

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.

Frequency bandwidth extended from 2 kHz to 5 kHz at level $\pm 5\%$ and from 6 kHz to 8 kHz at level $\pm 3\text{dB}$ when the 6243M1/6243M2 are combined with patented remote charge converter (RCC) 1772-1.

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
6243MX-ZZZ-US = Made in the USA

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
- RoHS compliant
- Increased bandwidth with patented remote charge converter

03 Applications

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

04 Contact

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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]			<u>With 1772-1</u>
±5%	Hz	1 to 2000	≤3 to 5000
±10%	Hz	1 to 3000	≤8 to 6000
±3dB	Hz	1 to 6000	<3.5 to 8000
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

Output polarity	Acceleration in direction of arrow marked on unit produces positive output		
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/3075M6-ZZZ-US [+900°F (+482°C) Hardline] /Model 3076A-ZZZ [+1000°F (+538°C) Flexible]

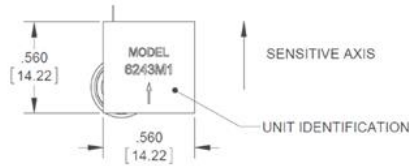
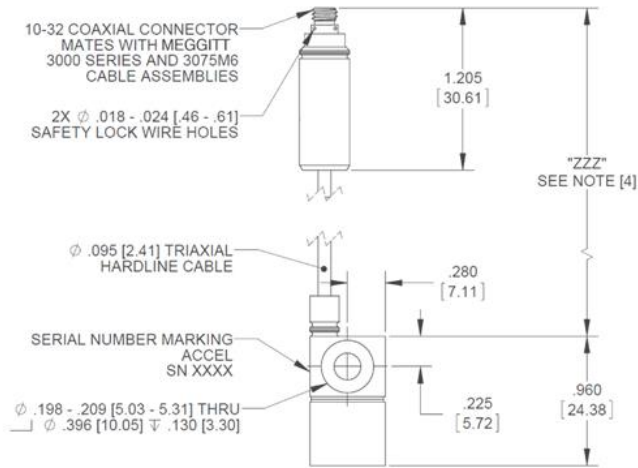
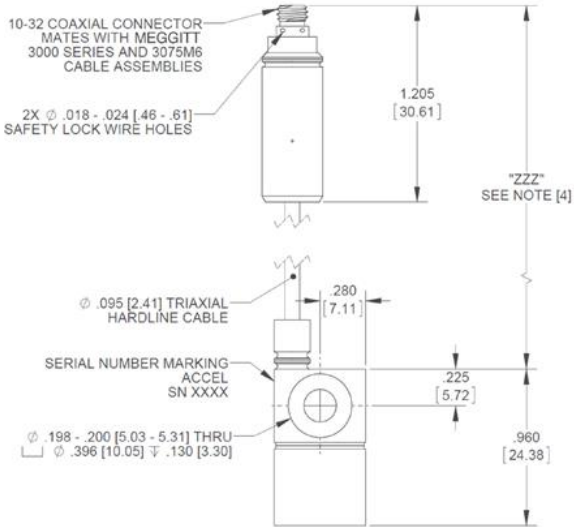
OPTIONAL: Model 1772-1 Remote charge converter (RCC)

OPTIONAL: Thermal Isolator Pad 47091, EH875 Mounting Screw [reduces temp 200°F (93°C) for approximately 30 minutes]

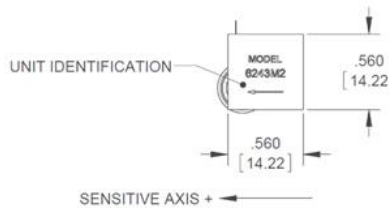
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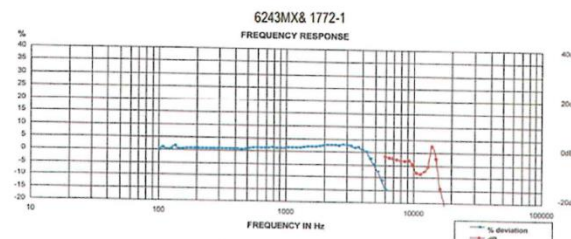
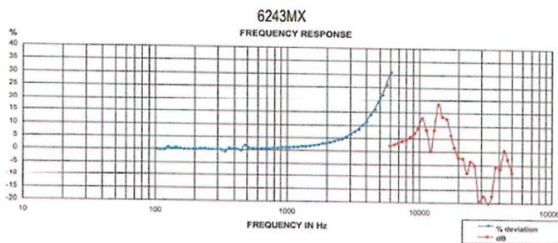
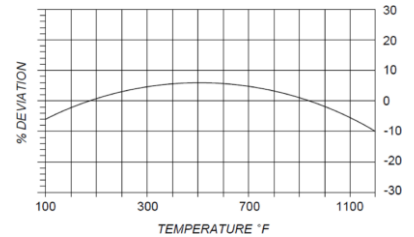
06 Outline details



STANDARD TOLERANCE
INCHES [MILLIMETERS]
XX = \pm .02 [X = \pm .5]
XXX = \pm .010 [XX = \pm .25]



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Notes:

1. Frequency response of the 6243M1/M2 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 $10\ 000\ \Omega$ at $+1200^\circ\text{F}$ ($+650^\circ\text{C}$).
4. For cable lengths of less than 12 inches (0.30 m), the maximum operating temperature is $+900^\circ\text{F}$ ($+482^\circ\text{C}$).
5. Intermittent temperature is defined as 5 minutes over a 30 minute period.
6. Parts made in the USA are marked with -US after 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. 053024