



HERMETICALLY SEALED DC-Operated LVDT Position Sensors MACRO HSD 750 | HSDR 750

Overview

Macro Sensors' HSD and HSDR 750 Series of 3/4 inch (19 mm) diameter DC-operated LVDTs are designed for a wide range of position measurement applications. These are rugged hermetically sealed sensors, constructed entirely of stainless steel, and intended for general industrial use. The coil windings are sealed against hostile environments to IEC standard IP-68 and electrical termination is through a sealed axial (HSD) or radial (HSDR) connector. 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. The mating connector plug is supplied with the unit.

HSD and HSDR 750 Series sensors use built-in electronics to provide the desirable features of an LVDT, such as frictionless operation and dynamic response, with the added convenience and simplicity of DC input and pre-calibrated DC output. They are designed to operate in conjunction with PLCs, digital indicators, A/D converters, computer-based data processors and QC data collection systems.

Available in ranges of ± 0.015 inch (± 0.38 mm) to ± 10.0 inches (± 250 mm), HSD/HSDR 750 Series sensors feature the high resolution, excellent repeatability, and low hysteresis associated with LVDT technology. Their exceptional reliability is a result of manufacturing processes and assembly techniques developed and optimized by Macro Sensors over many years of manufacturing LVDT sensors. The maximum linearity error for any of these sensors is $\pm 0.25\%$ of full range output using a statistically best-fit straight line derived by the least squares method.

Macro Sensors offers several standard options that permit a user to customize HSD/HSDR 750 LVDTs, including Teflon® bore liners and metric threaded cores, as well as smaller diameter and low mass cores. In addition, Macro Sensors can provide a range of mounting accessories, core extension rods, and DC power supplies.

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Benefits

- Ranges of $\pm 0.015"$ to $\pm 10"$ [± 0.38 mm to ± 250 mm]
- In-line connector (HSD) or through-bore (HSDR)
- Environmentally sealed to IEC IP-68
- ± 15 V DC input, pre-calibrated 0 to ± 10 V DC output
- Non-linearity less than $\pm 0.25\%$ of FRO
- Mating plug for connector included

Applications

- Machine tool positioners
- Materials testing extensometers
- Hydraulic cylinder position
- Valve position sensing
- Automatic assembly equipment
- Corrosive environments

General Specifications

Input Voltage	± 15 V DC, $\pm 5\%$ ± 25 mA (nominal)
Input Frequency	2.5 to 3.0 kHz
Full Scale Output	0 to ± 10 V DC
Output Noise & Ripple	<10 mV rms
Frequency Response (-3dB)	250 Hz (nominal)
Repeatability Error	< 0.01% of FSO
Hysteresis Error	< 0.01% of FSO
Operating Temperature	0 °F to +160 °F -20 °C to +70 °C
Thermal Coefficient of Sensitivity	-0.015%/°F (nominal) -0.027%/°C (nominal)
Vibration Tolerance:	20 g to 2 kHz
Shock Survival	100 g, 11 ms

Ordering Information

- For standard HSD 750, order by model number with range.
- For metric threaded core option, add -006 after model number with range.
- For Teflon® bore liner option, add -010 after model number with range.
- For both options, add -016 after model number with range.

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Specifications

Model ▶ Parameter ▼	HSD 750 -015	HSD 750 -050	HSD 750 -125	HSD 750 -250	HSD 750 -500	HSD 750 -1000	HSD 750 -2000	HSD 750 -3000	HSD 750 -5000	HSD 750 -7500	HSD 750 -10000
Nominal Range (inches)	±0.015	±0.050	±0.125	±0.25	±0.50	±1.00	±2.00	±3.00	±5.00	±7.50	±10.00
Nominal Range (mm)	±0.38	±1.25	±3.0	±6.3	±12.5	±25	±50	±75	±125	±190	±250
Scale Factor (V/inch)	66.67	200	80	40	20	10	5.0	3.3	2.0	1.33	1.0
Scale Factor (V/mm)	2.62	8.0	3.3	1.6	0.8	0.4	0.2	0.13	0.08	0.05	0.04
Dimension "A" (inches)	2.82	2.86	3.48	4.24	6.74	8.24	11.21	14.49	19.49	25.00	32.38
Dimension "A" (mm)	71.6	72.5	88.3	107.7	171.2	209.3	284.7	368.0	495.0	635.0	822.5
Dimension "B" (inches)	0.80	0.80	1.25	1.65	3.45	3.45	5.30	6.20	6.20	7.00	9.50
Dimension "B" (mm)	20.3	20.3	31.7	41.9	87.6	87.6	134.6	157.5	157.5	177.8	241.3
Dimension "N" (inches)	0.63	0.63	1.13	1.35	2.57	3.33	5.07	6.45	8.95	11.52	15.42
Dimension "N" (mm)	16.0	16.0	28.8	33.8	65.4	84.6	128.8	163.8	227.3	292.6	391.6
Weight - Body (ounces)	1.9	1.9	2.5	3.1	4.1	4.9	8.3	10.3	12.1	16.3	20.4
Weight - Body (g)	54	54	68	80	114	140	236	292	342	462	579
Weight - Core (ounces)	0.08	0.08	0.12	0.18	0.40	0.40	0.65	0.80	0.80	0.90	1.20
Weight - Core (g)	2.4	2.4	3.7	4.8	11.6	11.6	18.0	22.0	22.0	25.5	34.0

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Dimensions

