

Special Use Sensors – Linear Displacement Sensors

FEATURES

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

DESCRIPTION

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 use in research, manufacturing and process control applications.

ACCURACY

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

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.

OUTLINE DIMENSIONS in inches (millimeters)					
DIMENSION	MODEL				
	HS5	HS10	HS25	HS50	HS100
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 _∅	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 _∅	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)

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SPECIFICATIONS					
PARAMETERS	MODEL				
	HS5	HS10	HS25	HS50	HS100
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)
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)*	0.5% FS	0.5% FS	0.5% FS	0.5% FS	0.5% 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

FATIGUE LIFE					
MODEL	DISPLACEMENT (INCHES)				
	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

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