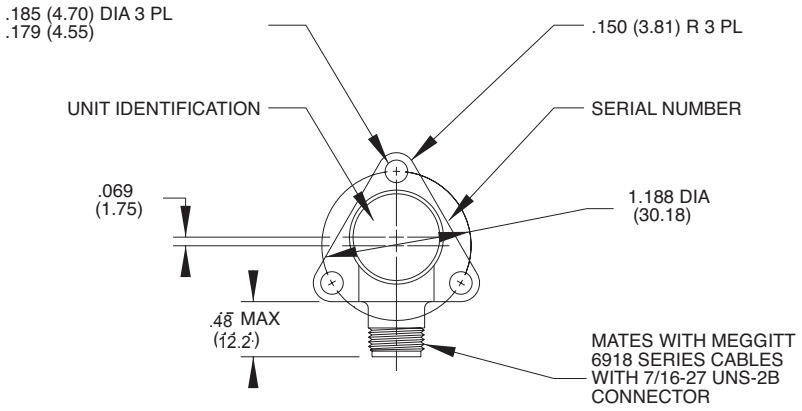
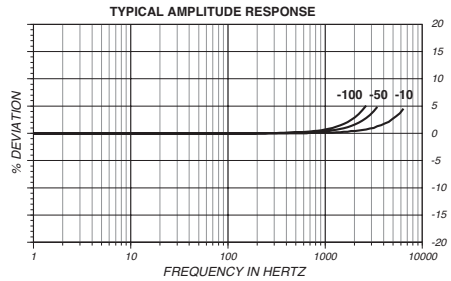
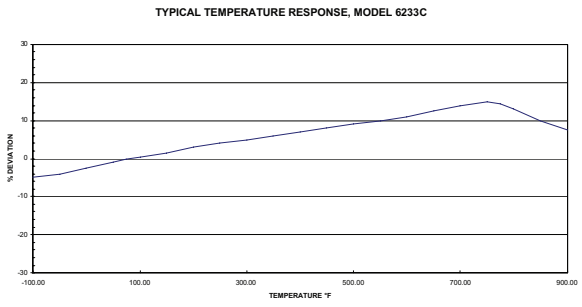
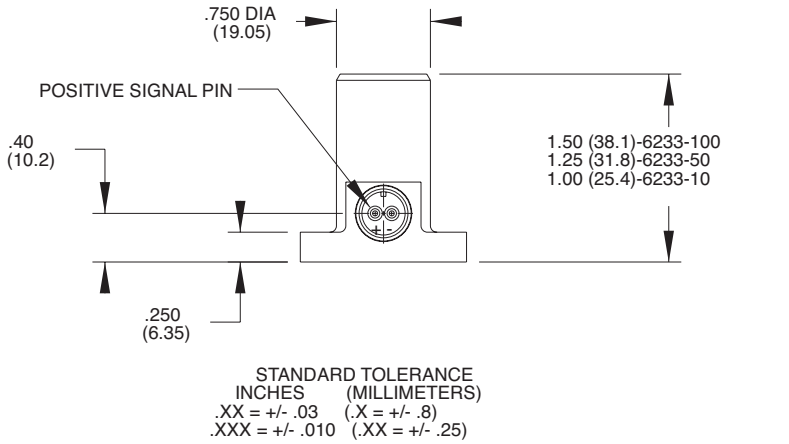
Piezoelectric accelerometer

Model 6233C -10, -50, -100









STANDARD TOLERANCE

INCHES	(MILLIMETERS)
.XX = +/- .03	(.X = +/- .8)
.XXX = +/- .010	(.XX = +/- .25)

Key features

- 10, 50 or 100 pC/g sensitivity
- +900°F (+482°C) operation
- Gas turbine monitoring
- Ground isolated
- Balanced differential output

Description

Model 6233C series piezoelectric accelerometers are designed for high temperature vibration measurement of gas turbine engines. The unit features high sensitivity, ruggedized connector, and ARINC 3 point mounting. 6233C is designed for continuous operation to +900°F with long Mean Time Between Failure (MTBF). The accelerometer is a self-generating device that requires no external power source for operation.

6233C incorporates Meggitt's crystal material to provide high output, excellent temperature stability, and wide operational bandwidth. With such high temperatures involved, this accelerometer requires the use of a charge amplifier or remote charge convertor which is designed to accept a 100 kΩ source resistance. 6233C provides a balanced differential output isolated from case ground. 6233C is available in standard ranges of 10, 50 and 100 pC/g and is designed for use with models 6918M30 shielded hardline cable or when temperature permits 6917B/D softline cable assembly.

Signal conditioner models 2777A, 6634C or equivalent are recommended for use with this high impedance 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), 24 Vdc supply, 4 mA, and 100 Hz, unless otherwise noted. Calibration data, traceable to National Institute of Standards and Technology (NIST), is supplied.

Dynamic characteristics	**Units**	**-10**	**-50**	**-100**
Charge sensitivity (typical)	pC/g	10	50	100
minimum	pC/g	9.5	47.5	95
maximum	pC/g	10.5	52.5	105
Frequency response			See typical amplitude response	
Resonance frequency [1] (typical)	kHz	31	16	12
minimum	kHz	28	14	10
Amplitude response [2]				
±5%	Hz	10 to 5000	10 to 2500	10 to 2000
±10% (reference)	Hz	1 to 9000	1 to 4500	1 to 4000
±1dB (reference)	Hz	1 to 10,000	0.1 to 5000	0.1 to 4500
At 10,000 Hz (reference)	db	1.2	5	8
Temperature response			See typical curve	
-67°F to +900°F (-55°C to +482°C) max/min	%		15% max over temperature range	
Transverse sensitivity	%	≤ 5	≤ 5	≤ 5
Amplitude linearity (up to vibration limit)	%	1/500 g	1/500 g	1/250 g
Electrical characteristics				
Output polarity		Acceleration directed into base of unit produces positive output at left receptacle pin (looking into receptacle)		
Resistance (between pins)				
Room temperature (typical)	GΩ	1	1	1
at +900°F (+482°C)	KΩ	≥ 100	≥ 100	≥ 100
Isolation (pin to case)	MΩ	≥ 100	≥ 100	≥ 100
at +900°F (+482°C)	MΩ	≥ 10	≥ 10	≥ 10
Capacitance	pF	725	1350	2300
unbalance between pins	pF	≤ 2	≤ 2	≤ 2
Grounding			Signal return isolated from case	
Environmental characteristics				
Temperature range			-67°F to +900°F (-55°C to +482°C)	
Humidity			Hermetically sealed	
Sinusoidal vibration limit	g pk	1000	1000	500
Shock limit	g pk	2000	2000	1000
Base strain sensitivity	equiv. g pk /μ strain	0.002	0.0024	0.002
Thermal transient sensitivity [3]	equiv. g pk /°F (/°C)	0.10 (0.18)	0.05 (0.09)	0.03 (0.05)
Radiation				
Integrated Gamma Flux, max	rad		6.2×10^{10}	
Integrated Neutron Flux, max	Neutron/cm^2		3.7×10^{18}	
Physical characteristics				
Dimensions			See outline drawing	
Weight	oz (gm)	≤ 2.6 (75)	≤ 3.8 (110)	≤ 3.8 (110)
Case material			Inconel	
Connector		Two pin receptacle designed to mate with Meggitt 6918M30 and 6917B/D cable assemblies when temperature permits.		
Mounting torque	lbf-in (Nm)	14 (1.6)	14 (1.6)	14 (1.6)
Supplied calibration				
Charge frequency response				
6233C-10	%		50 to 4000 Hz	
	dB		4000 Hz through resonance	
6233C-50	%		50 to 2500 Hz	
	dB		2500 Hz through resonance	
6233C-100	%		50 to 2000 Hz	
	dB		2000 Hz through resonance	
Charge sensitivity	pC/g			
Maximum transverse sensitivity	%			
Capacitance	pF			

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Accessories

Product	Description	6233C -10, -50, -100
Meggitt EH534 (QTY 3)	Screw, socket cap, 8-32 x 12	Included
Meggitt EHM438	Cap, protective	Included
Meggitt 6918M30-XXX	Cable assembly (+900°F)	Optional
6917B-XXX	Cable assembly (500°F)	Optional
6917D-XXX	Cable assembly (550°F)	Optional
2777A	Signal conditioner	Optional
6634C [4]	Signal conditioner	Optional

Notes

1. On the -10, there is a cover resonance at ~21 kHz.
2. Low-end response of the transducer is a function of the associated electronics.
3. With 1-Hz high-pass filter.
4. Input resistance at high temperature may not be sufficient when using this signal conditioner.