Low Cost, Embeddable Accelerometers

Ideal for Continuous Vibration Monitoring in High-Volume and Commercial OEM Applications

Highlights

- Choice of Standard TO-5 or TO-8 Transistor-Style Packages
- Choice of Charge Mode Piezoelectric, Voltage Mode ICP®, and 3-Wire Low Power Varieties
- Mountable via Adhesive or Soldering and Choice of Either Integral Cable or Solder Pin Electrical Connections
- Variety of Sensitivities to Accommodate a Wide Variety of Applications
- Broad Bandwidth, High Shock Survivability, Wide Operating Temperature Range, High Resolution, and Large Dynamic Range

Series 660

The Series 660 low cost accelerometers offer an affordable solution for vibration and shock measurements in high-volume and commercial OEM applications. The units are particularly well suited for shock and impact detection of packages or components, as well as bearing and gear mesh vibration measurements in predictive maintenance and condition monitoring requirements. The compact designs may be imbedded into machinery at the OEM level to provide value-added monitoring protection.

The units employ field-proven, solid-state, piezoelectric sensing elements for durability and broadband performance. Choose from either charge mode types, which achieve high operating temperatures or voltage mode ICP® types, with built-in signal conditioning microelectronics, for simplified operation and connectivity to data acquisition and vibration monitoring instrumentation.

As with all instrumentation from IMI, these sensors are complemented with toll-free applications assistance, 24-hour customer service, and are backed by a Total Customer Satisfaction guarantee.

Low Profile TO-5

TO-5

TO-8

Specifications

Package Size	Low Profile TO-5	TO-5	TO-8
2-Wire ICP Configuration			
Primary Model Sensitivity (± 20%)	10 mV/g 1.02 mV/m/s²	100 mV/g 10.2 mV/m/s²	1000 mV/g 102 mV/m/s²
Measurement Range	500 g 5000 m/s²	50 g 500 m/s²	5 g 50 m/s²
Frequency Range (± 3 dB)	0.4 to 10 k Hz	0.32 to 10k Hz	0.13 to 8000 Hz
Resonant Frequency	>30 kHz	>25 kHz	>20 kHz
Broadband Resolution	0.003 g pk	0.0003 g pk	0.00003 g pk
Excitation Voltage	18 to 28 VDC	18 to 28 VDC	18 to 28 VDC
Excitation Constant Current	2 to 20 mA	2 to 20 mA	2 to 20 mA
Output Impedance	<100 ohm	<100 ohm	<100 ohm
Output Bias Voltage	8 to 12 VDC	8 to 12 VDC	8 to 12 VDC
Discharge Time Constant	≥0.4 sec	≥0.5 sec	≥1.2 sec
Settling Time	2 sec	2.5 sec	12 sec
Operating Temperature Range	-65 to +185 °F -54 to +85 °C	-65 to +185 °F -54 to +85 °C	-65 to +185 °F -54 to +85 °C
Weight	0.08 oz 2.2 gm	0.1 oz 3 gm	0.88 oz 25 gm
Other Available Sensitivities	1 mV/g 0.102 mV/m/s²	N/A	100 mV/g, 500 mV/g 10.2 mV/m/s2, 51 mV/m/s²
3-Wire, Low-Power Configuration			
Primary Model Sensitivity (± 20%)	10 mV/g 1.02 mV/m/s²	100 mV/g 10.2 mV/m/s²	1000 mV/g 102 mV/m/s²
Measurement Range *	200 g 2000 m/s²	20 g 200 m/s²	2 g 20 m/s²
Frequency Range (± 3 dB)	0.32 to 10k Hz	0.32 to 10k Hz	0.32 to 8000 Hz
Resonant Frequency	>30 kHz	>25 kHz	>20 kHz
Broadband Resolution	0.003 g pk 0.03 m/s² pk	0.001 g pk 0.01 m/s² pk	0.0003 g pk 0.003 m/s² pk
Excitation Voltage	3 to 5 VDC	3 to 5 VDC	3 to 5 VDC
Current Draw	0.75 mA	0.75 mA	0.75 mA
Output Impedance	< 100 ohm	< 100 ohm	< 100 ohm
Output Bias Voltage (±10%)	0.5 × Excitation Voltage	0.5 × Excitation Voltage	0.5 × Excitation Voltage
Discharge Time Constant	≥0.5 sec	≥0.5 sec	≥0.5 sec
Settling Time	2.5 sec	2.5 sec	15 sec
Operating Temperature Range	-65 to +185 °F -54 to +85 °C	-65 to +185 °F	-65 to +185 °F -54 to +85 °C
Weight	0.08 oz 2.2 gm	0.1 oz 3 gm	0.88 oz 25 gm
Charge Mode Configuration			
Sensitivity (± 20%)	5 pC/g 0.51 pC/m/s²	11 pC/g 1.12 pC/ms²	120 pC/g 12.2 pC/m/s²
Frequency Range (± 3 dB)	10 kHz	10 kHz	8 kHz
Resonant Frequency	>30 kHz	>25 kHz	>20 kHz
Operating Temperature Range	-65 to +185 °F -54 to +85 °C	-65 to +185 °F -54 to +85 °C	-65 to +250 °F -54 to +121 °C
Capacitance	350 pF	350 pF	3600 pF
Weight	0.08 oz 2.2 gm	0.1 oz 3 gm	0.88 oz 25 gm
Common Specifications			
Transverse Sensitivity	≤ 5%	≤ 5%	≤ 5%
Non-Linearity	≤1%	≤1%	≤1%
Temperature Coefficient	0.10 %/°F 0.18 %/°C	0.10 %/°F 0.18 %/°C	0.10 %/°F 0.18 %/°C
Shock Limit	7000 g pk 70k m/s² pk	7000 g pk 70k m/s² pk	6000 g 60k m/s² pk
Housing Material	Stainless Steel	Stainless Steel	Stainless Steel
Mounting	Adhesive or Solder	Adhesive or Solder	Adhesive or Solder
Sealing (welded)	Hermetic	Hermetic	Hermetic
Size	0.36 × 0.26 in 9.1 × 6.6 mm	0.36 × 0.38 in 9.1 × 9.7 mm	0.64 × 0.57 in 16.3 × 14.5 mm

Note:

* Measurement range achieved is dependent upon excitation voltage supplied, i.e.: $\text{Measurement Range} = \frac{(0.5 \times \text{Excitation Voltage}) - 0.5\ \text{V}}{\text{Sensitivity (V/g)}}$

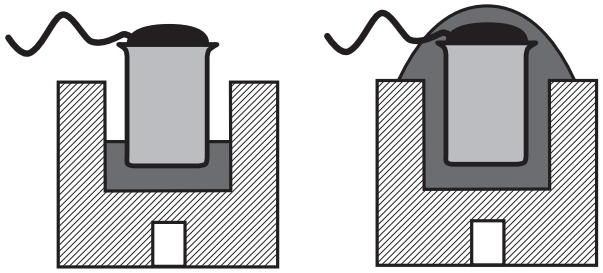
Options:

- Low Output Bias Voltage
- High Temperature Operation to 365 °F (185 °C)
- High Range (less sensitivity)
- Temperature Output Signal

How to Order

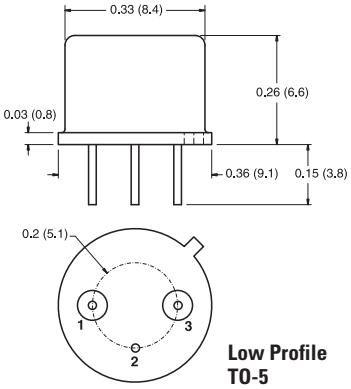
Style						
66	Low Cost, Embeddable Accelerometer					
	Package Size and Sensitivity					
	10	Low-profile TO-5 with 10 mV/g sensitivity				
	16	Low-profile TO-5 with 1 mV/g sensitivity — must select configuration 2A below				
	19	Low-profile TO-5 with 5 pC/g sensitivity — must select configuration 2C below				
	21	TO-5 with 100 mV/g sensitivity				
	29	TO-5 with 11 pC/g sensitivity — must select configuration 2C below				
	31	TO-8 with 100 mV/g sensitivity				
	32	TO-8 with 500 mV/g sensitivity				
	33	TO-8 with 1000 mV/g sensitivity				
	39	TO-8 with 100 pC/g sensitivity — must select configuration 2C below				
		Sensor Configuration and Excitation Scheme				
		2A	2-wire ICP® voltage mode (pwr/sgnl, gnd), current regulated power			
		2C	2-wire charge mode (sgnl, gnd) — for size and sensitivity 19, 29 or 39 only			
		3L	3-wire voltage mode (pwr, sgnl, gnd), low power			
		4T	4-wire voltage mode with temperature output (pwr, sgnl, gnd, temp)			
			Orientation / Polarity			
			PZ	Positive output for acceleration along z-axis (in upward direction when pin mounted)		
			NZ	Negative output for acceleration along z-axis (in upward direction when pin mounted)		
				Electrical Connection		
				1	Header Pins	
				2	Integral 1 ft. (0.3 m) cable	
					Options	
					XX	Overall integral cable length in “XX” ft. (other than standard 1 ft.)
					MXX	Overall integral cable length in “XX” meters (other than standard 0.3 m)
Example						
66	21	2A	PZ	1		Low-cost, TO-5 size, 100 mV.g, 2-wire, ICP accelerometer with positive polarity and header pin connections

Mounting Examples

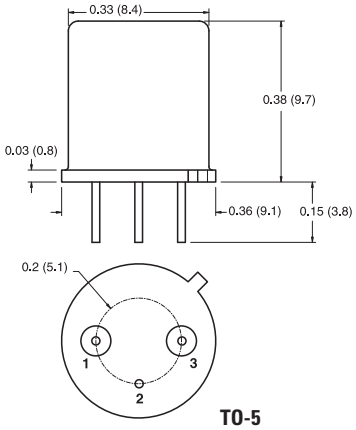


Potted Sensor Installation

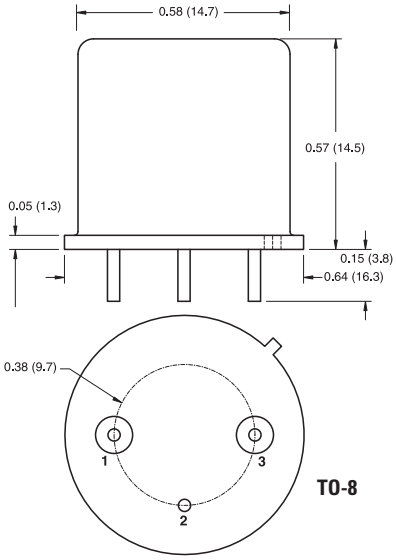
Encapsulated Sensor Installation



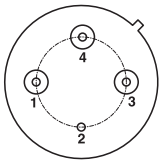
Low Profile TO-5



TO-5

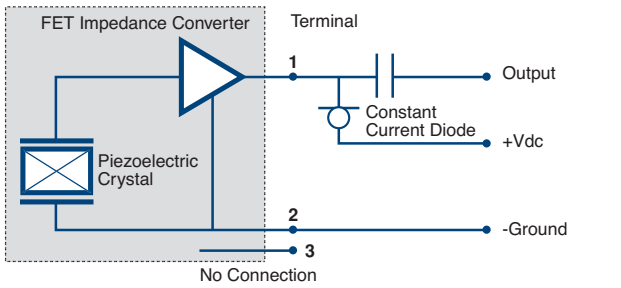


TO-8

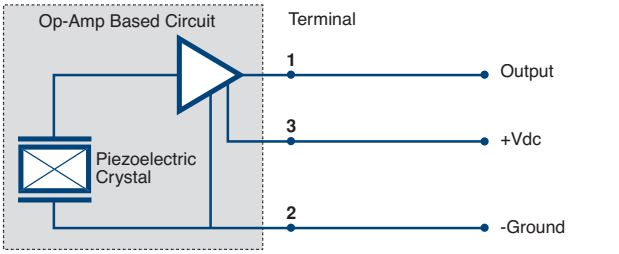


Optional Temperature Output Configuration

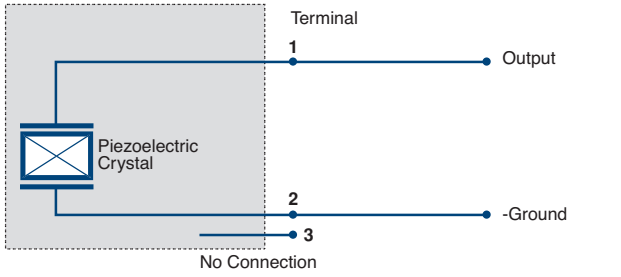
2-Wire ICP Mode



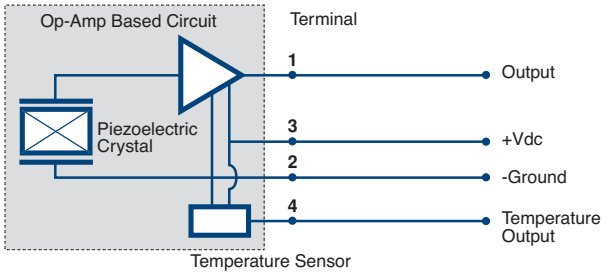
3-Wire Voltage Mode



2-Wire Charge Mode



4-Wire Voltage Mode with Temperature Output



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IMI Sensors designs and manufactures a full line of accelerometers, sensors, vibration switches, vibration transmitters, cables and accessories for predictive maintenance, continuous vibration monitoring, and machinery equipment protection. Products include rugged industrial ICP® accelerometers, 4-20 mA industrial vibration sensors and transmitters for 24/7 monitoring, electronic and mechanical vibration switches, the patented Bearing Fault Detector, high temperature accelerometers to +900 °F (+482 °C), 2-wire Smart Vibration Switch, and the patented Reciprocating Machinery Protector. CE approved and intrinsically safe versions are available for most products.

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