

MODEL 40A CRASH TEST ACCELEROMETER

Specifications

- Critically Damped DC Accelerometer
- Pedestrian Impact Testing
- Compliant to SAE J211/J2570
- Compliant to ISO 6487
- $\pm 25g$ to $\pm 2000g$ Dynamic Range
- Temperature Compensated

Features

- Low Transverse Sensitivity
- Critical 0.7 Damping Ratio
- Standard $< 25mV$ ZMO
- 10,000g Shock Protection
- 2-10Vdc Excitation
- Silicon Piezoresistive Elements
- $-20^{\circ}C$ to $+80^{\circ}C$ Temperature Range

Applications

- Anthropomorphic Dummy Instrumentation
- Crush Zone Testing
- Pedestrian Impact Testing
- Auto Safety Testing Applications
- Shock and Impact Testing
- Transient Drop Testing
- Munitions Testing

The TE Connectivity model 40A is a critically fluid damped DC accelerometer designed for anthropomorphic dummy and pedestrian impact testing and is compliant with the latest SAE J211/J2570 safety regulations. The accelerometer features a full bridge output configuration with built-in mechanical over-range stops for optimum protection. The model 40A accelerometer has a standard cross-talk accuracy of $< 3\%$ (with option for $< 1\%$) and a standard ZMO of $< \pm 25mV$.

The model 40A crash test accelerometer is offered in ranges from $\pm 25g$ to $\pm 2000g$ and features anodized aluminum housing with an industry standard mounting footprint.

The crash test accelerometer has a standard operating temperature range of $-20^{\circ}C$ to $+80^{\circ}C$ and is environmentally sealed with an integral cable strain relief. The flexible cable is also designed for high-g impact testing with minimal triboelectric induced noise.

For a triaxial option, TE Connectivity also offers the critically damped model 43 accelerometer with identical performance.

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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) | ±25 | ±100 | ±250 | ±500 | ±1000 | ±2000 | |
| Sensitivity (mV/g) ¹ | 6.0 | 1.5 | 0.60 | 0.30 | 0.15 | 0.075 | @10Vdc Excitation |
| Frequency Response (Hz) | 0-200 | 0-400 | 0-600 | 0-1100 | 0-1500 | 0-2500 | ±2.5%/-8% |
| | 0-350 | 0-675 | 0-1100 | 0-2000 | 0-2700 | 0-4500 | ±2.5%/-20% |
| Natural Frequency (Hz) | >800 | >1500 | >2500 | >4500 | >6000 | >10000 | |
| Transverse Sensitivity (%) | <3 | <3 | <3 | <3 | <3 | <3 | <1% Option |
| Non-Linearity (%FSO) | <±1 | <±1 | <±1 | <±1 | <±1 | <±1 | |
| Damping Ratio | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | Typical |
| Shock Limit (g) | 5000 | 10000 | 10000 | 10000 | 10000 | 10000 | |

ELECTRICAL

| | | |
|-------------------------------|--------------------------------|--------------|
| Zero Acceleration Output (mV) | <±25 | Differential |
| Excitation Voltage (Vdc) | 2 to 10 | |
| Input Resistance (Ω) | 2000 | Nominal |
| Output Resistance (Ω) | 1000 | Nominal |
| Insulation Resistance (MΩ) | >100 | @100Vdc |
| Residual Noise (μV RMS) | <10 | |
| Ground Isolation | Isolated from mounting surface | |

ENVIRONMENTAL

| | | |
|----------------------------------|--------------------|---------------------|
| Thermal Zero Shift (mV) | ±3.0 | From -10°C to +50°C |
| Thermal Sensitivity Shift (%/°C) | ±0.1 | From -10°C to +50°C |
| Operating Temperature (°C) | -20 to +80 | |
| Humidity | Epoxy Sealed, IP65 | |

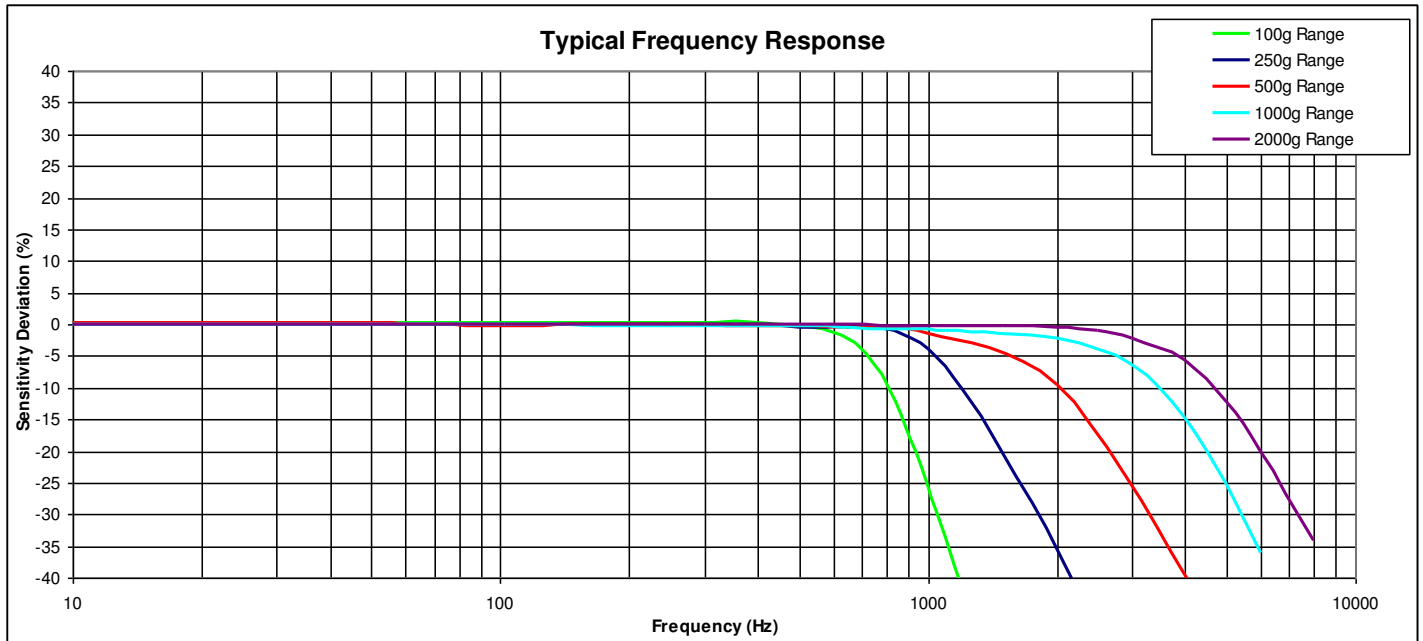
PHYSICAL

| | | |
|-----------------|--|--------------------|
| Case Material | Anodized Aluminum | |
| Cable | 5x #30 AWG Leads, PFA Insulated, Braided Shield, PU Jacket | |
| Weight (grams) | <5 | Cable not included |
| Mounting | 2x #0- 80 x 3/16" Socket Head Cap Screws | |
| Mounting Torque | 1.0-1.5 lb-in (0.11-0.17 Nm) | |

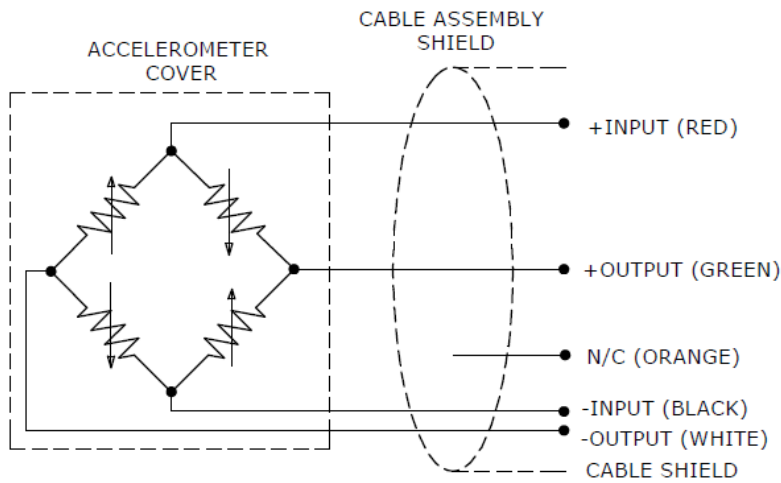
¹ Output is ratiometric to excitation voltage. Tolerance is +50%/-30%.

| | | |
|------------------------------|---------------|---|
| Calibration supplied: | CS-FREQ-0100 | NIST Traceable Amplitude Calibration from 20Hz to Upper Frequency Limit |
| Supplied accessories: | AC-A03923 | 2x #0-80 (3/16" length) Socket Head Cap Screw, 2x #0 Washer, 1x Allen Key |
| Optional accessories: | MTG-E2 121 | Triaxial Mounting Block 3-Channel Precision Low Noise DC Amplifier |

Typical Frequency Response

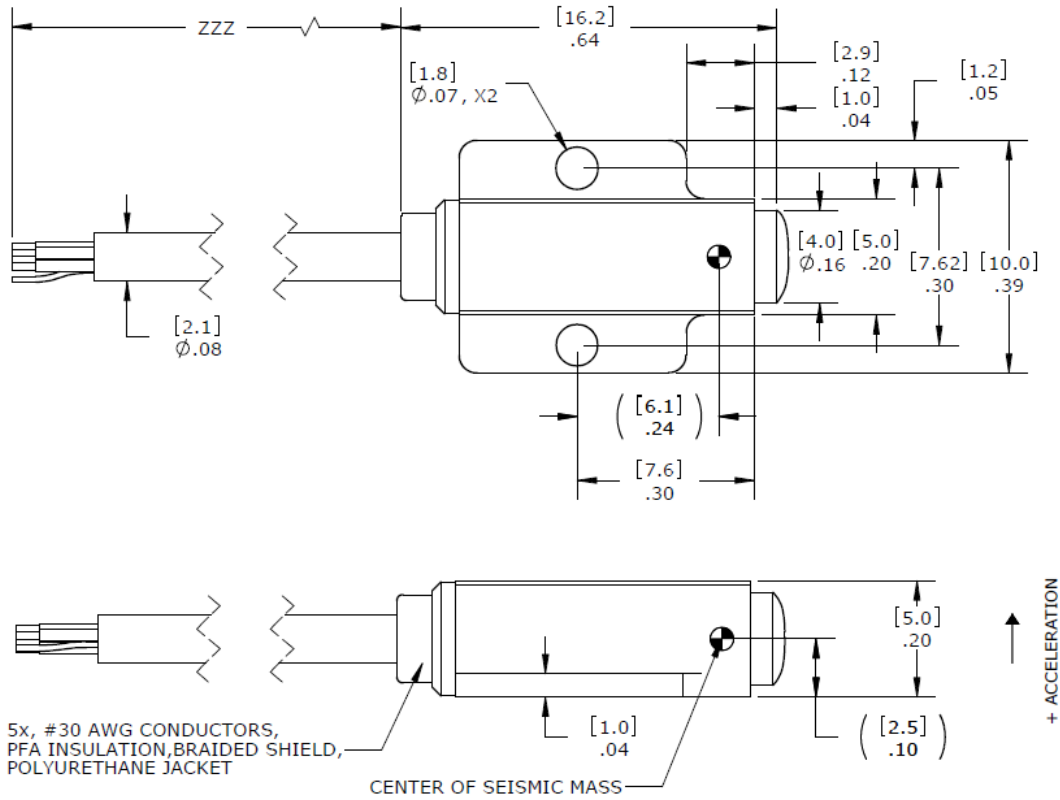


Schematic

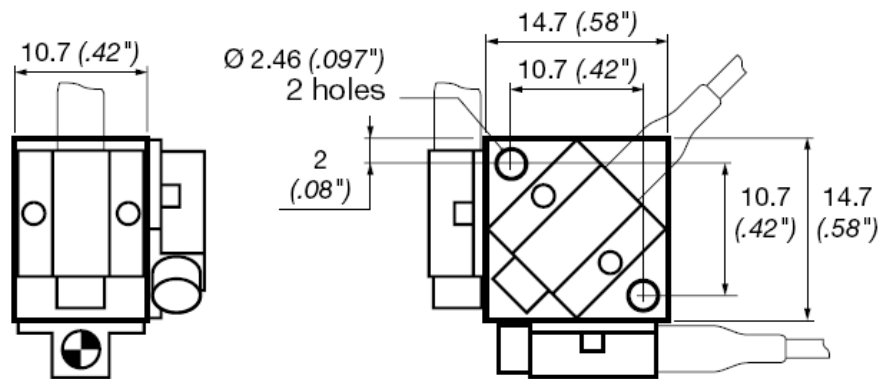


MODEL 40A ACCELEROMETER

Dimensions



Triaxial Mounting Block



MODEL 40A ACCELEROMETER

Ordering Information

| 40A | GGGG | ZZZ | T | XXX |
|---|------|-----|---|-----|
| Range 0025 = 25g 0100 = 100g 0250 = 250g 0500 = 500g 1000 = 1000g 2000 = 2000g | | | | |
| Cable length 240 = 240 inches, 20 feet 360 = 360 inches, 30 feet 276 = 276 inches, 7 meters (*Minimum order quantity 25 pieces) | | | | |
| Transverse Sensitivity Option Blank = <3% T = <1% | | | | |
| Excitation Voltage Option Blank = 10Vdc 001 = 5Vdc 005 = 2Vdc | | | | |

Example; 40A-2000-360
Model 40A, 2000g range, 360inch (30ft) cable length

Example; 40A-0500-276T
Model 40A, 500g range, 276inch (7m) cable length, <1% transverse sensitivity option

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