

## ®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
- M12 overmolded cable assembly is available through local electronic distributor
- M12 offers compatibility with sensors used in automation.

### Description

The epoxy sealed piezoelectric accelerometer model 108 is design 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 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.

### Typical applications

Ideal for walk-around 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.

### Ordering information.

To order, specify model number, options 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

#### Options :

#### Special Agency Approval

none

#### Accessories (Machine thread):

M2 : 10-32 UNF 2A mounting stud



Model 108.01-A-4

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, 100mV/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..... fig. 4a, 4b

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.....35 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 ..... fig3

Polarity ..... (fig. 1) Suffix dependant

Linearity ..... ±1% Max

Warm up time (Typical)

A=3, 6..... < 1 Sec

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 ΩNom

DC output bias, 4mA supply ..... 12 VDC (Fig 2)

Residual noise (24°C) : A=3

1 Hz to 25 kHz ..... 300 ug rms

1 Hz ..... 30 ug

Residual noise (24°C) : A=6

1 Hz to 25 kHz ..... 300 ug rms

1 Hz ..... 30 ug

Residual noise (24°C) : A=9

1 Hz to 25 kHz ..... 25 ug rms

1 Hz ..... 2.4 ug

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

..... Voltage : +22 to +28 VDC

Protection : Overvoltage ..... Yes

Protection : Reverse polarity..... Yes

### Environmental

Temperature :

Operating continuous (4mA max)

A=3, 6.....-55 to 120 °C (-65 to 252 °F)

A=9.....-55 to 90 °C (-65 to 212 °F)

Humidity / Enclosure ..... IP67, epoxy sealed

Acceleration limit : Shock ..... 5 000g peak

Acceleration limit : Continuous vibration..... 500g 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..... > 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

### Physical

#### Dimensions

B=1..... Fig 1a

B=2..... Fig. 1b

B=4..... Fig 1d

Design ..... Ceramic, preloaded 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 (20Hz 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

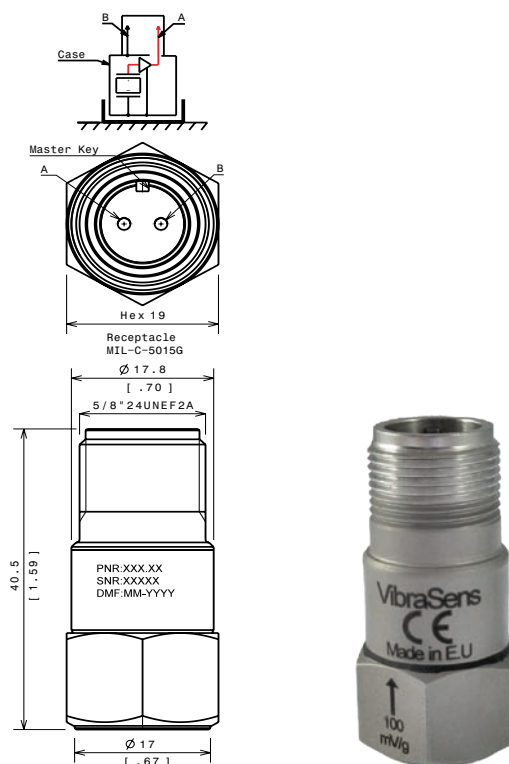
10-32 UNF 2A ..... 191.01-15-15-1

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

Repair of electronic is not possible

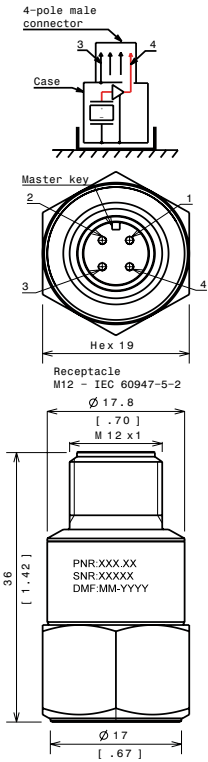
(1) Guaranteed if using accessories listed in this product datasheet only

### Drawings



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

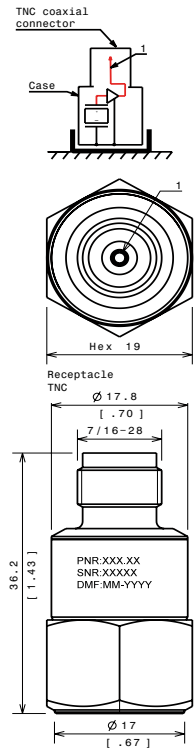
Fig 1a : Outline drawing & Electrical layout, B=1 (MIL-C-5015)



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

(NC) : Not connected

fig 1b : Outline drawing & Electrical layout, B=2 (M12 glass seal)



Model Number	Pin 1	TNC thread
Standard, no option	(+)	(-)

fig 1d : Outline drawing & Electrical layout, B=4 (TNC connector)

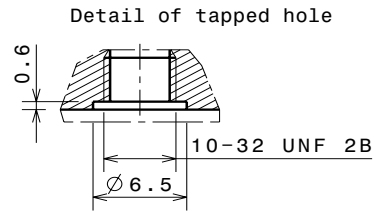


Fig 1c : Standard Housing Thread

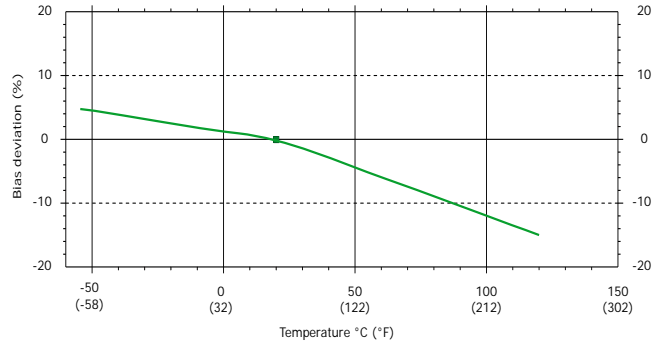


Fig 2 : DC (Bias) deviation versus temperature

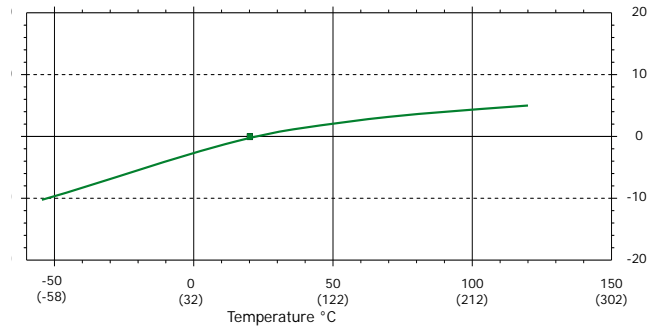


Fig 3 : Sensitivity deviation versus temperature

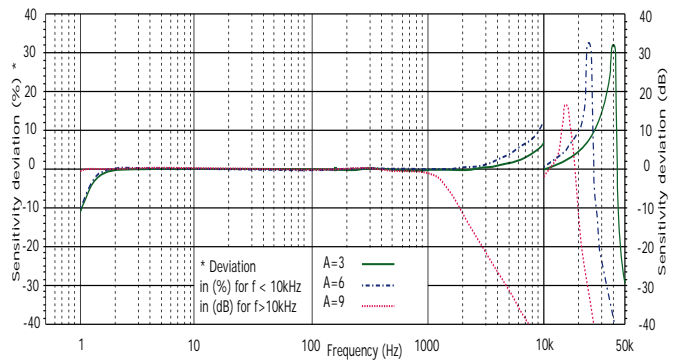


Fig 4a: Frequency response, amplitude

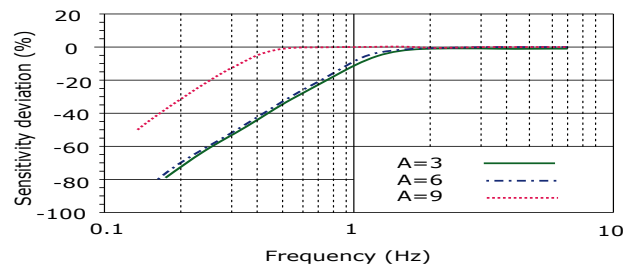


Fig 4b : Low Frequency response, amplitude