

Linear Displacement Sensor



FEATURES

- Infinite resolution
- True output linearity over the entire measurement range
- Low operating forces
- Excellent stability and temperature compensation

DESCRIPTION

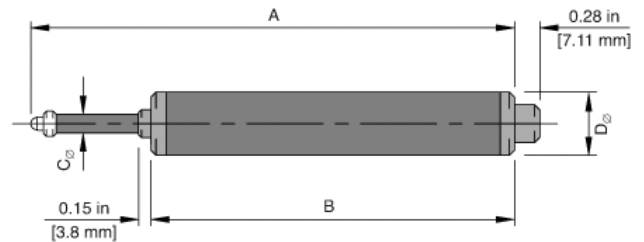
Vishay Micro-Measurements Linear Displacement Sensors use a fully active 350-ohm strain-gage bridge to sense spindle displacement, giving infinite resolution and excellent linearity. They are compatible with all standard strain-gage instrumentation with bridge excitation from 2 to 10 volts. With a selection of models having full-scale ranges from 1/4 in [5 mm] to 4 in [100 mm], Linear Displacement Sensors feature a unique design that produces maximum operating forces of less than 1 lb [4.4 N]. Available with specially designed mounting fixtures, these versatile sensors are ideally suited for us in research, manufacturing and process control applications.

Accuracy

Vishay Micro-Measurements Linear Displacement Sensors produce an output voltage proportional to a captive, guided spindle displacement by means of a 350-ohm strain gage bridge with four active arms. This arrangement provides excellent temperature compensation and linearity.

Compatibility

Vishay Micro-Measurements Linear Displacement Sensors exhibit the same inherent advantages for linearity, versatility and precision as many other strain-gage-based sensors. As such, they are systems-compatible with a wide range of commonly used sensors for pressure, load, acceleration, vibration, etc. and normally utilize the same instrumentation.



SPECIFICATIONS

| MODEL HS | 5 | 10 | 25 | 50 | 100 | |
|--|--|--------------------|-----------------------------|--------------------|--------------------|---------------------|
| *Displacement Range | 0.25 in [6.5 mm] | 0.5 in [11.2 mm] | 1 in [26 mm] | 2 in [51.5 mm] | 4 in [102 mm] | |
| Dimensions | A | 4.10 in [104.2 mm] | 4.30 in [109.2 mm] | 5.44 in [138.2 mm] | 8.48 in [215.4 mm] | 14.97 in [380.2 mm] |
| | B | 3.49 in [88.6 mm] | 3.49 in [88.6 mm] | 4.08 in [103.6 mm] | 6.11 in [155.2 mm] | 10.47 in [266.0 mm] |
| | C\varnothing | 0.19 in [4.8 mm] | 0.19 in [4.8 mm] | 0.19 in [4.8 mm] | 0.19 in [4.8 mm] | 0.24 in [6.0 mm] |
| | D\varnothing | 0.69 in [17.4 mm] | 0.69 in [17.4 mm] | 0.69 in [17.4 mm] | 0.69 in [17.4 mm] | 1.0 in [25.4 mm] |
| Weight | 0.31 lb [140 g] | 0.31 lb [140 g] | 0.33 lb [150 g] | 0.44 lb [200 g] | 1.10 lb [500 g] | |
| Spring Force* | 0.44 lb [200 g] | 0.55 lb [250 g] | 0.55 lb [250 g] | 0.66 lb [300 g] | 0.77 lb [350 g] | |
| Excitation | 2 to 10 V, ac or dc | | | | | |
| Frequency Response* | 5-mm displacement: 100 Hz; 100-mm displacement: 10 Hz | | | | | |
| Rated (F.S.) Output* | 4.5 mV/V | 5.3 mV/V | 7.0 mV/V | 3.6 mV/V | 5.2 mV/V | |
| Nonlinearity (Best-Fit Method)* | 0.1% FS | 0.1% FS | 0.1% FS | 0.1% FS | 0.2% FS | |
| Resolution | Infinite | | | | | |
| Bridge Resistance (Nominal) | 350 ohms Bridge, 100k ohms Zero Balance | | | | | |
| Temperature Range | +15 to +140°F [-10 to +60°C] | | | | | |
| Temperature Coefficient (%FS)* | Zero <0.006%/°F [<0.01%/°C] | | Span <0.006%/°F [<0.01%/°C] | | | |
| Termination | 0.18 in PVC 7/0.008 [4.5 mm PVC 7/0.2], 4-core shielded, 6.6 ft [2.2 m] long | | | | | |
| Electrical Connections | Input: Red+ Black- ; Output: Green+ White- | | | | | |

*Typical figures: Actual values subject to calibration.

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FATIGUE LIFE

| Model | Displacement (in) | | | | |
|-------|-----------------------------|----------|----------|----------|----------|
| | 0.25 | 0.50 | 1.00 | 2.00 | 4.00 |
| | Cycles to Failure (Nominal) | | | | |
| HS5 | 5.00E+04 | | | | |
| HS10 | 5.00E+05 | 5.00E+04 | | | |
| HS25 | 5.00E+06 | 5.00E+05 | 5.00E+04 | | |
| HS50 | 5.00E+06 | 5.00E+06 | 5.00E+06 | 5.00E+05 | |
| HS100 | 5.00E+06 | 5.00E+06 | 5.00E+06 | 5.00E+05 | 5.00E+04 |
| | Signal (mV/V) | | | | |
| HS5 | 4.50 | | | | |
| HS10 | 2.65 | 5.30 | | | |
| HS25 | 1.75 | 3.50 | 7.00 | | |
| HS50 | 0.45 | 0.90 | 1.80 | 3.60 | |
| HS100 | 0.32 | 0.65 | 1.30 | 2.60 | 5.20 |

*Please note that recommended displacements are indicated by shading.