

Model 53 & 53A Accelerometer



Triaxial DC Accelerometer
Low Cost, High Performance
±50g to ±2000g Range
Low Profile, Adhesive Mount



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 ±50g to ±2000g and frequency response to 5000Hz, this sensor is easily mounted in hard to reach places on vehicles under test.

FEATURES

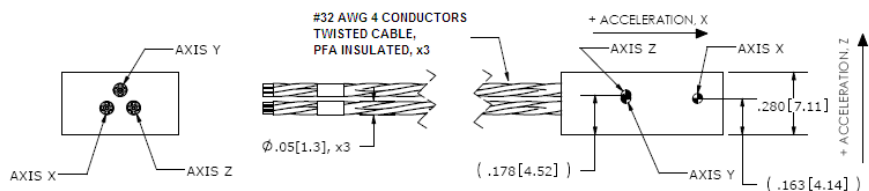
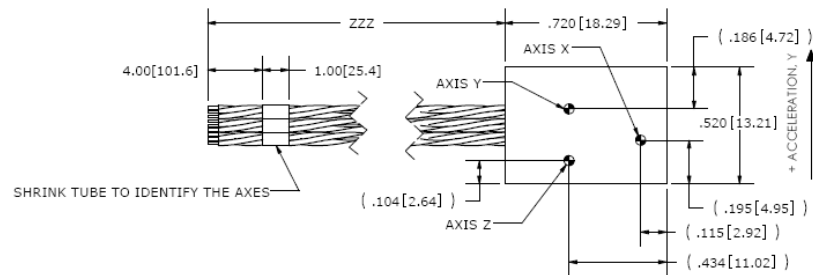
- -20 to +85°C Operating Range
- 2-10 Vdc Excitation
- ±50 mV Zero Measurand Output
- Gas Damping
- Mechanical Overload Stops
- Designed for Adhesive Mounting

APPLICATIONS

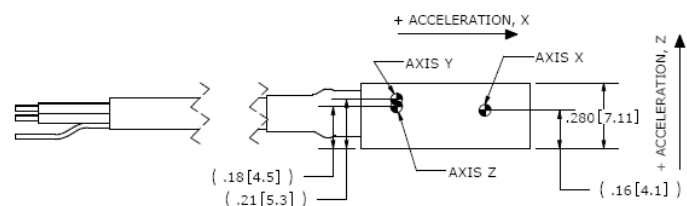
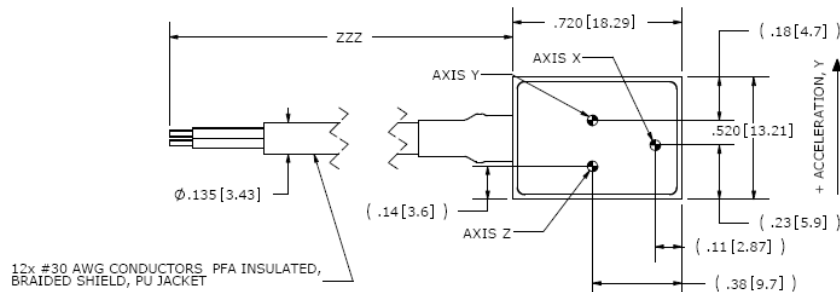
- Crash Testing
- Impact Testing
- Off Road Testing
- Vehicle Testing

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	$\pm 1\text{dB}$
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	
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)	< ± 50	
Excitation (Vdc)	2 to 10	
Input Resistance (Ω)	2400-6000	
Output Resistance (Ω)	2400-6000	
Insulation Resistance ($M\Omega$)	>100	@100Vdc
Residual Noise ($\mu\text{V RMS}$)	<10	
Ground Isolation	Isolated from Mounting Surface	

ENVIRONMENTAL

Thermal Zero Shift (%FSO/ $^{\circ}\text{C}$ (%FSO/ $^{\circ}\text{F}$))	± 0.05 (± 0.03)	From 0 to $+50^{\circ}\text{C}$
Thermal Sensitivity Shift (%/ $^{\circ}\text{C}$ (%/ $^{\circ}\text{F}$))	-0.20 ± 0.05 (-0.11 ± 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, PFA 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

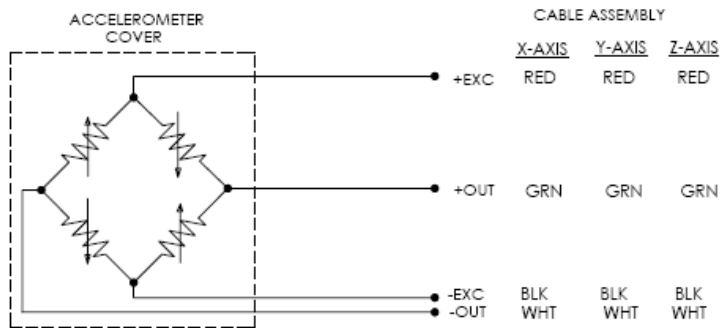
Optional accessories: 101 Three Channel DC Signal Conditioner Amplifier
 140 Auto-zero Inline Amplifier

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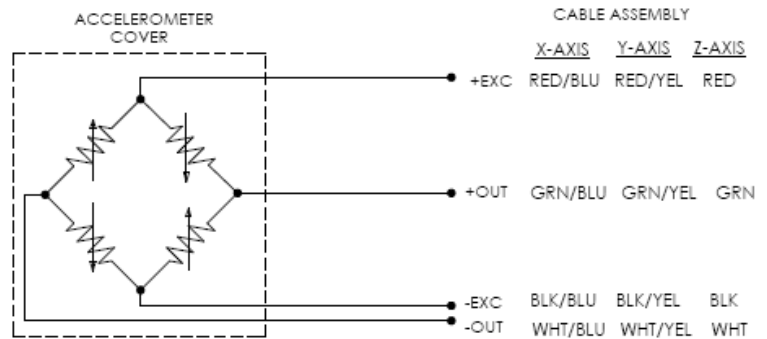
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schematic

53 Schematic



53A Schematic



ordering info

PART NUMBERING Model Number+Range+Cable Length

53-GGGG-CCC-XXX

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

Example: 53-0500-360

Model 53, 500g, 360" (30ft) Cable

Optional Dash Number

-003 5Vdc Calibration

53A-GGGG-CCC-XXX

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

Example: 53A-0500-360

Model 53A, 500g, 360" (30ft) Cable

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