

# LINEAR POSITION SENSOR

## GH-750 SERIES DC SPRING LOADED DC LVDT LINEAR POSITION SENSOR

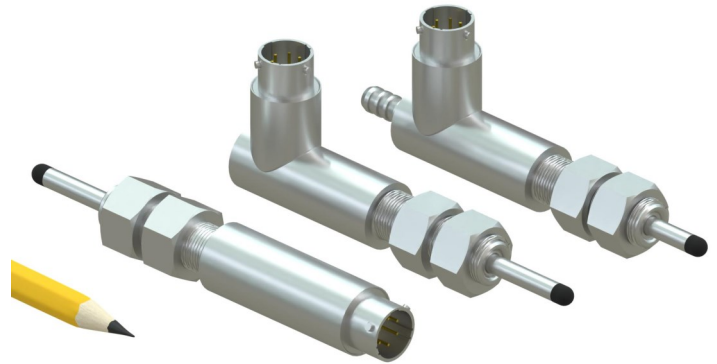
DC Spring Loaded LVDT Gauging Probe

### FEATURES

- Spring loaded probe
- Air-extend option available
- Stroke lengths from 0.1 to 4 inches
- Non-Linearity better than  $\pm 0.25\%$  of FS

### APPLICATIONS

- Laboratory R&D Materials Testing
- Industrial Gauging Test Stands
- Factory Automation



### OVERVIEW

The HGS I GH-750-D/E/I series DC Spring Loaded DC Linear Variable Differential Transformer (LVDT) Position Sensors are used to monitor and track the linear motion or position of a target. These spring-loaded ruggedized sensors are ideal for use in industrial and laboratory applications including automotive R&D, motorsports, industrial, motion control, medical, military and aerospace.

The sensor shaft is spring loaded and guided by a pair of precision sleeve bearings. These hermetically sealed sensors are constructed entirely of stainless steel and are resistant to dust, water, temperature, shock, and vibration. For the air-extend option, the shaft is extended by introduction of a low pressure (10-30 psi), clean, dry air supply, with a regulated flow, through a 1/4 barbed fitting on the end of the unit. With the release of pressure, an internal spring returns the probe to its fully retracted position.

The amplifier electronics are contained within the housing, resulting in no need for an external signal conditioner. The output is pre-calibrated at the factory.

### SPECIFICATIONS

	GH-750-D	GH-750-E	GH-750-I
Full Scale Output	$\pm 10$ VDC	0 to 10 VDC	4 to 20 mA. 2-wire loop
Input Power	$\pm 15$ VDC, $\pm 25$ mA	24 VDC (from 15 to 26 VDC), 25 mA	24 VDC (from 11 to 28 VDC)
Loop Resistance	NA	NA	50 $\Omega$ minimum
Linearity Error	$\leq \pm 0.15\%$ of FSO typical, $\pm 0.25\%$ maximum		
Resolution	16 bit		
Repeatability	0.01% of FS		
Hysteresis	0.01% of FS		
Bandwidth	125 Hz update rate (analog signal output), 3 Hz (mechanical)		
Operating Temperature	-20 to +85°C (0 to +185°F)		
Thermal Coefficient	$< -0.025\%/^{\circ}\text{C}$ of FS ( $< -0.014\%/^{\circ}\text{F}$ of FS)		
Humidity	90% RH		
Housing	Stainless steel		
Contact Tip	AGD #9 hardened tool steel, chrome plated, #4-48 thread, interchangeable		
Mating Connector	Amphenol PT06A-10-6S(SR) or equivalent		
Life Expectancy	$> 100$ million cycles		
Shock Rating	1000g, 11 ms		
Vibration Rating	20 g to 2000		
IP Rating	IEC IP68		



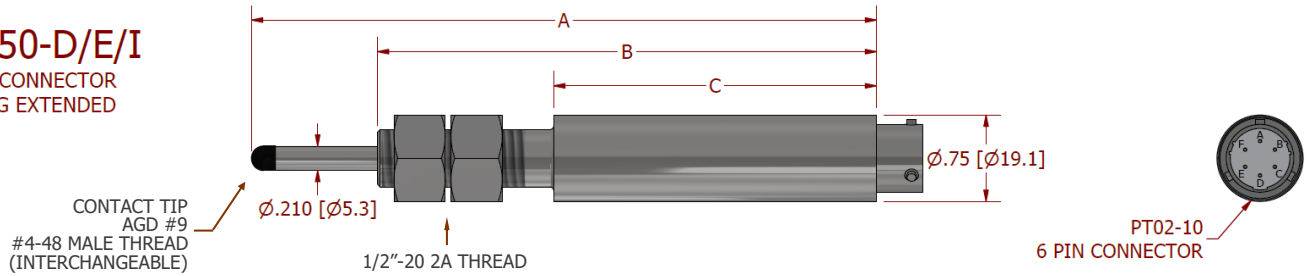
# LINEAR POSITION SENSOR

## GH-750 SERIES DC SPRING LOADED DC LVDT LINEAR POSITION SENSOR

DC Spring Loaded LVDT Gauging Probe

### GH-750-D/E/I

AXIAL CONNECTOR  
SPRING EXTENDED



### SPECIFICATIONS (0 to 10 VDC Output)

	GH-750-E-100	GH-750-E-250	GH-750-E-500	GH-750-E-1000	GH-750-E-2000	GH-750-E-4000
Measuring Range (in) [mm]	0.100 [2.5]	0.250 [6.3]	0.500 [12.5]	1.0 [25]	2.0 [50]	4.0 [100]
Scale Factor (V/in) [mm]	100 [4.0]	40 [1.6]	20 [0.8]	10 [0.4]	5.0 [0.2]	2.5 [0.1]
Pretravel (in) [mm]	0.12 [3.0]	0.13 [3.3]	0.10 [2.5]	0.10 [2.5]	0.05 [1.3]	0.02 [0.5]
Overtravel (in) [mm]	0.12 [3.0]	0.13 [3.3]	0.10 [2.5]	0.10 [2.5]	0.05 [1.3]	0.02 [0.5]
Dimension A (in) [mm]	5.46 [139]	6.10 [155]	6.86 [174]	11.36 [289]	13.82 [351]	21.75 [553]
Dimension B (in) [mm]	4.36 [111]	4.99 [127]	5.75 [146]	9.87 [251]	11.40 [291]	17.19 [437]
Dimension C (in) [mm]	2.82 [72]	3.44 [87]	4.20 [107]	6.70 [170]	8.20 [208]	11.71 [297]
Spring Rate (lb/in)	0.23	0.23	0.14	0.14	0.14	0.23

### SPECIFICATIONS (4 to 20 mA Output)

	GH-750-I-100	GH-750-I-250	GH-750-I-500	GH-750-I-1000	GH-750-I-2000	GH-750-I-4000
Measuring Range (in) [mm]	0.100 [2.5]	0.250 [6.3]	0.500 [12.5]	1.0 [25]	2.0 [50]	4.0 [100]
Scale Factor (mA/in) [mm]	160 [6.4]	64 [2.6]	32 [1.3]	16 [0.6]	8.0 [0.3]	4.0 [0.2]
Pretravel (in) [mm]	0.12 [3.0]	0.13 [3.3]	0.10 [2.5]	0.10 [2.5]	0.05 [1.3]	0.02 [0.5]
Overtravel (in) [mm]	0.12 [3.0]	0.13 [3.3]	0.10 [2.5]	0.10 [2.5]	0.05 [1.3]	0.02 [0.5]
Dimension A (in) [mm]	5.46 [139]	6.10 [155]	6.86 [174]	11.36 [289]	13.82 [351]	21.75 [553]
Dimension B (in) [mm]	4.36 [111]	4.99 [127]	5.75 [146]	9.87 [251]	11.40 [291]	17.19 [437]
Dimension C (in) [mm]	2.82 [72]	3.44 [87]	4.20 [107]	6.70 [170]	8.20 [208]	11.71 [297]
Spring Rate (lb/in)	0.23	0.23	0.14	0.14	0.14	0.23

### SPECIFICATIONS (+/- 10 VDC Output)

	GH-750-D-050	GH-750-D-125	GH-750-D-250	GH-750-D-500	GH-750-D-1000	GH-750-D-2000
Measuring Range (in) [mm]	± 0.050 [± 1.2]	± 0.125 [± 3.2]	± 0.250 [± 6.3]	± 0.500 [± 12.5]	± 1.0 [± 25]	± 2.0 [± 50]
Scale Factor (V/in) [mm]	200 [8.0]	80 [3.3]	40 [1.6]	20 [0.8]	10.0 [0.4]	5.0 [0.2]
Pretravel (in) [mm]	0.12 [3.0]	0.13 [3.3]	0.10 [2.5]	0.10 [2.5]	0.05 [1.3]	0.02 [0.5]
Overtravel (in) [mm]	0.12 [3.0]	0.13 [3.3]	0.10 [2.5]	0.10 [2.5]	0.05 [1.3]	0.02 [0.5]
Dimension A (in) [mm]	5.46 [139]	6.10 [155]	6.86 [174]	11.36 [289]	13.82 [351]	21.75 [553]
Dimension B (in) [mm]	4.36 [111]	4.99 [127]	5.75 [146]	9.87 [251]	11.40 [291]	17.19 [437]
Dimension C (in) [mm]	2.82 [72]	3.44 [87]	4.20 [107]	6.70 [170]	8.20 [208]	11.71 [297]
Spring Rate (lb/in)	0.23	0.23	0.14	0.14	0.14	0.23

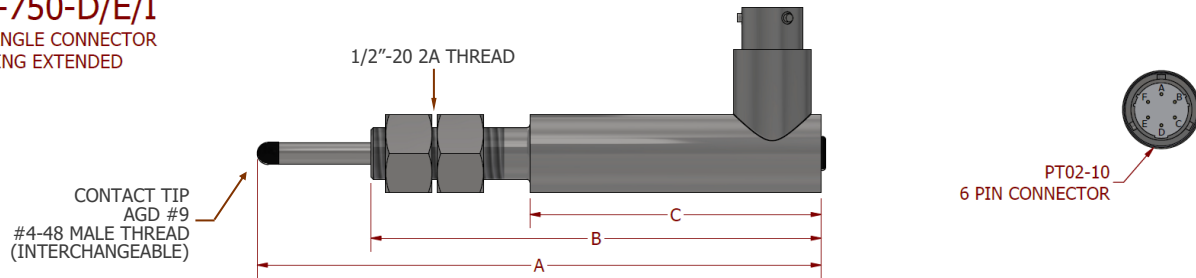
# LINEAR POSITION SENSOR

## GH-750 SERIES DC SPRING LOADED DC LVDT LINEAR POSITION SENSOR

DC Spring Loaded LVDT Gauging Probe

### GHR-750-D/E/I

RIGHT ANGLE CONNECTOR  
SPRING EXTENDED



### SPECIFICATIONS (0 to 10 VDC Output)

	GHR-750-E-100	GHR-750-E-250	GHR-750-E-500	GHR-750-E-1000	GHR-750-E-2000	GHR-750-E-4000
Measuring Range (in) [mm]	0.100 [2.5]	0.250 [6.3]	0.500 [12.5]	1.0 [25]	2.0 [50]	4.0 [100]
Scale Factor (V/in) [mm]	100 [4.0]	40 [1.6]	20 [0.8]	10 [0.4]	5.0 [0.2]	2.5 [0.1]
Pretravel (in) [mm]	0.12 [3.0]	0.13 [3.3]	0.10 [2.5]	0.10 [2.5]	0.05 [1.3]	0.02 [0.5]
Overtravel (in) [mm]	0.12 [3.0]	0.13 [3.3]	0.10 [2.5]	0.10 [2.5]	0.05 [1.3]	0.02 [0.5]
Dimension A (in) [mm]	5.46 [139]	6.10 [155]	6.86 [174]	11.36 [289]	13.82 [351]	21.75 [553]
Dimension B (in) [mm]	4.36 [111]	4.99 [127]	5.75 [146]	9.87 [251]	11.40 [291]	17.19 [437]
Dimension C (in) [mm]	2.82 [72]	3.44 [87]	4.20 [107]	6.70 [170]	8.20 [208]	11.71 [297]
Spring Rate (lb/in)	0.23	0.23	0.14	0.14	0.14	0.23

### SPECIFICATIONS (4 to 20 mA Output)

	GHR-750-I-100	GHR-750-I-250	GHR-750-I-500	GHR-750-I-1000	GHR-750-I-2000	GHR-750-I-4000
Measuring Range (in) [mm]	0.100 [2.5]	0.250 [6.3]	0.500 [12.5]	1.0 [25]	2.0 [50]	4.0 [100]
Scale Factor (mA/in) [mm]	160 [6.4]	64 [2.6]	32 [1.3]	16 [0.6]	8.0 [0.3]	4.0 [0.2]
Pretravel (in) [mm]	0.12 [3.0]	0.13 [3.3]	0.10 [2.5]	0.10 [2.5]	0.05 [1.3]	0.02 [0.5]
Overtravel (in) [mm]	0.12 [3.0]	0.13 [3.3]	0.10 [2.5]	0.10 [2.5]	0.05 [1.3]	0.02 [0.5]
Dimension A (in) [mm]	5.46 [139]	6.10 [155]	6.86 [174]	11.36 [289]	13.82 [351]	21.75 [553]
Dimension B (in) [mm]	4.36 [111]	4.99 [127]	5.75 [146]	9.87 [251]	11.40 [291]	17.19 [437]
Dimension C (in) [mm]	2.82 [72]	3.44 [87]	4.20 [107]	6.70 [170]	8.20 [208]	11.71 [297]
Spring Rate (lb/in)	0.23	0.23	0.14	0.14	0.14	0.23

### SPECIFICATIONS (+/- 10 VDC Output)

	GHR-750-D-050	GHR-750-D-125	GHR-750-D-250	GHR-750-D-500	GHR-750-D-1000	GHR-750-D-2000
Measuring Range (in) [mm]	± 0.050 [± 1.2]	± 0.125 [± 3.2]	± 0.250 [± 6.3]	± 0.500 [± 12.5]	± 1.0 [± 25]	± 2.0 [± 50]
Scale Factor (V/in) [mm]	200 [8.0]	80 [3.3]	40 [1.6]	20 [0.8]	10.0 [0.4]	5.0 [0.2]
Pretravel (in) [mm]	0.12 [3.0]	0.13 [3.3]	0.10 [2.5]	0.10 [2.5]	0.05 [1.3]	0.02 [0.5]
Overtravel (in) [mm]	0.12 [3.0]	0.13 [3.3]	0.10 [2.5]	0.10 [2.5]	0.05 [1.3]	0.02 [0.5]
Dimension A (in) [mm]	5.46 [139]	6.10 [155]	6.86 [174]	11.36 [289]	13.82 [351]	21.75 [553]
Dimension B (in) [mm]	4.36 [111]	4.99 [127]	5.75 [146]	9.87 [251]	11.40 [291]	17.19 [437]
Dimension C (in) [mm]	2.82 [72]	3.44 [87]	4.20 [107]	6.70 [170]	8.20 [208]	11.71 [297]
Spring Rate (lb/in)	0.23	0.23	0.14	0.14	0.14	0.23

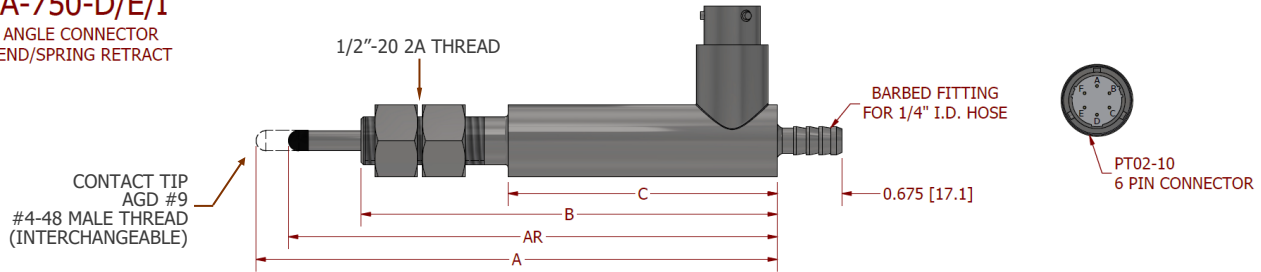
# LINEAR POSITION SENSOR

## GH-750 SERIES DC SPRING LOADED DC LVDT LINEAR POSITION SENSOR

DC Spring Loaded LVDT Gauging Probe

### GHRA-750-D/E/I

RIGHT ANGLE CONNECTOR  
AIR EXTEND/SPRING RETRACT



### SPECIFICATIONS (0 to 10 VDC Output)

	GHRA-750-E-100	GHRA-750-E-250	GHRA-750-E-500	GHRA-750-E-1000	GHRA-750-E-2000	GHRA-750-E-4000
Measuring Range (in) [mm]	0.100 [2.5]	0.250 [6.3]	0.500 [12.5]	1.0 [25]	2.0 [50]	4.0 [100]
Scale Factor (V/in) [mm]	100 [4.0]	40 [1.6]	20 [0.8]	10 [0.4]	5.0 [0.2]	2.5 [0.1]
Pretravel (in) [mm]	0.12 [3.0]	0.13 [3.3]	0.10 [2.5]	0.10 [2.5]	0.05 [1.3]	0.02 [0.5]
Overtravel (in) [mm]	0.12 [3.0]	0.13 [3.3]	0.10 [2.5]	0.10 [2.5]	0.05 [1.3]	0.02 [0.5]
Dimension A (in) [mm]	5.46 [139]	6.10 [155]	6.86 [174]	11.36 [289]	13.82 [351]	21.75 [553]
Dimension AR (in) [mm]	4.27 [108]	4.75 [121]	5.32 [135]	9.34 [237]	10.71 [272]	16.87 [428]
Dimension B (in) [mm]	4.36 [111]	4.99 [127]	5.75 [146]	9.87 [251]	11.40 [291]	17.19 [437]
Dimension C (in) [mm]	2.82 [72]	3.44 [87]	4.20 [107]	6.70 [170]	8.20 [208]	11.71 [297]

### SPECIFICATIONS (4 to 20 mA Output)

	GHRA-750-I-100	GHRA-750-I-250	GHRA-750-I-500	GHRA-750-I-1000	GHRA-750-I-2000	GHRA-750-I-4000
Measuring Range (in) [mm]	0.100 [2.5]	0.250 [6.3]	0.500 [12.5]	1.0 [25]	2.0 [50]	4.0 [100]
Scale Factor (mA/in) [mm]	160 [6.4]	64 [2.6]	32 [1.3]	16 [0.6]	8.0 [0.3]	4.0 [0.2]
Pretravel (in) [mm]	0.12 [3.0]	0.13 [3.3]	0.10 [2.5]	0.10 [2.5]	0.05 [1.3]	0.02 [0.5]
Overtravel (in) [mm]	0.12 [3.0]	0.13 [3.3]	0.10 [2.5]	0.10 [2.5]	0.05 [1.3]	0.02 [0.5]
Dimension A (in) [mm]	5.46 [139]	6.10 [155]	6.86 [174]	11.36 [289]	13.82 [351]	21.75 [553]
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Dimension C (in) [mm]	2.82 [72]	3.44 [87]	4.20 [107]	6.70 [170]	8.20 [208]	11.71 [297]

### SPECIFICATIONS (+/- 10 VDC Output)

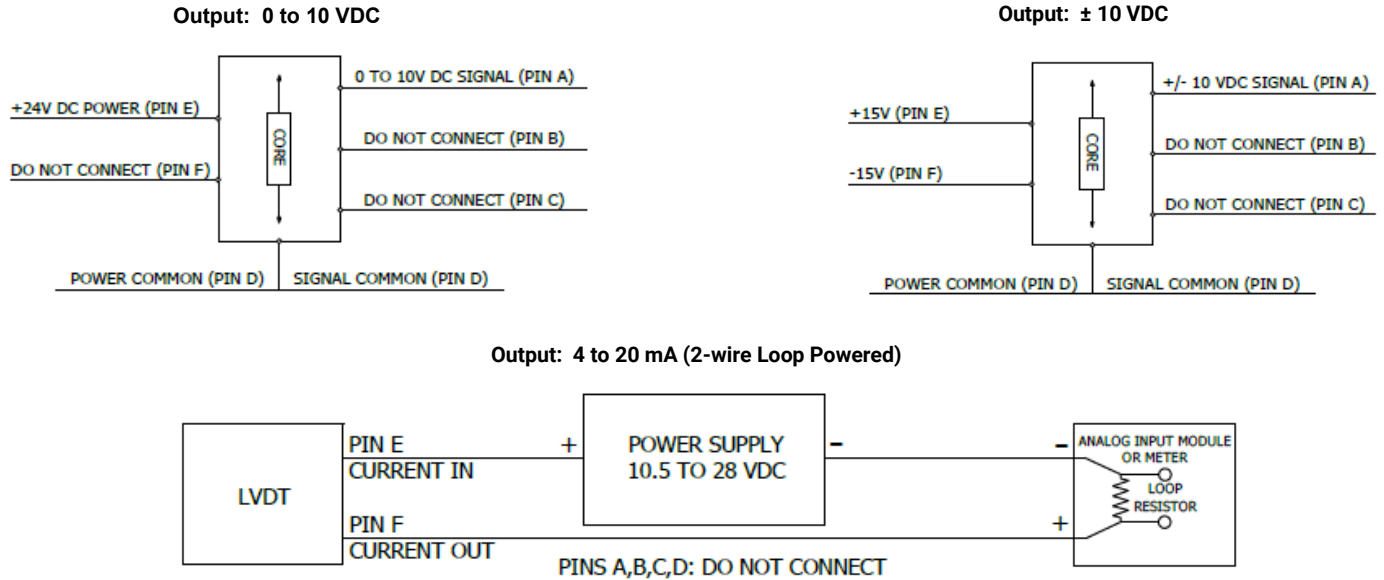
	GHRA-750-D-050	GHRA-750-D-125	GHRA-750-D-250	GHRA-750-D-500	GHRA-750-D-1000	GHRA-750-D-2000
Measuring Range (in) [mm]	± 0.050 [± 1.2]	± 0.125 [± 3.2]	± 0.250 [± 6.3]	± 0.500 [± 12.5]	± 1.0 [± 25]	± 2.0 [± 50]
Scale Factor (V/in) [mm]	200 [8.0]	80 [3.3]	40 [1.6]	20 [0.8]	10.0 [0.4]	5.0 [0.2]
Pretravel (in) [mm]	0.12 [3.0]	0.13 [3.3]	0.10 [2.5]	0.10 [2.5]	0.05 [1.3]	0.02 [0.5]
Overtravel (in) [mm]	0.12 [3.0]	0.13 [3.3]	0.10 [2.5]	0.10 [2.5]	0.05 [1.3]	0.02 [0.5]
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# LINEAR POSITION SENSOR

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DC Spring Loaded LVDT Gauging Probe

### WIRING



### ORDERING MATRIX

Output: 0 to 10 VDC /or/ 4 to 20 mA

Connector Position	Output	Measuring Range	Options
GH-750 = Axial	E = 0 to 10 VDC	100 = 0.100"	Consult Factory
GHR-750 = Radial	I = 4 to 20 mA	250 = 0.250"	
GHRA-750 = Radial Air Extend		500 = 0.500"	
		1000 = 1.0"	
		2000 = 2.0"	
		4000 = 4.0"	

Ordering example: GH-750-E-100  
Ordering example: GH-750-I-100

Output: ± 10 VDC

Connector Position	Output	Measuring Range	Options
GH-750 = Axial	D = ± 10 VDC	050 = ± 0.050"	Consult Factory
GHR-750 = Radial		125 = ± 0.125"	
GHRA-750 = Radial Air Extend		250 = ± 0.250"	
		500 = ± 0.500"	
		1000 = ± 1.0"	
		2000 = ± 2.0"	

Ordering example: GH-750-D-050

