

OEM Piezoelectric Accelerometer Model 160

Main Characteristics

- T0-5 eq. Transistor-Style Package
- Small size (9mm), light weight (3 grammes, 0.1 Oz)
- Variety of Sensitivities : 100 mV/g, 11 pC/g, ...
- Variety of transmission : 2-Wire @ICP/@IEPE transmission mode / 3-Wire Voltage output / 2-wire charge output
- Annular shear mode

Competitive advantage

- Low Cost
- Electronic is protected from Overload (Magnet mounting, shock protected)
- life time hermetic sealing warranty (glass seal and laser weld)
- base strain isolation (easier epoxy mounting)
- exceptional bias stability (improved dynamic range)

Description

The piezoelectric accelerometer model 160 uses a solid-state piezoelectric element in the annular shear mode. It is available with 2-wire ICP - IEPE - LIVM Voltage output for easy compatibility with existing piezoelectric accelerometer. 3-wire Voltage output is also available for simplified operation and connectivity to low power data acquisition unit.

Typical applications

The piezoelectric accelerometer model 160 is design for vibration and shock measurements in high-volume and OEM applications. It is well suited for vibration monitoring and machinery protection.

Ordering information model 160.01

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

160.01- AAA - B

AAA : Sensitivity

- I6 : 100 mV/g $\pm 5\%$ / 2-wire ICP-IEPE transmission
- I6D : 100 mV/g $\pm 10\%$ / 2-wire ICP-IEPE transmission
- I6V : 100 mV/g $\pm 20\%$ / 2-wire ICP-IEPE transmission

- I5 : 50 mV/g $\pm 5\%$ / 2-wire ICP-IEPE transmission
- I5D : 50 mV/g $\pm 10\%$ / 2-wire ICP-IEPE transmission
- I5V : 50 mV/g $\pm 20\%$ / 2-wire ICP-IEPE transmission

- I3 : 50 mV/g $\pm 5\%$ / 2-wire ICP-IEPE transmission
- I3D : 50 mV/g $\pm 10\%$ / 2-wire ICP-IEPE transmission
- I3V : 10 mV/g $\pm 20\%$ / 2-wire ICP-IEPE transmission

- V6D : 100 mV/g $\pm 10\%$ / 3-wire voltage output
- V6V : 100 mV/g $\pm 20\%$ / 3-wire voltage output

- V5D : 50 mV/g $\pm 10\%$ / 3-wire voltage output
- V5V : 50 mV/g $\pm 20\%$ / 3-wire voltage output

- V4D : 25 mV/g $\pm 10\%$ / 3-wire voltage output
- V4V : 25 mV/g $\pm 20\%$ / 3-wire voltage output

- P3V: 11 pC/g $\pm 20\%$ / 2 wire charge output
- Available suffix : N, negative polarity

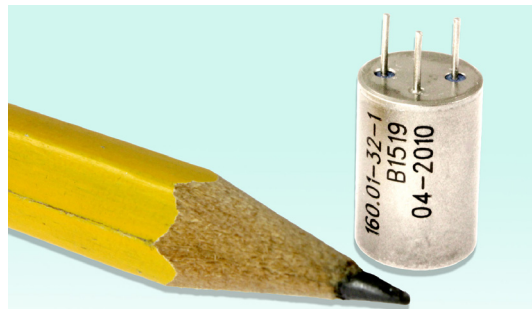
B : Connector / Integral cable

- 1 : Glass seal header, 3-pin

Specifications (24°C)

Dynamic

Frequency response	
AAA=I, V	± 1 dB : 1 to 10 000 Hz
AAA=I, V	± 3 dB : 0.4 to 20 000 Hz



Model 160.01-AAA-1

Mounted Resonant frequency	>42 kHz Nom
Dynamic range	
AAA=I6	80 g pk
AAA=I5	160 g pk
AAA=I3	800 g pk
AAA=V3 (5 VDC supply)	25 g pk
AA=V5 (5 VDC supply)	50 g pk
AA=V4 (5 VDC supply)	100 g pk
AA=P3	Not Applicable
Transverse response sensitivity (20Hz, 5g)	<5%
Temperature response (sensitivity)	+12% at 120 °C
Polarity	(fig. 1) Suffix dependant
Linearity	$\pm 1\%$ Max
Warm up time (Typical)	
AA=I, V	< 2 Sec (Typical)
AA=P3	N/A

Electrical

Output impedance	< 100 Ω
DC output bias	
AAA=I	12 VDC $\pm 2\%$
AAA=V	0.5 x Vsupply $\pm 2\%$
Residual noise (24°C) : AAA=I3	
1 Hz	2000 $\mu\text{g} / \sqrt{\text{Hz}}$
10 Hz	200 $\mu\text{g} / \sqrt{\text{Hz}}$
100 Hz	10 $\mu\text{g} / \sqrt{\text{Hz}}$
1000 Hz	2 $\mu\text{g} / \sqrt{\text{Hz}}$
RMS (2.5 Hz to 25 kHz)	300 μg
Residual noise (24°C) : AAA=I5	
1 Hz	1500 $\mu\text{g} / \sqrt{\text{Hz}}$
10 Hz	60 $\mu\text{g} / \sqrt{\text{Hz}}$
100 Hz	5 $\mu\text{g} / \sqrt{\text{Hz}}$
1000 Hz	2 $\mu\text{g} / \sqrt{\text{Hz}}$
RMS (2.5 Hz to 25 kHz)	300 μg
Residual noise (24°C) : AAA=I6	
0.2 Hz	2000 $\mu\text{g} / \sqrt{\text{Hz}}$
1 Hz	1500 $\mu\text{g} / \sqrt{\text{Hz}}$
10 Hz	30 $\mu\text{g} / \sqrt{\text{Hz}}$
100 Hz	3 $\mu\text{g} / \sqrt{\text{Hz}}$
1000 Hz	1 $\mu\text{g} / \sqrt{\text{Hz}}$
RMS (0.5 Hz to 1 kHz)	150 μg
Residual noise (24°C) : AAA=V4, V5, V6	
1 Hz	200 $\mu\text{g} / \sqrt{\text{Hz}}$
10 Hz	20 $\mu\text{g} / \sqrt{\text{Hz}}$
100 Hz	5 $\mu\text{g} / \sqrt{\text{Hz}}$
1000 Hz	1 $\mu\text{g} / \sqrt{\text{Hz}}$
RMS (2.5 Hz to 25 kHz)	160 μg
Power requirements :	
AAA=IXX (Fig 2a)	Constant current : +2 to +10mA DC
	Voltage : +22 to +28 VDC
Protection, overvoltage	Yes
Protection, reverse polarity	Yes
ESD Protection	> 20V
AAA=VXX (Fig 2b)	Voltage : +3 to +5 VDC
Current draw	1 mA max
Protection, overvoltage	Yes
Protection, reverse polarity	No

ESD Protection none
 AAA=P3V (Fig 2c)..... none

Environmental

Temperature, operating continuous
 AAA= IXX-55 to 120 °C (-65 to 250°F)
 AAA= VXX-55 to 120 °C (-65 to 250 °F)
 AAA=PXX.....-55 to 120 °C (-65 to 250 °F)

Humidity / Enclosure

B=1..... Not affected, hermetically sealed, 1E-8torr.l/s
 Acceleration limit : Shock 5 000g peak
 : Continuous vibration..... 500g peak
 Base strain sensitivity TBD g pk/u strain
 Temp. transient sens. (3Hz, LLF, 20dB/dec) 0.8 mg/°C
 Acoustic sensitivity (164 dBSP) TBD mg
 Electromagnetic sens. (50Hz, 0.03 T)..... TBD g
 Mean time between failure (MTBF)..... 10 Years Nom

Physical

Dimensions

B=1..... Fig. 1a
 Mounting..... Fig 1b
 Design Ceramic, annular shear mode
 Weight
 All..... 3 gr Nom (0.1 Oz)
 Material AISI 316L, DIN 1.4404 (Stainless steel)

Accessories, supplied

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

Drawings

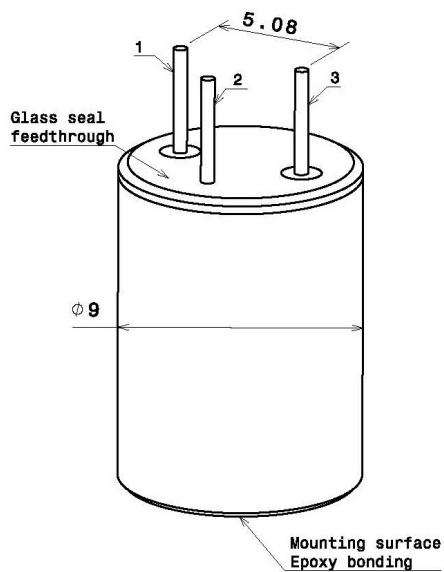


Fig 1a : Outline drawing)

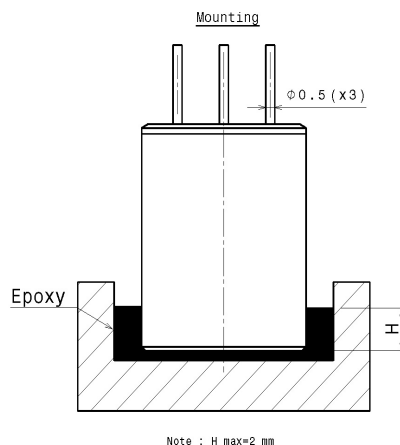


Fig 1b : Mounting drawing

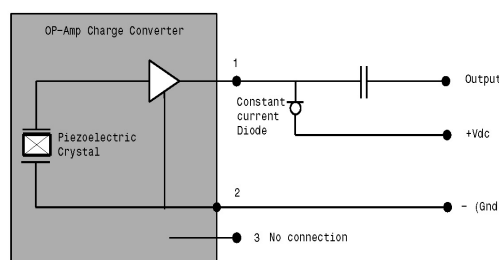


fig 2a : Electrical layout - 2-Wire ICP / IEPE

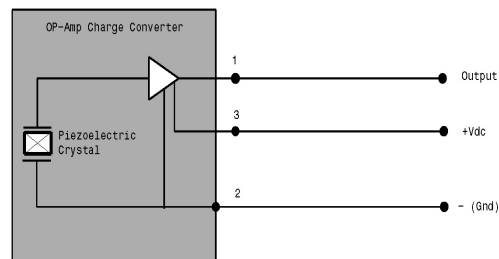


fig 2b : Electrical layout -3 Wire Voltage Output

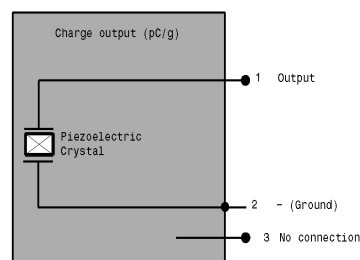


fig 2c : Electrical layout - 2-Wire Charge Output