

Embedded IEPE accelerometer



Description

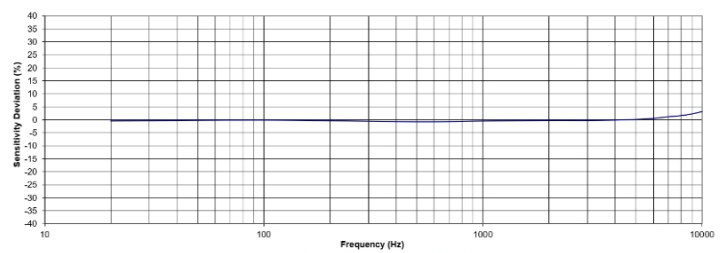
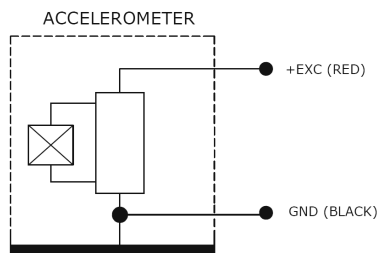
Model 548A is an IEPE embedded accelerometer permitting simultaneous shock and vibration measurements. 548A features an annular shear ceramic crystal which exhibits excellent output stability over time. The accelerometer incorporates an internal circuit in a two-wire IEPE system which transmits its low impedance voltage output through the same cable that supplies the constant current power. Signal ground is connected to the outer case of the unit. Isolated mounting washer or housing are available. Polarity inversion protection for the amplify circuit is inherent in the circuit design. The stainless-steel construction provides a lightweight hermetic housing. Two wire lead cable are convenient for structure assembly and electrical connection. Compact columnar configuration is fit with most of the impact testing device. The 548A provides wide frequency response, which is ideal for dynamic vibration and shock measurement especially for lightweight structures.

Features

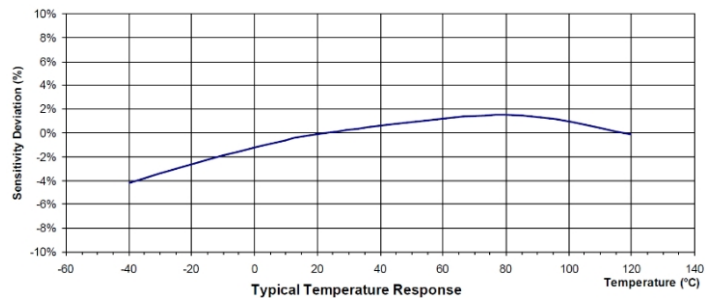
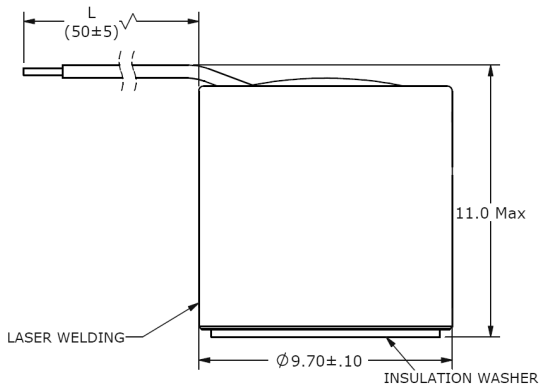
- Miniature Size
- Adhesive mounting
- Hermetic seal
- Annular shear mode
- Wide frequency response
- Outstanding resolution

Application

- Vibration testing
- Machine health monitoring
- Embedded device
- Industrial IoT
- Wireless device



Typical Frequency Response



Typical Temperature Response

Specification

Typical at +24°C (+75°F), 24Vdc, 4 mA and 100Hz, unless otherwise stated.

Performance

Measurement Range	50	200	500	1000	g
Sensitivity ±10%	100	20	10	5	mV/g
Frequency Range ±5%	1-7000	1-7000	1-7000	1-7000	Hz
Frequency Range ±3dB	0.5-20000	0.5-20000	0.5-20000	0.5-20000	Hz
Resonant Frequency	38	38	38	38	kHz
Transverse Sensitivity	<5	<5	<5	<5	%
Broadband Resolution	0.0005	0.0008	0.0012	0.0012	Equiv. g RMS
Non-Linearity	±1	±1	±1	±1	%
Shock Limit	±5000	±5000	±5000	±5000	g pk

Environmental

Temperature Range	-50-125	-50-125	-50-125	-50-125	°C
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Electrical

Bias Voltage (Room Temp.)	8-12	8-12	8-12	8-12	Vdc
Bias Voltage (-50-125) °C	6-13	6-13	6-13	6-13	Vdc
Output Impedance	<100	<100	<100	<100	Ω
Full Scale Output Voltage	±5	±5	±5	±5	V
Insulation Resistance	>100	>100	>100	>100	MΩ
Supply Voltage	18-30	18-30	18-30	18-30	VDC
Supply Current	2 to 10	2 to 10	2 to 10	2 to 10	mA
Grounding	Signal return connected to case				
Ground insulation	By insulation washer				

Physical

Weight	4	4	4	4	gm
Sensing Element	Ceramic	Ceramic	Ceramic	Ceramic	
Sensing Geometry	Shear	Shear	Shear	Shear	
Housing Material	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	
Sealing	Welded Hermetic	Welded Hermetic	Welded Hermetic	Welded Hermetic	

Accessories

Calibration certificate included.

Part Number	Description	Availability
PM0125	Insulation washer	Included
IN-03	3 channels IEPE signal conditioner	Optional
IN-91	Portable vibration analyzer	Optional

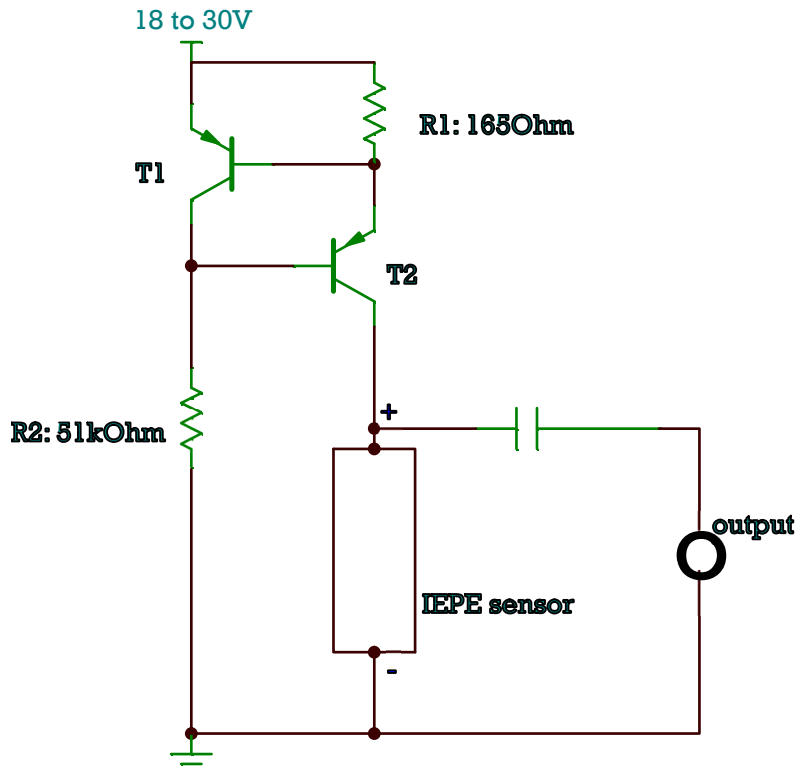
Circuit Schematic for IEPE Sensors

IEPE type sensors require a constant current source for proper operation. Various methods can be used to provide constant current. The circuit below is recommended to provide 4 mA constant current at room temperature for powering IEPE sensors. The capacitor at "Sensor +" AC coupled the output signal, blocking the DC voltage. The current temperature coefficient is about to 0.25%/deg C.

T1 and T2 can be most of PNP type transistor, such as 3906, 9012 etc.

R1: 165 ohm, sets the constant current level, Decreasing the value will increase the current, and vice versa.

R2: 51k ohm typical. Precision is not critical.



Ordering information

548	A	-	50	-	0.05
Model	Output signal	-	Range	-	Cable length in meter
548	A=IEPE output	-	50=50g 100=100g 500=500g 1000=1000g	-	0.05=0.05meter=50mm

