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MEGGITT

DATA SHEET

High Temperature Piezoelectric Accelerometer (HTPE)

Model 2273AM1/2273AM20

01 Description

Meggitt piezoelectric accelerometer Models 2273AM1 and 2273AM20 are specially designed for use in nuclear-reactor-vibration and loose-parts-monitoring systems. The 2273AM1 and 2273AM20 are differentiated only by the location of their connectors, the AM1 being side mounted and the AM20 utilizing a top-mount configuration. The accelerometer is a self-generating device that requires no external power source for operation.

The 2273AM1/AM20 feature Meggitt's crystal to provide flat temperature response over the range of -65°F to +750°F (-55°C to +399°C). The construction provides mechanical isolation of the seismic system from the mounting base, resulting in very low strain sensitivity. The case is made ofInconel and provides hermeticity through welding and glass-to-metal fusion at the connector.

Model number definition:_
2273AM1/2273AM20 = basic model number
2273AM1-R/2273AM20-R = replacement sensor, no accessories

02 Key features and benefits

- High temperature operation (+399°C)
- Radiation-hardened
- Top/side mounted connectors
- Requires no external power

03 Applications

- Test cell vibration measurements
- Reactor and loose parts testing

04 Contact

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DATA SHEET

HIGH TEMPERATURE PE ACCELEROMETER, Model 2273AM1/2273AM20

05 Specifications

The following performance specifications are typical values, referenced at +75°F (+24°C) unless otherwise noted.

Dynamic characteristics	Units	
Charge sensitivity (typical)	pC/g	10
Min/max	pC/g	9/11
Frequency response		See typical amplitude response
Resonance frequency (typical/min)	kHz	27/24
Amplitude response [1]		
± 5%	Hz	20 to 5000
± 1dB	Hz	1 to 7000
Temperature response		See typical curve
2273AM1		
+400°F (+204°C) max/min	%	+10 / 0
+700°F (+371°C) max/min	%	+15 / +52273AM20
+400°F (+204°C) max/min	%	+12 / 0
+750°F (+399°C) max/min	%	+20 / +3
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
2273AM1		
Resistance at +700˚F (+371˚C)	MΩ	≥ 102273AM20
Resistance at +750˚F (+399˚C)	MΩ	≥ 10
Isolation	GΩ	≥ 1
Capacitance	pF	660
Grounding		Signal ground isolated from case

Environmental characteristics			
Temperature range			-67˚F to +750˚F (-55˚C to +399˚C)
Humidity			Hermetically sealed
Sinusoidal vibration shock	g pk	500	
Shock limit [2]	g pk	3000	
Base strain sensitivity	equiv. g pk/ µstrain	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		
2273AM1	gm (oz)	32 (1.1)
2273AM20	gm (oz)	34 (1.4)
Case material		Inconel
Connector		Coaxial receptacle with 10-32 UNF threads
Mounting torque	lbf-in (Nm)	18(2)

Accessories:

SUPPLIED: Model 50001 Mounting stud (hex ID)10-32 to 10-32 / Model 3075M6-ZZZ Cable assembly +900°F (482°C), Hardline/EHM464 Hex key wrench
OPTIONAL: Model 1001-ZZZ Cable assembly, +550˚F (288°C) / Model 3076-ZZZ Cable Assembly +1000°F (538°C), Flexible
OPTIONAL: Model 50003 Mounting stud 10-32 to M5/Model 50002 Mounting stud, 10-32 to 10-32/Model 70019 Mounting Stud 10-32 to ¼-28

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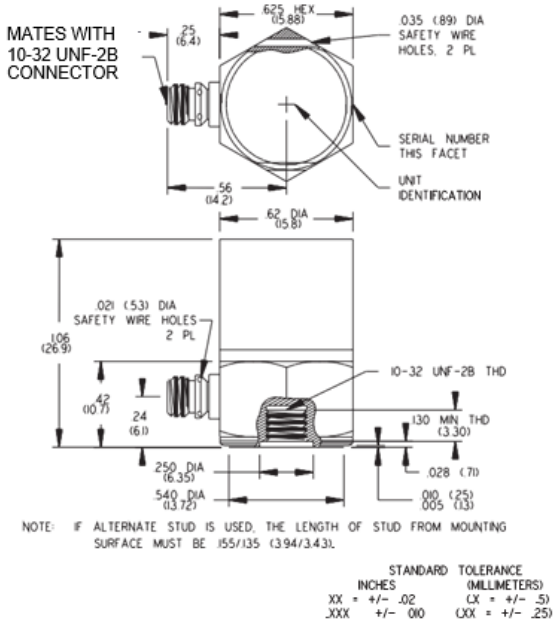
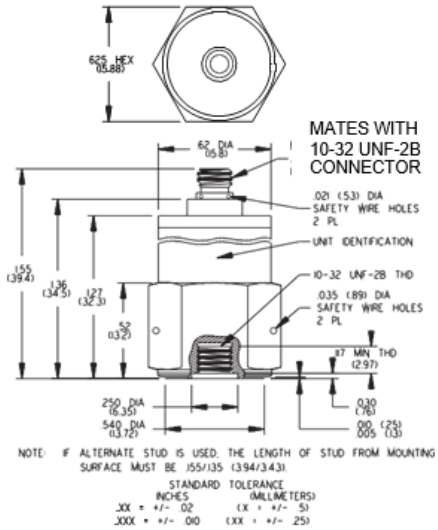
HIGH TEMPERATURE PE ACCELEROMETER, Model 2273AM1/2273AM20

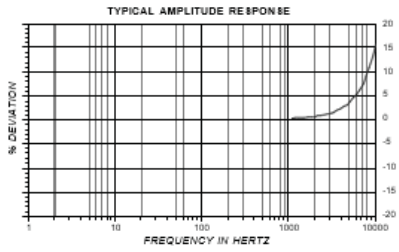
06 Outline details

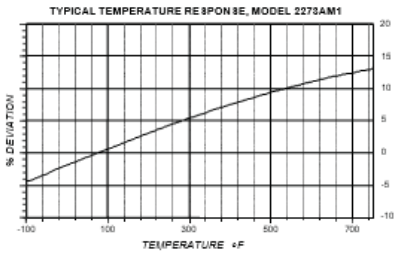


Model 2273AM1



Model 2273AM20





Calibrations supplied

Charge frequency response	%	20 to 5000 Hz
	dB	5000 Hz thru resonance
Charge sensitivity	pC/g	
Maximum transverse sensitivity	%	
Capacitance	pF	

Notes:

1. Low-end response of the transducer is a function of its associated electronics.
2. In shock measurements, minimum pulse duration for halfsine or triangular pulses should exceed 0.2 ms to avoid excessive high frequency ringing.