

MODEL 53 & 53A TRIAXIAL CRASH TEST ACCELEROMETER

SPECIFICATIONS

- Triaxial MEMS Crash Test Accelerometer
- Best in Class Piezoresistive MEMS Sensor
- $\pm 50g$ to $\pm 2000g$ Ranges
- Compliant to SAE-J211/J2570
- Compliant to ISO-6487
- Ideal for Crush Zone Installations
- Low Profile, Adhesive Mount

The Model 53 and 53A Triaxial Crash Test Accelerometers

are some of the most popular sensor to be used in crush zone and side impact testing when a triaxial solution is preferred. The accelerometers feature the next generation of the reliable TE Connectivity piezoresistive MEMS chip with superior stability and measurement accuracy.

The model 53 and 53A accelerometers are both available in ranges from $\pm 50g$ to $\pm 2000g$ and features a full-bridge configuration with a nominal 4000Ω impedance that offers quick warm-up time and minimal drift, unlike lower impedance designs on the market.

Both of the 53 series accelerometers are fully compliant to the performance requirements of SAE-J211 & SAE-J2570. The accelerometers are packaged in an anodized Aluminum housing and fully encapsulated in Stycast potting for reliable protection in harsh crash test applications.

The model 53 accelerometer has three sets of twisted leads for the electrical interface while the model 53A has an integral 12 wire cable assembly with braided shield and Polyurethane jacket. For a flange mount version of the model 53A, TE Connectivity also offers the model 53AF with identical performance.

TE Connectivity also supplies the calibration data in a user friendly excel format which enables high volume users to quickly upload the calibration information for each sensor installed.



FEATURES

- Minimal Warm-Up Drift
- 0-4500Hz Frequency Response, All Axes
- 10,000g Shock Protection
- 2-10Vdc Excitation
- Optimum Gas Damping
- Linearity $<1\%$
- IP65 Environmentally Sealed
- Multiple Cable Options

APPLICATIONS

- Auto Safety Testing Applications
- Biomechanical Studies
- Transient Drop Testing
- Helmet Impact Testing
- Crush Zone Testing
- Shock and Impact Testing

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PERFORMANCE SPECIFICATIONS

All values are typical at +24°C, 80Hz and 10Vdc excitation unless otherwise stated. TE Connectivity reserves the right to update and change these specifications without notice.

PARAMETERS

DYNAMIC						NOTES
Range (g)	±50	±100	±200	±500	±2000	
Sensitivity (mV/g) ¹	1.2-3.0	0.6-1.2	0.6-1.2	0.3-0.6	0.12-0.3	@10Vdc Excitation
Frequency Response (Hz)	0-1000	0-1200	0-2000	0-3000	0-4500	±1dB, All Axes
Natural Frequency (Hz)	4000	6000	8000	11000	28000	
Transverse Sensitivity (%)	<3	<3	<3	<3	<3	
Non-Linearity (% of reading)	±1	±1	±1	±1	±1	
Damping Ratio	0.5	0.5	0.5	0.3	0.15	
Shock Limit (g)	5000	5000	5000	10000	10000	

ELECTRICAL

Zero Acceleration Output (mV)	<±50	Differential
Excitation Voltage (Vdc)	2 to 10	
Input Resistance (Ω)	3500-4500	
Output Resistance (Ω)	3500-4500	
Insulation Resistance (MΩ)	>100	@100Vdc
Residual Noise (μV RMS)	<10	
Ground Isolation	Isolated from mounting surface	
Warm-up Time	<1min	@10Vdc Excitation

ENVIRONMENTAL

Thermal Zero Shift (%FSO/°C)	±0.04	From 0 to +50°C
Thermal Sensitivity Shift (%/°C)	-0.20 ±0.05	From 0 to +50°C
Operating Temperature (°C)	-20 to +85	
Storage Temperature (°C)	-20 to +85	
Humidity	Epoxy Sealed, IP65	

PHYSICAL

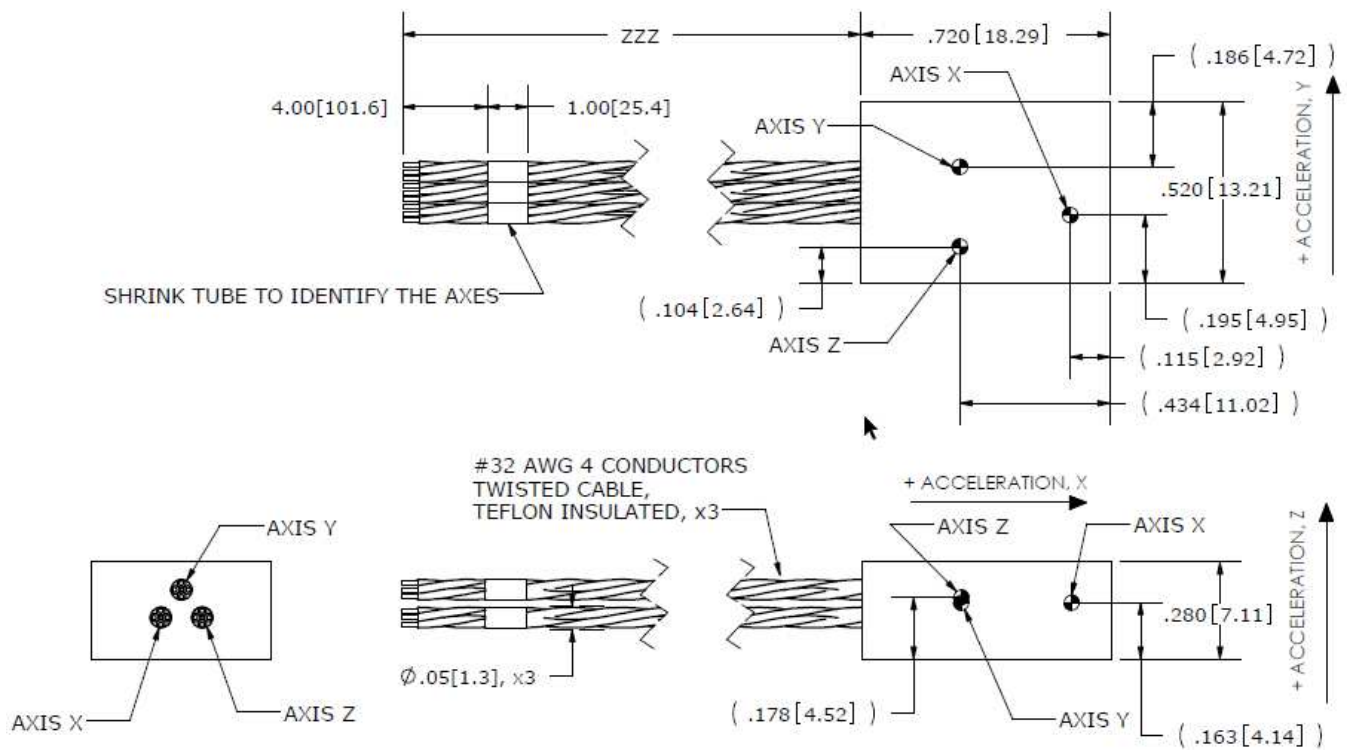
Case Material	Anodized Aluminum	
Cable, Model 53	#32 AWG Twisted Conductors, PFA Insulated	
Cable, Model 53A	#30 AWG Conductors PFA Insulated, Braided Shield, PU Jacket	
Weight (grams)	3.5	Cable not included
Mounting	Adhesive	

¹ Output is ratiometric to excitation voltage

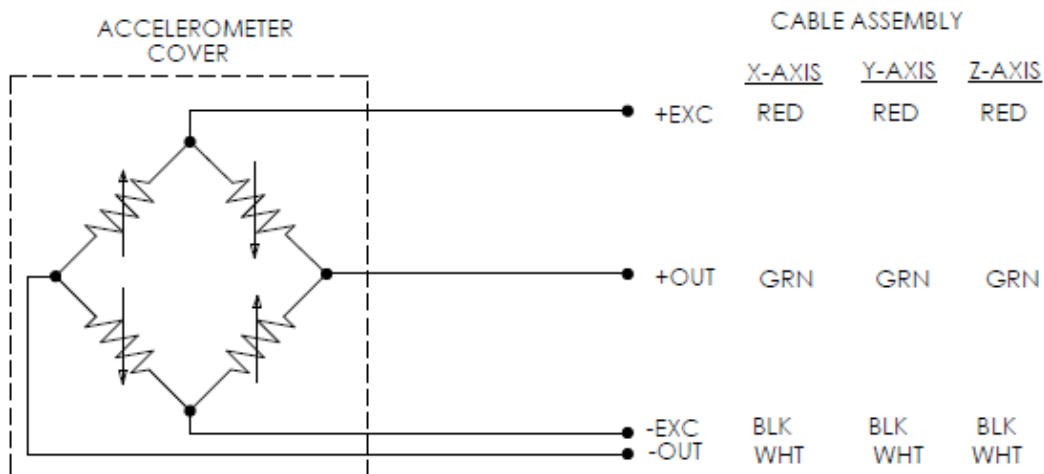
Calibration supplied:	CS-FREQ-0100	NIST Traceable Amplitude Calibration from 20Hz to 4000Hz
Optional accessories:	121	3-Channel Precision Low Noise DC Amplifier
	140A	Auto-Zero Inline Amplifier

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DIMENSIONS, MODEL 53

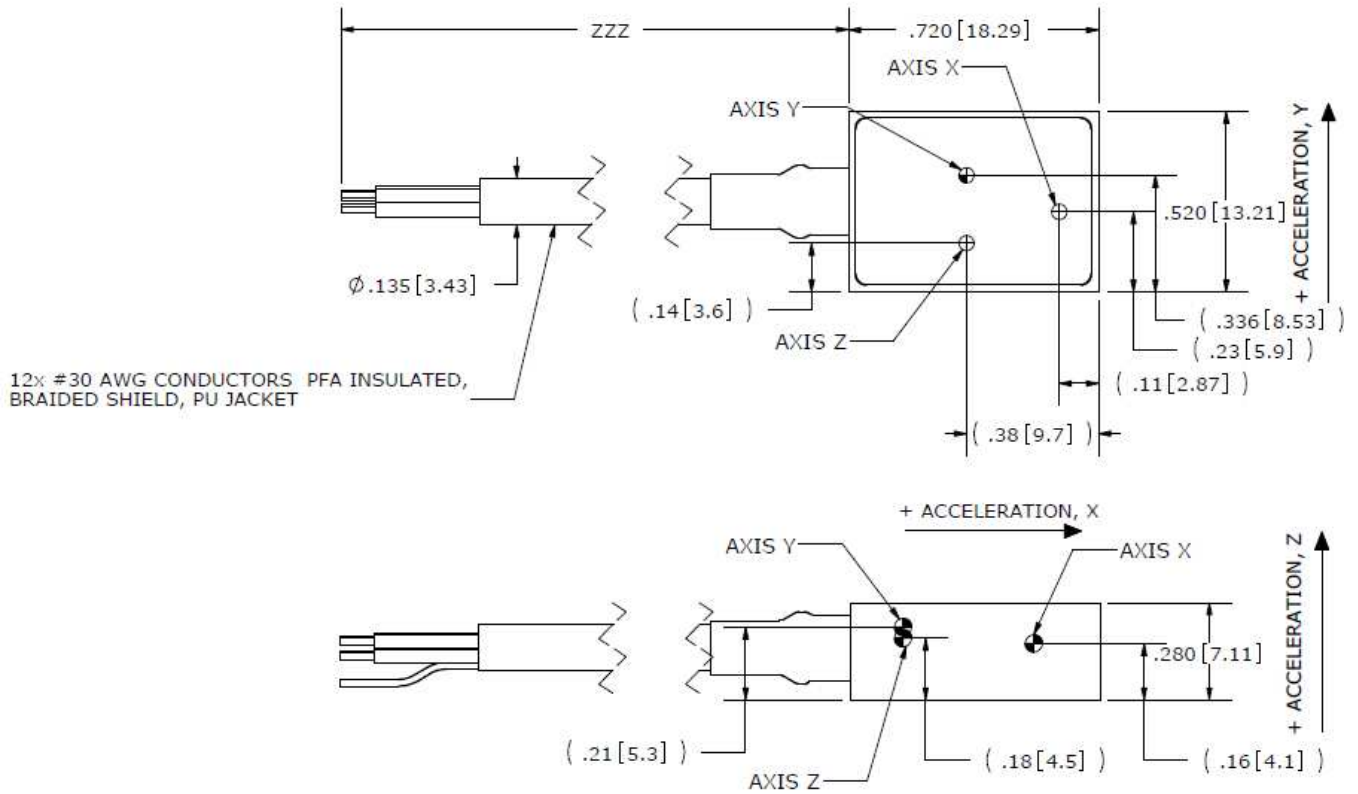


SCHEMATIC, MODEL 53

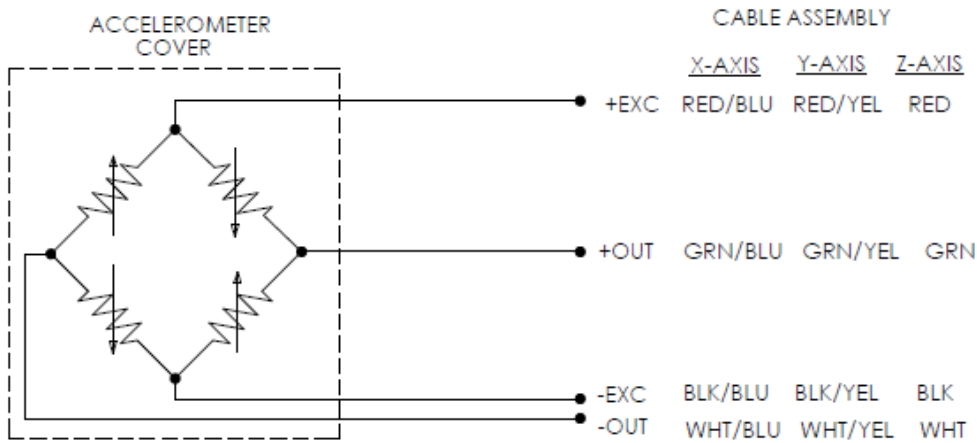


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DIMENSIONS, MODEL 53A



SCHEMATIC, MODEL 53A



ORDERING INFORMATION

53 (twisted conductor leads) 53A (shielded jacketed cable)	GGGG	ZZZ	XXX
Range 0050 = 50g 0100 = 100g 0200 = 200g 0500 = 500g 2000 = 2000g			
Cable length 120 = 120 inches, 10ft 240 = 240 inches, 20ft 360 = 360 inches, 30ft 197 = 197 inches, 5 meters 276 = 276 inches, 7 meters 394 = 394 inches, 10 meters			
Excitation Voltage Option Blank = 10Vdc 003 = 5Vdc			

Example;53-2000-360
Model 53 (twisted conductor leads), 2000g range, 360inch (30ft) cable length

Example;53A-0500-276-003
Model 53A (shielded jacketed cable), 500g range, 276inch (7m) cable length, 5V calibration

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