

Inclinometers

SI-702B, SI-702BHP

The Columbia Models SI-702B and SI-702BHP are biaxial electronic tilt sensors based upon force balance accelerometer technology. They produce a high-level low-impedance output proportional to the sine of the tilt angle. Unique electronic damping and desensitization circuitry allows tilt measurements in strong vibration and shock environments.

These inclinometers are self-contained requiring no additional signal conditioning in most applications. The Model SI-702B is well suited for many OEM and industrial applications requiring dual axis tilt measurements. The Model SI-702BHP uses the Columbia patented HP suspension system and provides added accuracy and ruggedness. These sensors are intended for applications such as platform stabilization, surface mapping and measuring tilt angles in remote locations. *Consult the factory for customized versions of these sensors.*

- * **Biaxial Sensors**
- * **+/-15 VDC Operation**
- * **Low Cost and High Performance**



Specifications

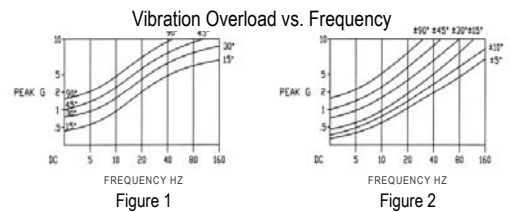
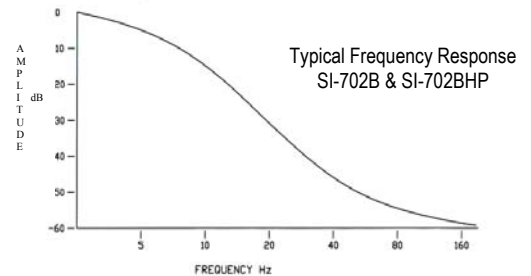
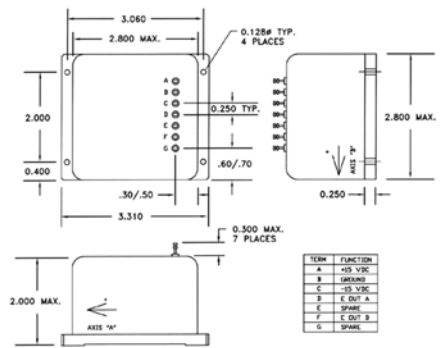
| | SI-702B | SI-702BHP |
|----------------------------------|---|---|
| Operational | | |
| Ranges Available | $\pm 15^\circ, \pm 30^\circ, \pm 45^\circ, \pm 90^\circ$ | $\pm 5^\circ, \pm 10^\circ, \pm 15^\circ, \pm 30^\circ, \pm 45^\circ, \pm 90^\circ$ |
| Output Voltage | ± 5 VDC at Full Range Output Proportional to the Sine of the Angle | |
| Recommended Load | 100K Ohms or Greater | |
| Excitation | ± 12 VDC to ± 15 VDC <30 mA Each Supply | |
| Output Impedance | <100 Ohms | |
| Output Noise | <3 mV RMS | |
| Non-Linearity | $\pm 0.2\%$ F.R. | $\pm 0.1\%$ F.R. |
| Non-Repeatability | $\pm 0.1\%$ F.R. | $\pm 0.05\%$ F.R. |
| Scale Factor | $\pm 1\%$ | |
| Scale Factor Temp Coefficient | $\pm 0.02\%$ / Deg C | |
| Zero Bias | $\pm 0.2\%$ F.R. | $\pm 0.1\%$ F.R. |
| Zero Bias Temp. Coefficient | 0.001% F.R. / Deg. C | |
| Resolution | 0.001% F.R. | |
| Bandwidth | 0 To 3 Hz (-18 dB / Octave Roll-off) | |
| Orthogonal Sensitivity | <1% | <0.5% |
| Case Alignment | $\pm 1^\circ$ | $\pm 0.5^\circ$ |
| Vibration Overload vs. Frequency | See Figure 1 | See Figure 2 |

Environmental

| | | |
|-------------------------------------|--------------------------|---------------------------|
| Temperature, Operating | -50 To +85 Deg C | |
| Temperature, Storage | -50 To +100 Deg C | |
| Random Vibration (2 To 2,000 Hz) | 5 G RMS, 0.5" Disp. D.A. | 10 G RMS, 0.5" Disp. D.A. |
| Shock Survival | 125 G, 1 mSec Half Sine | 1000 G, 1 mSec Half Sine |
| Humidity | 95% R.H. | |

Physical

| | |
|----------------------|--|
| Weight | 8 Oz (226.8 Gm) |
| Size | 3.31 in L x 2.80 in W x 2.00 in H (8.41 cm L x 7.11 cm W x 5.08 cm H) |
| Case Material | Anodized Aluminum |
| Sealing | Environmental |
| Electrical Interface | 7 Terminal Pins |



Output Terminal Pin Functions:

| SI-702B and SI-702BHP | | | |
|-----------------------|------------------|-----|------------------|
| Pin | Function | Pin | Function |
| A | +15 VDC | E | Spare |
| B | Ground | F | E ₀ B |
| C | -15 VDC | G | Spare |
| D | E ₀ A | | |

Ordering Information:

SI-702B(+/- X Deg)
SI-702BHP(+/- X Deg)

Standard Inclinometer
Range +/- X Deg (Required)

R51906



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