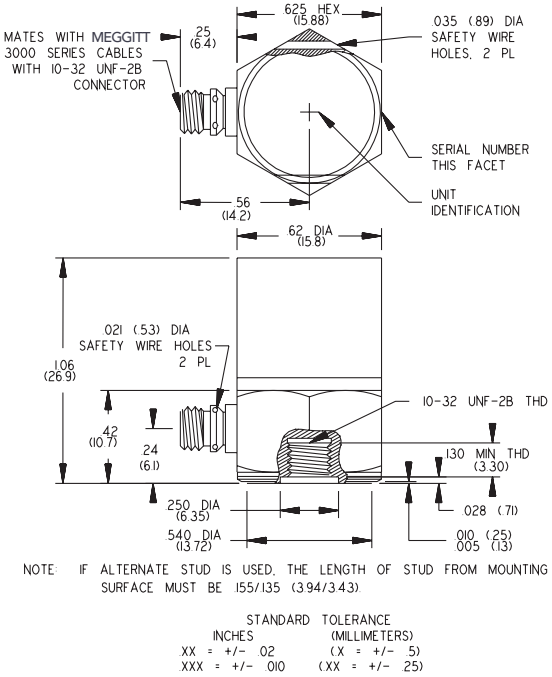
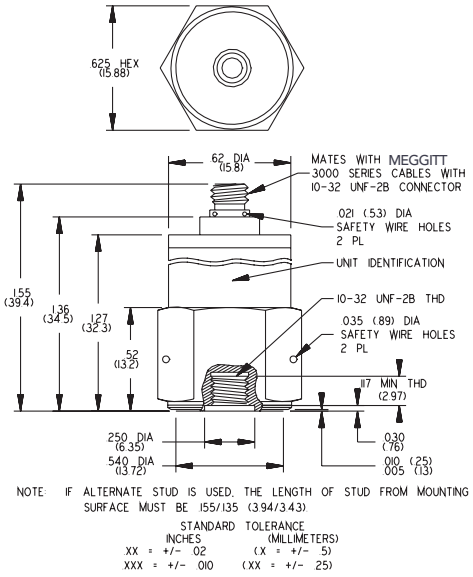
Piezoelectric accelerometer

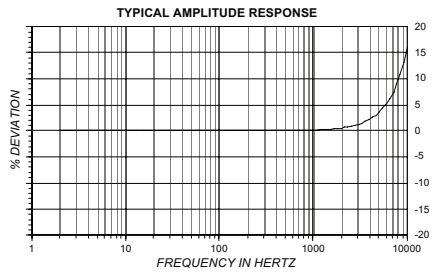
Model 2273AM1 / AM20

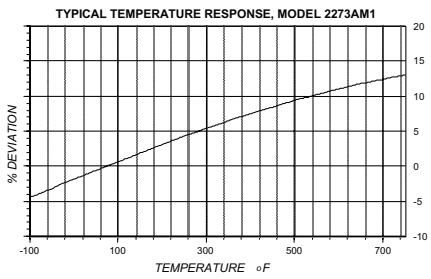


Model 2273AM1



Model 2273AM20





Model 2273AM1

Key features

- NEW! 2273AM1-R and 2273AM20-R available as replacement sensors
- High-temperature operation (+399°C)
- Radiation-hardened
- Top/side-mounted connectors
- Requires no external power
- Reactor and loose-parts testing

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 of Inconel and provides for hermeticity through welding and glass-to-metal fusion at the connector.

Signal conditioner models 133, 2771C, 2721B, 6634C or equivalent are recommended for use with these accelerometers.

Piezoelectric 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
min	pC/g	9
max	pC/g	11
Frequency response		See typical amplitude response
Resonance frequency (typical)	kHz	27
min	kHz	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 / +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
2273AM20		
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 limit	g pk	500
Shock limit [2]	g pk	3000
Base strain sensitivity	equiv. g pk/μ strain	0.002
Radation		
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[3]		Coaxial receptacle with 10-32 UNF threads designed to mate with Meggitt brand 3075M6-XXXX cable assembly or equivalent
Mounting torque	lbf-in (Nm)	18(2)

Piezoelectric accelerometer

Model 2273AM1 / AM20

Specifications con't

Calibration

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

Accessories

Product	Description	AM1/AM20	AM1-R/AM20-R
Meggitt 3075M6-120	Cable assembly, 900°F, 10ft	Included	Optional
Meggitt 50001	Mounting stud, 10-32 to 10-32	Included	Included
Meggitt EHM464	Hex key wrench	Included	Optional
Meggitt 50003	Mounting stud, 10-32 to M5	Optional	Optional
30846	Pin retention alignment kit	Optional	Optional
Meggitt 3075M21-XXX	Armor-braided cable assembly, 900°F	Optional	Optional
3090C-120	Cable assembly for under 500°F, 10ft	Optional	Optional
133	Signal conditioner	Optional	Optional
2771C	In-line charge converter	Optional	Optional
6634C	Vibration amplifier	Optional	Optional
2721B	In-line charge converter	Optional	Optional

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. Repeated insertion of mating cable may result in a loss of pin retention and intermittent output. Use Meggitt 30846 pin retention alignment kit to bring socket to original shape.