

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 & 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.

Frequency bandwidth extended from 6kHz to 11.5 kHz at level $\pm 5\%$ and from 12.5 kHz to 20 kHz at level $\pm 3\text{dB}$ when the 2273AM1/2273AM20 is combined with patented remote charge converter (RCC) 1772-6 (Gain of 1) or 1772-6-10 (Gain of 10).

The 2273AM1/AM20 feature Meggitt's crystal to provide flat temperature response over the range of -65°F to $+750^{\circ}\text{F}$ (-55°C to $+399^{\circ}\text{C}$). The construction provides mechanical isolation of the seismic system from the mounting base, resulting in very low strain sensitivity. The case is made of Inconel 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 supplied
2273AM1-US/2273AM20-US = Made in USA

02 Key features and benefits

- High temperature operation ($+399^{\circ}\text{C}$)
- Radiation-hardened
- Top/side mounted connectors
- Requires no external power
- Increase bandwidth with patented remote charge converter

03 Applications

- Test cell vibration measurements
- Reactor and loose parts testing

04 Contact

1-833-HITEMP1
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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]			<u>With 1772-6 or 1772-6-10</u>
± 5%	Hz	20 to 5000	13 to 11500
± 1 dB	Hz	1 to 7000	8 to 14000
± 3 dB	Hz	1 to 12500	3.5 to 20000
Temperature response	See typical curve		
2273AM1			
+400°F (+204°C) max/min	%	+10 / 0	
+700°F (+371°C) max/min	%	+15 / +5	2273AM20
+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	≥ 10	
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 x 10 ¹⁰	
Integrated neutron flux	N/cm ²	Up to 3.7 x 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 3075M6-120 Cable assembly +900°F (482°C), Hardline/EHM464 Hex key wrench

OPTIONAL: Model 1001-ZZZ Cable assembly, +550°F (288°C)

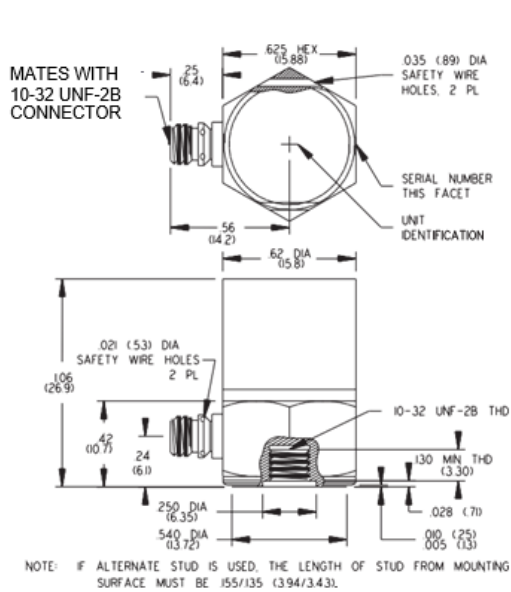
OPTIONAL: Model 50003 Mounting stud 10-32 to M5/Model 50002 Mounting stud, 10-32 to 10-32/Model 70019 Mounting Stud 10-32 to 1/4-28

OPTIONAL: REMOTE CHARGE CONVERTER 1772-6 OR 1772-6-10

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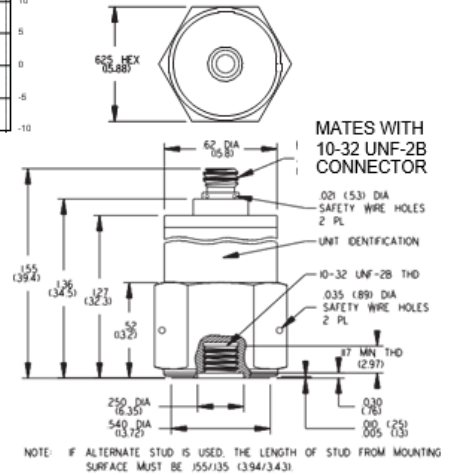
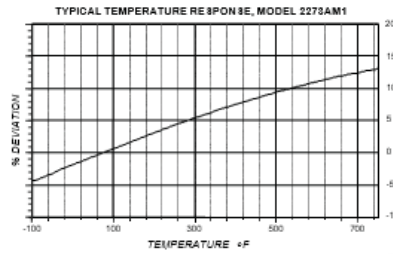
HIGH TEMPERATURE PE ACCELEROMETER, Model 2273AM1/2273AM20

06 Outline details

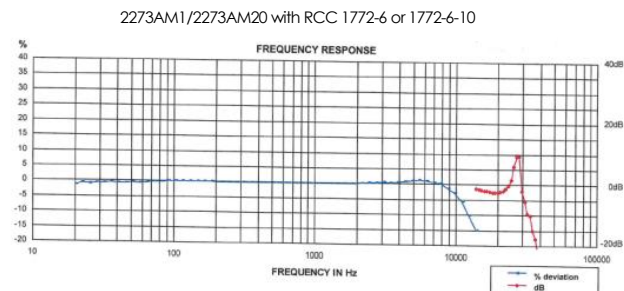
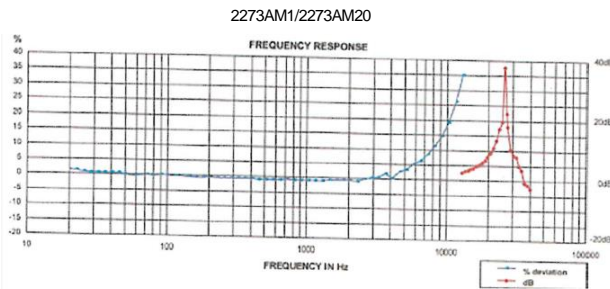


Model 2273AM1

STANDARD TOLERANCE	
INCHES	(MILLIMETERS)
XX = +/- .02	(X = +/- .5)
XXX = +/- .010	(XX = +/- .25)



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.
3. Parts made in the USA are marked with -US at the end of the model number



Continued product improvement necessitates that MEGGITT reserve the right to modify these specifications without notice. MEGGITT maintains a program of constant surveillance over all products to ensure a high level of reliability. This program includes attention to reliability factors during product design, support of stringent Quality Control requirements, and compulsory corrective action procedures. 061124