

DATA SHEET

Extreme High Temperature Piezoelectric Accelerometer (EHTPE)

Model 6243M1/6243M2



01 Description

Meggitt model 6243M1 and 6243M2 piezoelectric accelerometers are designed specifically for use in extremely high temperature environments such as aircraft and ground-based gas turbines. These accelerometers are designed for continuous operation at +1200°F (+650°C) and intermittent operation (see note 5) up to +1400°F (+760°C). The small size and light weight of these accelerometers facilitate installation in cramped locations with minimal structural support.

6243M1 and 6243M2 incorporate Meggitt's MC2 shear mode crystal. The 6243M1 has its sensitive axis located in line with the mounting screw. The 6243M2 has its sensitive axis located perpendicular to the mounting screw. The sensing elements and integral shield are isolated from the case. The accelerometer features an integral hardline cable of customer specified length, in which the standard length is 120 inches. The cable is triaxial with the termination of the signal positive and negative leads through a 10-32 coaxial receptacle. The connector is designed to operate in an environment up to +900°F (+482°C).

Model number definition:
6243MX-ZZZ
6243MX = basic model number
ZZZ = cable length in inches

02 Key features and benefits

- +1200°F (+650°C) operation
- Integral hardline cable
- Hermetically sealed
- No pyroelectric or thermal velocity spiking
- Single bolt mount
- Ground isolated

03 Applications

- Aircraft and gas turbine engine monitoring
- Test cell vibration measurements
- Nuclear applications

04 Contact

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DATA SHEET

EXTREME HIGH TEMPERATURE PE ACCELEROMETER, Model 6243M1/6243M2

05 Specifications

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

Dynamic characteristics	Units	6243MX
Charge sensitivity		
Typical	pC/g	5.5
Tolerance	pC/g	±0.5
Frequency response		
Resonance frequency		
Typical	kHz	11
Minimum	kHz	9
Typical amplitude response [1][2]		
±5%	Hz	1 to 2000
±10%	Hz	1 to 3000
±3dB	Hz	1 to 6000
Temperature response		See typical curve
+1200°F (650°C) max/min	%	±15
Transverse sensitivity	%	≤5
Amplitude linearity per 500g, 0 to 2000 g	%	1

Electrical characteristics	Acceleration in direction of arrow marked on unit produces positive output	
Output polarity		
Resistance		
Pin to pin at 1200°F [3]	kΩ	≥10
Isolation, pin to case, at 1200°F	kΩ	≥500
Hardline cable, two places at 1200°F (650°C)	kΩ-ft	100
Capacitance		
Transducer, excluding hardline cable	pF	50
Hardline cable, center conductor to inner shield	pF/ft (pF/m)	100 (328)
Dielectric strength	V	500
Grounding		Signal return isolated from case

Environmental characteristics		
Temperature range		
Transducer/hardline cable, continuous [4]	°F (°C)	-65 to +1200 (-55 to +650)
Transducer/hardline cable, intermittent [5]	°F (°C)	-65 to +1400 (-55 to +760)
Connector	°F (°C)	-65 to +900 (-55 to +482)
Humidity		Hermetically sealed
Sinusoidal vibration limit	g	500
Shock limit	g	2000

Physical characteristics		
Dimensions		See outline detail
Weight excluding cable	grams (oz)	30 (1.1)
Case material		Inconel
Hardline cable		Triaxial, 0.095 inch (2.41 mm) diameter, mineral insulated hardline
Cable minimum bend radius	Inches	0.25
Connector		10-32 coaxial
Mounting torque	lbf-in (Nm)	18 (2)

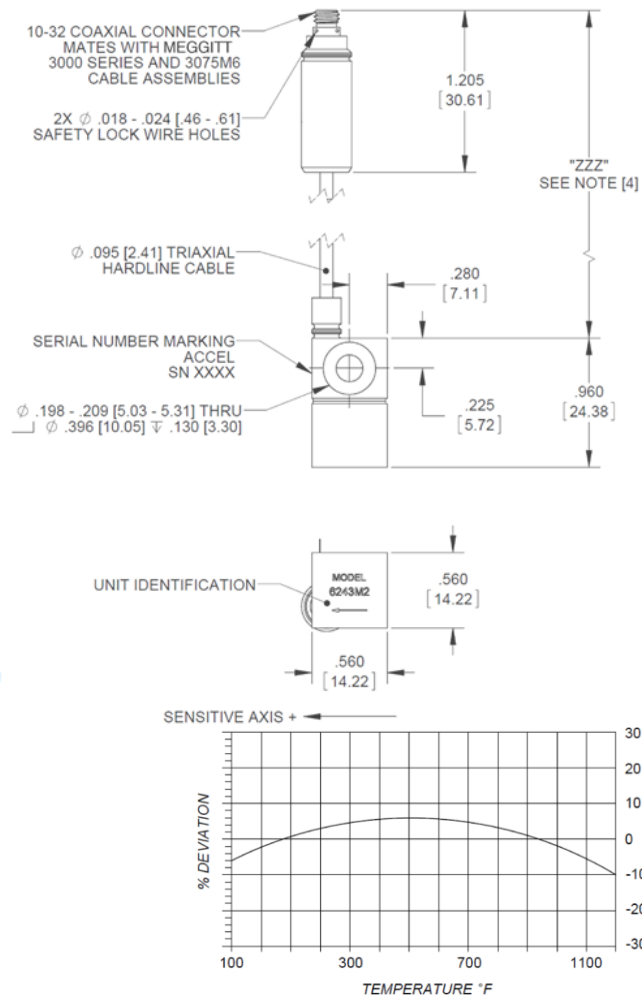
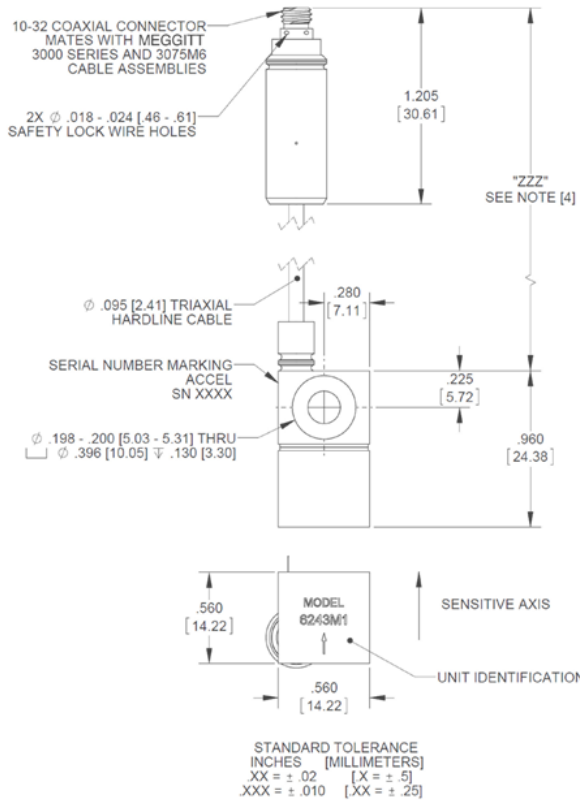
Calibration data supplied		
Charge sensitivity	pC/g	
Frequency response	%	50 to 2000 Hz
Transverse sensitivity	%	
Capacitance	pF	

Accessories:
 SUPPLIED: EH471 MOUNTING SCREW, 10-32 X .75 in, 12 PT
 OPTIONAL: Model 1001-ZZZ Cable assembly, +550°F (288°C) /Model 3075M6-ZZZ [+900°F (+482°C) Hardline] /Model 3076-ZZZ [+1000°F (+538°C) Flexible]
 OPTIONAL: Model 1772-1 Remote charge converter
 OPTIONAL: Thermal Isolator Pad EM3241, EH875 Mounting Screw [reduces temp 200°F (93°C) for approximately 30 minutes]

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06 Outline details



Typical Charge Deviation over temperature

Note:

1. Frequency response is controlled by the resonance characteristics of the transducer. Estimated calibration errors are $\pm 1.5\%$ to 900 Hz and 2.5% from 900 Hz to 5000 Hz.
2. Low-end response of the transducer is a function of its associated electronics.
3. The electrical resistance of piezoelectric materials decreases with an increase in temperature and can approach 10 000 Ω at +1200°F (+650°C).
4. For cable lengths of less than 12 inches (0.30 m), the maximum operating temperature is +900°F (+482°C).
5. Intermittent temperature is defined as 5 minutes over a 30 minute period.



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, the support of stringent Quality Control requirements, and compulsory corrective action procedures. 010121