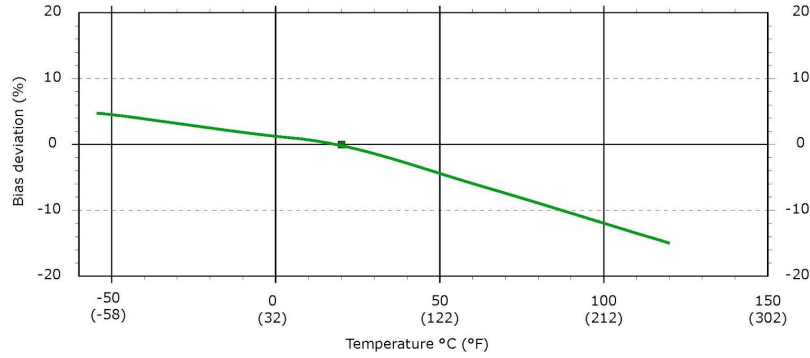


Fig 2. DC (Bias) deviation versus temperature

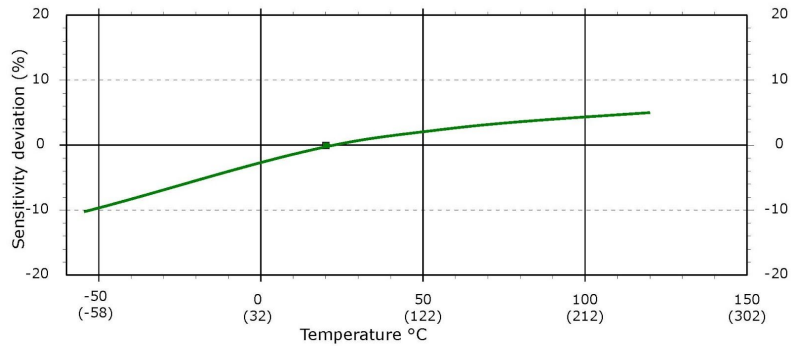


Fig 3. : Sensitivity deviation versus temperature

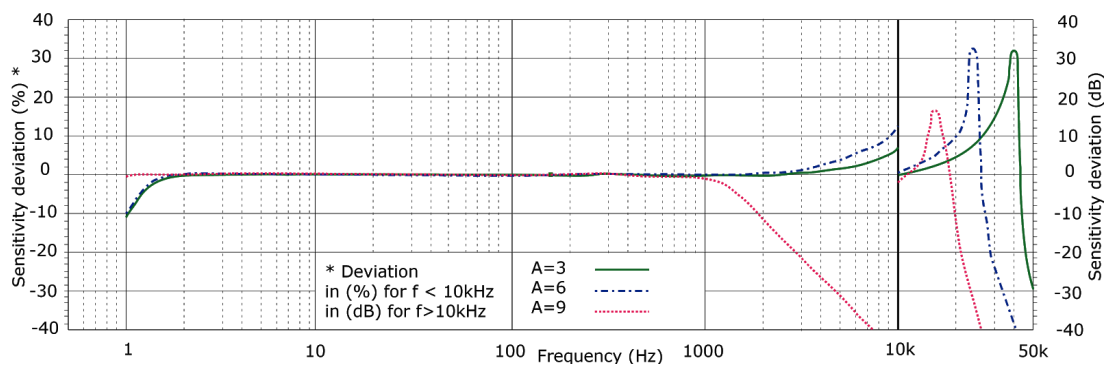


Fig 4a. Frequency Response, amplitude

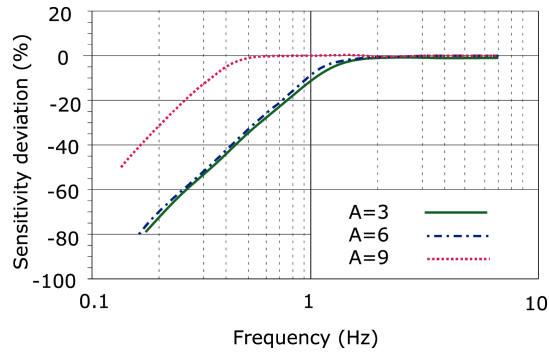


Fig 4b. Low Frequency response, amplitude

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