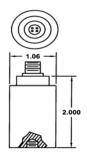
Columbia Research Laboratories, Inc.

Integrated Accelerometers

Model 947M4 Model 947M5 Model 947M6

- ***Seismic Sensors**
- ***Low Impedance Output**
- *Choice of Sensitivities
- *Electrical Isolation
- *Hermetically Sealed
- *Battery Power (+12 VDC)





Output Connector Pin Functions:

Pin A + DC Power Pin B Common Pin C Signal Out Pin D Common

Accessories Supplied:

- (1) Mating Connector (PC06-8-4S)
- (1) 1/4-28 x 0.500"L Mounting Stud
- (1) Hardwood Storage Case
- (1) Standard Calibration Data
- (1) Certificate of Calibration Traceable to N.I.S.T.

Columbia Models 947M4, 947M5 and 947M6 Piezoelectric Accelerometers provide an electrical output of 0.5 volt per g, 1 volt per g, and 2 volts per g respectively over a frequency band of 0.1 Hz to 1500 Hz. They are designed for measurement of the low level, low frequency signals encountered in seismic studies.

The sensors incorporate a 4-pin connector for ease of installation or may be supplied with choice of optional cable assemblies. Internal electrical isolation minimizes ground loop problems from noise currents. The Series 947 is designed to operate from DC power sources ranging from 10 to 30 VDC. The low power requirement allows operation from battery sources for portable or remote applications. *Consult the factory for customized versions of this sensor.*

Specifications

Voltage Sensitivity1 500 mv/g +/-10%	Transfer / Electrical	947M4	947M5	947M6
## Frequency Linearity2 ## I dB Max ## 0.01 Hz To 1500 Hz Phase Shift 6 Deg Max @ 2.5 Hz Transverse Sensitivity ## 6 Max Amplitude Linearity ## 1-1.0% (BFSL) Electrical Noise 0.0003 g Equiv., Nom. Avg Temp Coeff of Sensitivity 0.05 % / Deg F Output Bias Voltage 75 Ohms Max. Isolation Resistance 100M Ohm Min., 50 VDC Power Requirements ## 100 g Max. ## 100 g Ma	Voltage Sensitivity ¹	500 mv/g +/-10%	1,000 mv/g +/-10%	2,000 mv/g +/-10%
Description	Vibration Range	+/-5.0 g Max.	+/-2.5 g Max.	+/-1.75 g Max.
Phase Shift 6 Deg Max @ 2.5 Hz Transverse Sensitivity 6% Max Amplitude Linearity +/-1.0% (BFSL) Electrical Noise 0.0003 g Equiv., Nom. Avg Temp Coeff of Sensitivity 0.05 % / Deg F Output Bias Voltage 5.0 +/-1 VDC Output Impedance 75 Ohms Max. Isolation Resistance 100M Ohm Min., 50 VDC Power Requirements 12 VDC @ 4.0 mA, Nom. Environmental 50 g Max (Sine) Shock Limit 100 g Max. Temperature Range -40 To +250 Deg F (-40 To +121 Deg C) 0 To 100% R.H. Humidity³ 0.005 g/UE Equiv, Typical Base Strain Sensitivity 0.005 g (Equiv, Typical Electromagnetic Sensitivity 0.005 g (Equiv, Typical Physical Configuration Single-Ended Compression Size 1.060 In. Dia. x 2.000 In. H (27.0 mm Dia x 50.0 mm H) Weight 6.0 Oz (170 Gm) Case Material 18-8 Stainless Steel Electrical Interface PC02A-8-4P or Equiv.	Frequency Linearity ²	+/-1 dB Max		
Transverse Sensitivity 6% Max Amplitude Linearity +/-1.0% (BFSL) Electrical Noise 0.0003 g Equiv., Nom. Avg Temp Coeff of Sensitivity 0.05 % / Deg F Output Bias Voltage 5.0 +/-1 VDC Output Impedance 75 Ohms Max. Isolation Resistance 100M Ohm Min., 50 VDC Power Requirements 12 VDC @ 4.0 mA, Nom. Environmental 50 g Max (Sine) Shock Limit 100 g Max. Temperature Range -40 To +250 Deg F (-40 To +121 Deg C) Humidity³ 0 To 100% R.H. Base Strain Sensitivity 0.005 g/uE Equiv / Typical Electromagnetic Sensitivity 0.005 g (Equiv / 100 Gauss) Acoustic Sensitivity 0.02 g RMS (Equiv @ 124 dB SPL) Physical Single-Ended Compression Size 1.060 In. Dia. x 2.000 In. H (27.0 mm Dia x 50.0 mm H) Weight 6.0 Oz (170 Gm) Case Material 18-8 Stainless Steel Electrical Interface PC02A-8-4P or Equiv.		1.1		
### Amplitude Linearity ### -1-0% (BFSL) Electrical Noise 0.0003 g Equiv., Nom. Avg Temp Coeff of Sensitivity 0.05 % / Deg F Output Bias Voltage 5.0 +/-1 VDC Output Impedance 75 Ohms Max. Isolation Resistance 100M Ohm Min., 50 VDC Power Requirements 12 VDC @ 4.0 mA, Nom. ###################################	Phase Shift	6 Deg Max @ 2.5 Hz		
Electrical Noise Avg Temp Coeff of Sensitivity Output Bias Voltage Output Impedance To Ohms Max. Isolation Resistance Power Requirements In the standard of the standar	Transverse Sensitivity	5.11 - 5		
Avg Temp Coeff of Sensitivity Output Bias Voltage 5.0 +/-1 VDC Output Impedance 75 Ohms Max. Isolation Resistance 100M Ohm Min., 50 VDC Power Requirements 12 VDC @ 4.0 mA, Nom. Environmental Vibration Limit 50 g Max (Sine) Shock Limit 100 g Max. Temperature Range -40 To +250 Deg F (-40 To +121 Deg C) Humidity³ 0 To 100% R.H. Base Strain Sensitivity 0.005 g/uE Equiv, Typical Electromagnetic Sensitivity 0.005 g (Equiv / 100 Gauss) Acoustic Sensitivity 0.02 g RMS (Equiv @ 124 dB SPL) Physical Configuration Single-Ended Compression Size 1.060 In. Dia. x 2.000 In. H (27.0 mm Dia x 50.0 mm H) Weight 6.0 Oz (170 Gm) Case Material Electrical Interface PC02A-8-4P or Equiv.	Amplitude Linearity	+/-1.0% (BFSL)		
Output Bias Voltage Output Impedance 75 Ohms Max. Isolation Resistance 100M Ohm Min., 50 VDC Power Requirements 12 VDC @ 4.0 mA, Nom. Environmental Vibration Limit 50 g Max (Sine) Shock Limit 100 g Max. Temperature Range -40 To +250 Deg F (-40 To +121 Deg C) Humidity³ 0 To 100% R.H. Base Strain Sensitivity 0.005 g/uE Equiv, Typical Electromagnetic Sensitivity 0.005 g (Equiv / 100 Gauss) Acoustic Sensitivity 0.02 g RMS (Equiv @ 124 dB SPL) Physical Configuration Single-Ended Compression Size 1.060 In. Dia. x 2.000 In. H (27.0 mm Dia x 50.0 mm H) Weight 6.0 Oz (170 Gm) Case Material Electrical Interface PC02A-8-4P or Equiv.	Electrical Noise	0.0003 g Equiv., Nom.		
Output Impedance Isolation Resistance Power Requirements 12 VDC @ 4.0 mA, Nom. Environmental Vibration Limit Shock Limit 100 g Max. Temperature Range -40 To +250 Deg F (-40 To +121 Deg C) Humidity³ 0 To 100% R.H. Base Strain Sensitivity 0.005 g/uE Equiv, Typical Electromagnetic Sensitivity 0.005 g (Equiv / 100 Gauss) Acoustic Sensitivity 0.02 g RMS (Equiv @ 124 dB SPL) Physical Configuration Single-Ended Compression Size 1.060 In. Dia. x 2.000 In. H (27.0 mm Dia x 50.0 mm H) Weight 6.0 Oz (170 Gm) Case Material Electrical Interface PC02A-8-4P or Equiv.	Avg Temp Coeff of Sensitivity	0.05 % / Deg F		
Isolation Resistance 100M Ohm Min., 50 VDC Power Requirements 12 VDC @ 4.0 mA, Nom. Environmental Vibration Limit 50 g Max (Sine) Shock Limit 100 g Max. Temperature Range -40 To +250 Deg F (-40 To +121 Deg C) Humidity³ 0 To 100% R.H. Base Strain Sensitivity 0.005 g/uE Equiv, Typical Electromagnetic Sensitivity 0.005 g (Equiv / 100 Gauss) Acoustic Sensitivity 0.02 g RMS (Equiv @ 124 dB SPL) Physical Configuration Single-Ended Compression Size 1.060 In. Dia. x 2.000 In. H (27.0 mm Dia x 50.0 mm H) Weight 6.0 Oz (170 Gm) Case Material 18-8 Stainless Steel Electrical Interface PC02A-8-4P or Equiv.	Output Bias Voltage	5.0 +/-1 VDC		
Power Requirements 12 VDC @ 4.0 mA, Nom. Environmental Vibration Limit 50 g Max (Sine) Shock Limit 100 g Max. Temperature Range -40 To +250 Deg F (-40 To +121 Deg C) Humidity³ 0 To 100% R.H. Base Strain Sensitivity Electromagnetic Sensitivity 0.005 g (Equiv / 100 Gauss) Acoustic Sensitivity 0.02 g RMS (Equiv @ 124 dB SPL) Physical Configuration Single-Ended Compression Size 1.060 In. Dia. x 2.000 In. H (27.0 mm Dia x 50.0 mm H) Weight 6.0 Oz (170 Gm) Case Material Electrical Interface PC02A-8-4P or Equiv.	Output Impedance	75 Ohms Max.		
Environmental Vibration Limit 50 g Max (Sine) Shock Limit 100 g Max. Temperature Range -40 To +250 Deg F (-40 To +121 Deg C) Humidity³ 0 To 100% R.H. Base Strain Sensitivity 0.005 g/uE Equiv, Typical Electromagnetic Sensitivity 0.005 g (Equiv / 100 Gauss) Acoustic Sensitivity 0.02 g RMS (Equiv @ 124 dB SPL) Physical Configuration Single-Ended Compression Size 1.060 In. Dia. x 2.000 In. H (27.0 mm Dia x 50.0 mm H) Weight 6.0 Oz (170 Gm) Case Material 18-8 Stainless Steel Electrical Interface PC02A-8-4P or Equiv.	Isolation Resistance	100M Ohm Min., 50 VDC		
Vibration Limit Shock Limit 100 g Max. Temperature Range -40 To +250 Deg F (-40 To +121 Deg C) Humidity³ 0 To 100% R.H. Base Strain Sensitivity 0.005 g/uE Equiv, Typical Electromagnetic Sensitivity 0.005 g (Equiv / 100 Gauss) Acoustic Sensitivity 0.02 g RMS (Equiv @ 124 dB SPL) Physical Configuration Single-Ended Compression Size 1.060 In. Dia. x 2.000 In. H (27.0 mm Dia x 50.0 mm H) Weight 6.0 Oz (170 Gm) Case Material Electrical Interface PC02A-8-4P or Equiv.	Power Requirements	12 VDC @ 4.0 mA, Nom.		
Shock Limit 100 g Max. Temperature Range -40 To +250 Deg F (-40 To +121 Deg C) Humidity³ 0 To 100% R.H. Base Strain Sensitivity 0.005 g/uE Equiv, Typical Electromagnetic Sensitivity 0.005 g (Equiv / 100 Gauss) Acoustic Sensitivity 0.02 g RMS (Equiv @ 124 dB SPL) Physical Configuration Single-Ended Compression Size 1.060 In. Dia. x 2.000 In. H (27.0 mm Dia x 50.0 mm H) Weight 6.0 Oz (170 Gm) Case Material Electrical Interface PC02A-8-4P or Equiv.	Environmental			
Temperature Range -40 To +250 Deg F (-40 To +121 Deg C) Humidity³ 0 To 100% R.H. Base Strain Sensitivity 0.005 g/uE Equiv, Typical Electromagnetic Sensitivity 0.005 g (Equiv / 100 Gauss) Acoustic Sensitivity 0.02 g RMS (Equiv @ 124 dB SPL) Physical Configuration Single-Ended Compression Size 1.060 In. Dia. x 2.000 In. H (27.0 mm Dia x 50.0 mm H) Weight 6.0 Oz (170 Gm) Case Material Electrical Interface PC02A-8-4P or Equiv.	Vibration Limit	50 g Max (Sine)		
(-40 To +121 Deg C) Humidity³ 0 To 100% R.H. Base Strain Sensitivity 0.005 g/uE Equiv, Typical Electromagnetic Sensitivity 0.005 g (Equiv / 100 Gauss) Acoustic Sensitivity 0.02 g RMS (Equiv @ 124 dB SPL) Physical Configuration Single-Ended Compression Size 1.060 In. Dia. x 2.000 In. H (27.0 mm Dia x 50.0 mm H) Weight 6.0 Oz (170 Gm) Case Material Electrical Interface PC02A-8-4P or Equiv.	Shock Limit	·		
Humidity³ 0 To 100% R.H. Base Strain Sensitivity 0.005 g/uE Equiv, Typical Electromagnetic Sensitivity 0.005 g (Equiv / 100 Gauss) Acoustic Sensitivity 0.02 g RMS (Equiv @ 124 dB SPL) Physical Configuration Single-Ended Compression Size 1.060 In. Dia. x 2.000 In. H (27.0 mm Dia x 50.0 mm H) Weight 6.0 Oz (170 Gm) Case Material Electrical Interface PC02A-8-4P or Equiv.	Temperature Range	· ·		
Base Strain Sensitivity 0.005 g/uE Equiv, Typical Electromagnetic Sensitivity 0.005 g (Equiv / 100 Gauss) Acoustic Sensitivity 0.02 g RMS (Equiv @ 124 dB SPL) Physical Configuration Single-Ended Compression Size 1.060 In. Dia. x 2.000 In. H (27.0 mm Dia x 50.0 mm H) Weight 6.0 Oz (170 Gm) Case Material Electrical Interface PC02A-8-4P or Equiv.		(-40 To +121 Deg C)		
Electromagnetic Sensitivity 0.005 g (Equiv / 100 Gauss) Acoustic Sensitivity 0.02 g RMS (Equiv @ 124 dB SPL) Physical Configuration Single-Ended Compression Size 1.060 In. Dia. x 2.000 In. H (27.0 mm Dia x 50.0 mm H) Weight 6.0 Oz (170 Gm) Case Material Electrical Interface PC02A-8-4P or Equiv.	Humidity ³			
Acoustic Sensitivity 0.02 g RMS (Equiv @ 124 dB SPL) Physical Configuration Single-Ended Compression Size 1.060 In. Dia. x 2.000 In. H (27.0 mm Dia x 50.0 mm H) Weight 6.0 Oz (170 Gm) Case Material 18-8 Stainless Steel Electrical Interface PC02A-8-4P or Equiv.	Base Strain Sensitivity			
Physical Configuration Single-Ended Compression Size 1.060 In. Dia. x 2.000 In. H (27.0 mm Dia x 50.0 mm H) Weight 6.0 Oz (170 Gm) Case Material 18-8 Stainless Steel Electrical Interface PC02A-8-4P or Equiv.	Electromagnetic Sensitivity			
Configuration Single-Ended Compression Size 1.060 In. Dia. x 2.000 In. H (27.0 mm Dia x 50.0 mm H) Weight 6.0 Oz (170 Gm) Case Material Electrical Interface PC02A-8-4P or Equiv.	Acoustic Sensitivity	0.02 g RMS (Equiv @ 124 dB SPL)		
Size 1.060 In. Dia. x 2.000 In. H (27.0 mm Dia x 50.0 mm H) Weight 6.0 Oz (170 Gm) Case Material 18-8 Stainless Steel Electrical Interface PC02A-8-4P or Equiv.	Physical			
Weight 6.0 Oz (170 Gm) Case Material 18-8 Stainless Steel Electrical Interface PC02A-8-4P or Equiv.	Configuration	Single-Ended Compression		
Case Material 18-8 Stainless Steel Electrical Interface PC02A-8-4P or Equiv.	Size	1.060 ln. Dia. x 2.000 ln. H (27.0 mm Dia x 50.0 mm H)		
Electrical Interface PC02A-8-4P or Equiv.	Weight	6.0 Oz (170 Gm)		
	Case Material		18-8 Stainless Steel	
Mounting 0.250-28 UNF-3A Tapped Base	Electrical Interface	PC02A-8-4P or Equiv.		
· · ·	Mounting	0.	.250-28 UNF-3A Tapped Ba	ase

NOTES:

- ¹ At +75 Deg F, 10g Peak, 100Hz; 12 VDC Power Source
- ² Referenced to Sensitivity @ 100 Hz.
- ³ With Connector Protected or Sealed, Unit is Hermetically Sealed.

R112706

^{*}Optional cable assemblies are available