



## HERMETICALLY SEALED LVDT Position Sensors MACRO HSE 750 | HSER 750 HSI 750 | HSIR 750

### Overview

Macro Sensors HS 750 Series hermetically sealed LVDTs are designed for a wide range of position measurement applications. These rugged, 3/4 inch diameter sensors are constructed entirely of stainless steel and are available in ranges of 0.100 inch (2.5 mm) to 20.00 inches (500 mm). The coil windings are sealed against hostile environments to IEC standard IP-68 and electrical termination is through either a sealed axial connector (HSE/HSI) or a sealed radial connector (HSER/HSIR).

The radial connector offers two important benefits. First, it results in a through-bore design, which permits access to either or both ends of the LVDT's core for better mechanical support and core guidance, and easier cleanout in dusty or dirty locations. The second advantage of the radial connector is shorter installed length compared to units of the same range with axial connectors.

Units are supplied with built-in electronics for either DC operation with a pre-calibrated 0-10VDC output (HSE) or 4-20 mA current loop operation (HSI). The standard maximum linearity error for a HS 750 Series sensor is  $\pm 0.25\%$  of full range output, with  $\pm 0.10\%$  available as an option.

Macro Sensors offers several standard options that permit a user to customize HS 750 LVDTs, including Teflon® bore liners and metric threaded cores. In addition, Macro Sensors can provide mounting accessories and core extension rods.

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HSE 750 | HSER 750 | HSI 750 | HSIR 750 | LVDT Position Sensors

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### Benefits

- ◆ Ranges of 0.100 inch to 20.00 inches
- ◆ Non-linearity less than  $\pm 0.25\%$  ( $\pm 0.10\%$  optional)
- ◆ Repeatability of 0.000050 inch
- ◆ 0-10VDC or 4-20mA outputs
- ◆ Rugged, stainless steel construction
- ◆ Coil environmentally sealed to IEC IP-68
- ◆ Axial or radial connectors w/ mating plug included

### Applications

- ◆ Machine tool positioners
- ◆ Valve position sensing
- ◆ Automatic assembly equipment
- ◆ Materials testing apparatus
- ◆ Corrosive environments
- ◆ Hydraulic cylinder position
- ◆ Agrochemical dispensing

### Performance @ 25°C (77°F)

**Linearity Error**  $\leq \pm 0.25\%$  of Full Range ( $\pm 0.10\%$  optional)

**Repeatability Error**  $\leq 0.01\%$  of Full Range

### Environmental Data

**Operating Temperature** -20 to 85°C (0 to 185°F)

**Temperature Sensitivity** -0.027%/°C (-0.015%/°F) nominal

**Vibration Tolerance** 20 g to 2 kHz

**Shock Survival** 100 g, 11 ms

**Ingress Protection** IP 68

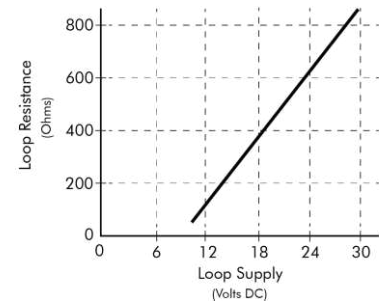
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### Electrical Data

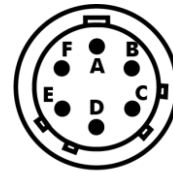
<b>Output</b>	<b>0-10VDC</b>	<b>4-20mA</b>
<b>Input</b>	12-26VDC	8-28VDC
<b>Loop Resistance:</b>	N/A	see graph at right
<b>Current Consumption:</b>	25 mA (max.)	
<b>Output Noise &amp; Ripple:</b>	$\leq 0.005 V_{rms}$	$< 10 \mu A_{rms}$
<b>Bandwidth; Electrical:</b>	Range Dependent	(-3dB): DC to 50 Hz

HSI (4-20 mA)  
Loop Resistance (Max.) vs. Loop Supply Voltage



### Connector Wiring

Pin A	DC Out	Not Connected
Pin B	Do Not Connect	Do Not Connect
Pin C	Case Ground	Case Ground
Pin D	Common	Not Connected
Pin E	12-26VDC, 24VDC (nom.)	Loop +
Pin F	Not Connected	Loop -



PT02A-10-6P  
Connector

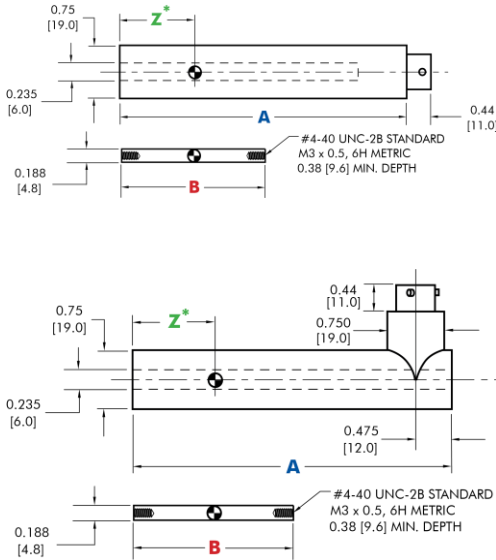
### Ordering Information

<b>HS</b>	<b>E</b>	<b>R</b>	<b>750</b>	<b>10000</b>	<b>0</b>	<b>1</b>	<b>0</b>
<b>Series</b>							
<b>Outputs</b> E = 0-10VDC I = 4-20mA							
<b>Connector</b> R = Radial Leave Blank for Axial							
<b>0.750" (19 mm) Body Diameter</b>							
<b>Range (see table above)</b>							
100 = 0.100" (2.5 mm)	4000 = 4.00" (101.6 mm)						
250 = 0.250" (6.3 mm)	6000 = 6.00" (152.4 mm)						
500 = 0.500" (12.7 mm)	10000 = 10.00" (254.0 mm)						
1000 = 1.00" (25.4 mm)	15000 = 15.00" (381.0 mm)						
2000 = 2.00" (50.8 mm)	20000 = 20.00" (508.0 mm)						
<b>Linearity Error Option</b> 0 = $\leq \pm 0.25\%$ of Full Range 2 = $\leq \pm 0.10\%$ of Full Range							
<b>Teflon Bore Liner Option</b> 0 = No Liner Included 1 = Teflon Bore Liner Included							
<b>Metric Threaded Core Option</b> 0 = #4-40 UNC-2B Thread 6 = M3 x 0.5, 6H Metric Thread							

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## Dimensions



Parameter	Range Code	100	250	500	1000	2000	4000	6000	10000	15000	20000
Range	inches	0.10	0.25	0.50	1.00	2.00	4.00	6.00	10.00	15.00	20.00
	mm	2.5	6.3	12.7	25.4	50.8	101	152.4	254.0	381.0	508.0
Scale Factor	V/inch	100	40	20	10	5.0	2.5	1.65	1.0	0.67	0.5
	V/mm	4.0	1.6	0.8	0.4	0.2	0.1	0.06	0.04	0.03	0.02
Body Length "A"	inches	2.86	3.48	4.25	6.70	8.20	11.7	14.45	19.45	25.01	32.38
	mm	72.6	88.4	108	170	208	298	367.0	492.8	635.2	822.4
Core Length "B"	inches	0.80	1.25	1.65	3.45	3.45	5.30	6.20	6.20	7.00	9.50
	mm	20.3	31.8	41.9	87.6	87.6	134	159.5	157.5	177.8	241.3
Core Position "Z" (at beginning of range)	inches	0.58	1.01	1.07	2.07	2.32	3.07	3.29	3.94	4.03	5.42
	mm	14.6	25.6	27.3	52.6	59.0	78.0	83.6	100.1	102.4	137.7
Weight - Body	ounces	1.9	2.5	3.1	4.1	4.9	8.3	10.3	12.1	16.3	20.4
	g	54	68	80	114	140	236	292	342	462	579
Weight - Core	ounces	0.08	0.12	0.18	0.40	0.40	0.65	0.80	0.80	0.90	1.20
	g	2.4	3.7	4.8	11.6	11.6	18.0	22.0	22.0	25.5	34.0

## Accessories

### Cable Assemblies

Pre-built LVDT cable assemblies are available in lengths of 10, 30, or 50 feet for all Macro Sensors LVDTs with in-line or radial connectors. Cable assemblies are constructed of PVC-jacketed, multi-conductor, shielded cable, with a heavy-duty, 6-pin female, aluminum-alloy connector with soldered connections.

### Mounting Blocks

LVDT mounting blocks provide an easy means of mounting an LVDT. Made from linen-based phenolic with a split block design that will not stress or distort the LVDT body, these blocks are available with bore diameters to accommodate standard Macro Sensors LVDT body diameters.

### Core Connecting Rods

Core Connecting Rods are available for all Macro Sensors separate core LVDTs. These rods are a convenient way to connect the internally threaded core to the object being measured. Made from non-magnetic 300 series stainless steel, they are available in kits with either standard or metric threads and can be supplied in a variety of lengths.

## NORTH AMERICA

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