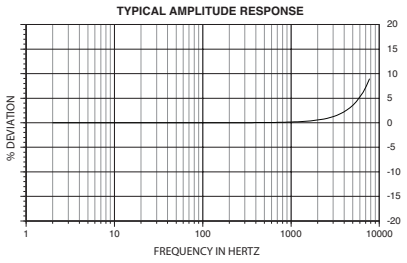
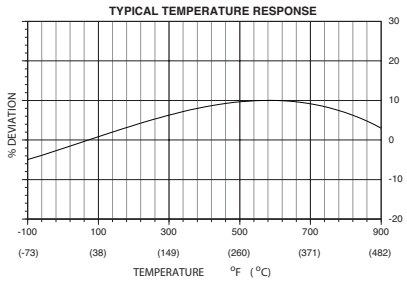
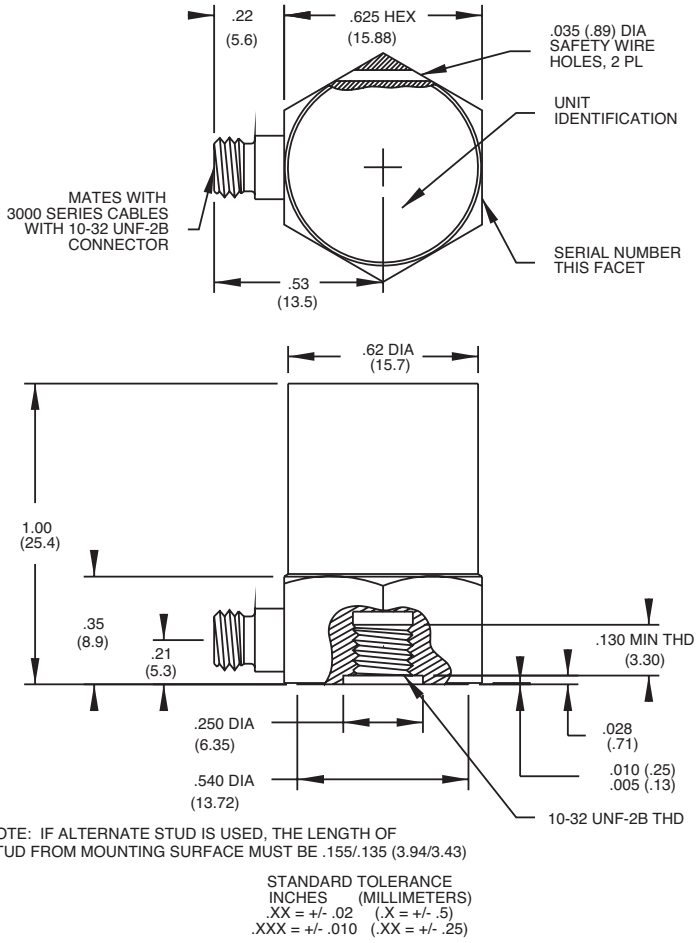
Piezoelectric accelerometer

Model 2276







Key features

- NEW! 2276-R available as replacement sensor
- High temperature operation +900°F (+482°C)
- Radiation hardened
- Inconel construction
- Requires no external power
- Nuclear and high temperature applications

Description

The Meggitt model 2276 is a precision piezoelectric accelerometer for shock and vibration measurement of structures subjected to very high temperatures. It is capable of operation in nuclear environments during the presence of Gamma and Neutron radiation. This accelerometer features a side mounted 10-32 receptacle and hex base construction with a 10-32 or M5 center stud mount. The accelerometer is a self-generating device that requires no external power source for operation.

The 2276 features Meggitt's piezoelectric crystal elements in the compression mode. The unit is designed with mechanical isolation that provides extremely low strain sensitivity (base strain). The unit has special processing to assure accurate data over the temperature range of -65°F to +900°F. The unit is constructed using Inconel, and provides for hermeticity through welding and glass-to-metal fusion at the connector. Signal return is connected to case.

Signal conditioner model 2721B or equivalent is recommended for use with this accelerometer. The 2771C remote charge convertor is also compatible for applications using this high impedance accelerometer.

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Specifications

The following performance specifications conform to ISA-RP-37.2 and are typical values, referenced at +75˚F (+24˚C) and 100 Hz, unless otherwise noted. Calibration data, traceable to National Institute of Standards and Technology (NIST), is supplied.

Dynamic characteristics	**Units**	
Charge sensitivity		
Typical	pC/g	10.0
Minimum	pC/g	9.0
Frequency response		See typical amplitude response
Resonance frequency	kHz	27
Amplitude response [1]		
±5 %	Hz	1 to 5000
±1 dB	Hz	1 to 7000
Temperature response		See typical curve
Transverse sensitivity	%	≤ 3
Amplitude linearity	%	1
Per 1000 g, 0 to 3000 g		
Electrical characteristics		
Output polarity		Acceleration directed into the base of unit produces positive output
Resistance		
Room temperature (typical)	GΩ	1
at +900˚F (+482˚C) [2]	KΩ	≥ 100
Capacitance	pF	660
Grounding		Signal return connected to case
Environmental characteristics		
Temperature range		-67˚F to +900˚F (-55˚C to +482˚C)
Humidity		Hermetically sealed
Sinusoidal vibration limit	g pk	500
Shock limit [3]	g pk	3000
Base strain sensitivity	equiv. g pk/μ strain	0.002
Radiation		
Integrated gamma flux	rad	up to 6.2×10^{10}
Integrated neutron flux	N/cm2	up to 3.7×10^{18}
Physical characteristics		
Dimensions		See outline drawing
Weight	gm (oz)	30 (1.1)
Case material		Inconel
Connector [4]		10-32 coaxial connector
Mounting torque	lbf-in (Nm)	18 (2)
Calibration		
Supplied:		
Frequency response	%	20 Hz to 5000 Hz
	dB	5000 Hz through resonance
Sensitivity	pC/g	
Maximum transverse sensitivity	%	
Mounted resonance frequency	kHz	
Capacitance	pF	

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Accessories

Product	Description	2276	2276-R
Meggitt 50001	Mounting stud, 10-32 to 10-32	Included	Included
Meggitt 3075M6-120	Cable assembly, high temperature, 10ft	Included	Optional
Meggitt EHM464	Hex key wrench	Included	Optional
3090C-120	Cable assembly, for under +500˚F, 10ft	Optional	Optional
Meggitt 50003	Mounting stud, 10-32 to M5	Optional	Optional
30846	Pin retention alignment kit	Optional	Optional
Meggitt 50002	Adaptor stud, 10-32	Optional	Optional
2721B	Charge amplifier	Optional	Optional
2771C	In-line charge convertor	Optional	Optional

Notes

1. Low-end response of the transducer is a function of its associated electronics.
2. Because of low resistance at high temperatures, the signal conditioner must be capable of operating with the specified source resistance.
3. Short duration shock pulses, such as those generated by metal-to-metal impacts, may excite transducer resonance and cause linearity errors. Send for TP290 for more details.
4. Repeated insertion of mating cable may result in a loss of pin retention and intermittent ouput. Use 30846 pin retention alignment kit to bring socket to original shape.