

Model 53 & 53A Accelerometer



Triaxial DC Accelerometer
Low Cost, High Performance
 $\pm 50g$ to $\pm 2000g$ Range
Low Profile



The Model 53 Accelerometer is a small, compact triaxial device designed for vehicle impact and road testing. The accelerometer incorporates gas-damped MEMS sensing elements with mechanical stops for high overload protection. Featuring ranges from $\pm 50g$ to $\pm 2000g$ and frequency response to 5000Hz, this sensor is easily mounted in hard to reach places on vehicles under test.

FEATURES

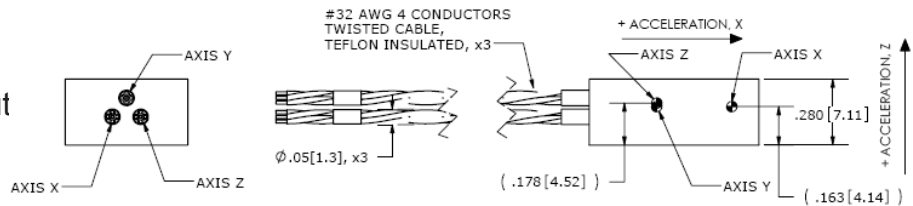
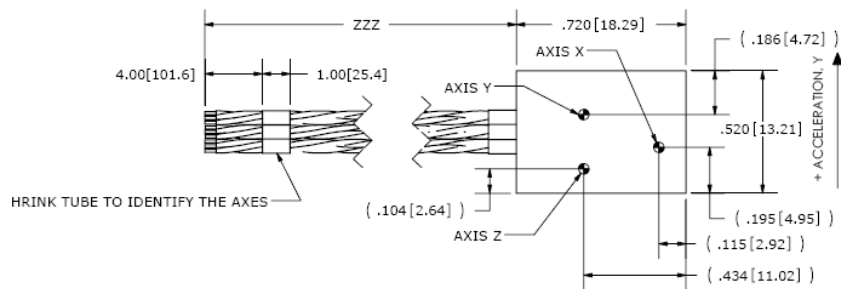
- -20 to +85°C Operating Range
- 2-10 Vdc Excitation
- ± 50 mV Zero Measurand Output
- Gas Damping
- Mechanical Overload Stops
- Designed for Adhesive Mounting

APPLICATIONS

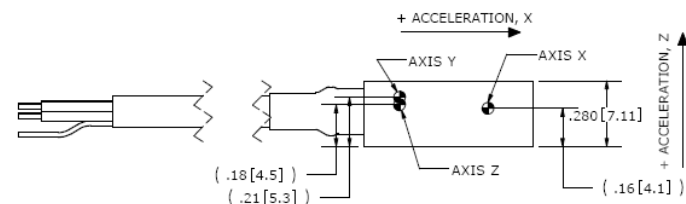
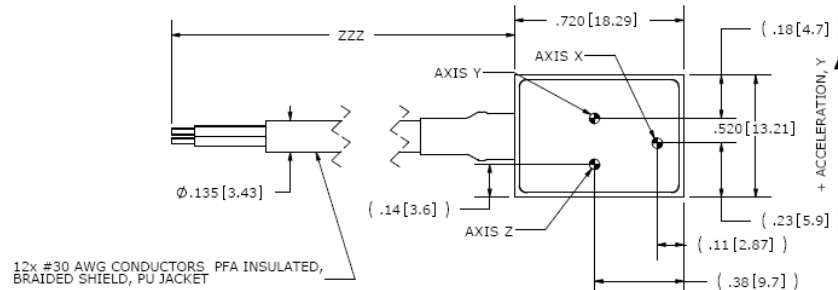
- Crash Testing
- Impact Testing
- Off Road Testing
- Vehicle Testing

dimensions

53 Dimensions



53A Dimensions



Model 53 & 53A Accelerometer

performance specifications

All values are typical at $\pm 24^{\circ}\text{C}$, 100 Hz and 10 Vdc excitation unless otherwise stated. Measurement Specialties reserves the right to update and change these specifications without notice. Standard product parameters are described in PSC-1004 for Plug & Play DC Accelerometers.

Parameters

DYNAMIC

	± 50	± 200	± 500	± 2000	Notes
Range(g)	2	0.9	0.4	0.15	Ratiometric to Exc Voltage
Sensitivity (mV/g)	2	0.9	0.4	0.15	
Frequency Response, Z Axis (Hz)	0-1000	0-2000	0-3000	0-4500	$\pm 1\text{dB}$
Frequency Response, X & Y Axis (Hz)	0-500	0-1000	0-1500	0-2500	$\pm 1\text{dB}$
Resonant Frequency (Hz)	4000	8000	15000	26000	
Damping Ratio	0.5	0.5	0.3	0.05	Typical
Shock Limit (g)	5000	5000	5000	5000	
Non-Linearity (% FSO)	± 1	± 1	± 1	± 1	Of Reading
Transverse Sensitivity (%)	<3	<3	<3	<3	

ELECTRICAL

Zero Acceleration Output (mV)	$<\pm 50$	$<\pm 50$	$<\pm 50$	$<\pm 50$
Excitation (Vdc)	2 to 10	2 to 10	2 to 10	2 to 10
Input Resistance (Ω)	2400-6000	2400-6000	2400-6000	2400-6000
Output Resistance (Ω)	2400-6000	2400-6000	2400-6000	2400-6000
Insulation Resistance ($M\Omega$)	>100	>100	>100	>100
Residual Noise ($\mu\text{V RMS}$)	<10	<10	<10	<10
Ground Isolation	Isolated from Mounting Surface			

ENVIRONMENTAL

Thermal Zero Shift (%FSO/ $^{\circ}\text{C}$ (%FSO/ $^{\circ}\text{F}$))	$\pm 0.05 (\pm 0.03)$			From 0 to $+50^{\circ}\text{C}$
Thermal Sensitivity Shift (%/ $^{\circ}\text{C}$ (%/ $^{\circ}\text{F}$))	$-0.20 \pm 0.05 (-0.11 \pm 0.03)$			From 0 to $+50^{\circ}\text{C}$
Operating Temperature ($^{\circ}\text{C}$ ($^{\circ}\text{F}$))	-20 to +85 (-4 to +185)			
Storage Temperature ($^{\circ}\text{C}$ ($^{\circ}\text{F}$))	-40 to +90 (-40 to +194)			
Humidity	Epoxy Sealed, IP65			

PHYSICAL

Case Material	Anodized Aluminum			
Cable, Model 53	#32 AWG Twisted Conductors, Teflon Insulated			
Cable, Model 53A	#30 AWG Conductors PFA Insulated, Braided Shield, PU Jacket			
Weight (grams)	3.5			Without cable
Mounting	Adhesive			

Calibration supplied: CS-FREQ-0100 NIST Traceable Amplitude Calibration from 20Hz to $\pm 1\text{dB}$ Frequency Response Limit

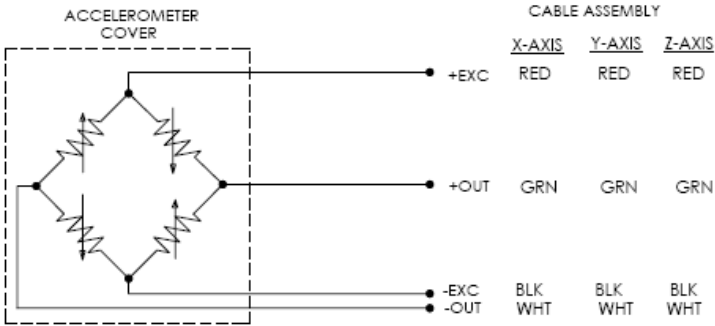
Optional accessories: 101 Three Channel DC Signal Conditioner Amplifier

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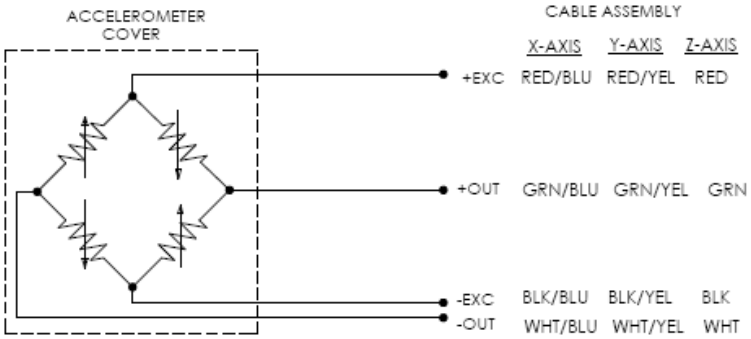
Model 53 & 53A Accelerometer

schematic

53 Schematic



53A Schematic



ordering info

PART NUMBERING Model Number+Range+Cable Length

53-GGGG-CCC-XX

| | | Options (leave blank otherwise)
 | | Cable (360 is 360 inches)
 | Range (0500 is 500g)

Example: 53-0500-360
Model 53, 500g, 360" (30ft) Cable

53A-GGGG-CCC-XX

| | | Options (leave blank otherwise)
 | | Cable (360 is 360 inches)
 | Range (0500 is 500g)

Example: 53A-0500-360
Model 53A, 500g, 360" (30ft) Cable