GENERAL PURPOSE

LVDT Position Sensors
MACRO PR 750 | PR 812 | PRH 812

Overview

Macro Sensors' PR 750 Series of 3/4" (19 mm) diameter AC-Operated LVDTs are general purpose contactless linear position sensors for both OEM applications and end user requirements. PR 812 and PRH 812 Series AC LVDTs are 0.812" (20.6 mm) diameter versions of the PR 750 Series and are designed primarily for use in legacy OEM applications and are not recommended for new designs. In most applications they are a cost effective form, fit, and function replacement LVDT for an OEM or user employing a competitor's products of similar size and range.

PR 750, PR 812, and PRH 812 Series units are available in full scale measuring ranges from ±0.050" (±1.25 mm) to ±10" (±250 mm). PR 750 and PR 812 Series units offer a core-to-bore radial clearance of 0.031" (0.75 mm), while PRH 812 Series offer a core-to-bore radial clearance of 0.062" (1.6 mm), with the standard 0.25" (6.35 mm) diameter core supplied. PR Series sensors feature the high resolution, excellent repeatability, and low hysteresis associated with LVDT technology, as well as the highest sensitivity consistent with good linearity. The maximum linearity error for these sensors is ±0.25% of full range output, using a statistically best-fit straight line derived by the least squares method.

The proven reliability of PR Series LVDTs is a direct result of manufacturing processes and assembly techniques developed and optimized by Macro Sensors personnel over many years of making LVDTs. Their environmental robustness stems from the materials of their construction, such as glass-filled polymer coil forms for thermal stability and stainless steel housings that act as magnetic shields to reduce the effects of any external AC magnetic fields. Their external sealing meets IEC standard IP-61.

Macro Sensors offers several options that permit a user to customize PR 750, PR 812, and PRH 812 LVDTs, including Teflon® bore liners, metric threaded cores, smaller diameter cores for greater core-to-bore clearance or lower core mass, and construction for resistance to mild nuclear radiation. In addition to these standard options, Macro Sensors can design and produce a variety of special PR Series LVDTs, including units with different lead wire colors, configurations, exit points, and connectors; vented units for operation in pressurized fluids; and units for higher ambient temperatures. Contact the highly experienced Applications Engineers at Macro Sensors for help with any special requirements.

All PR Series LVDTs will operate properly with any conventional differential input LVDT signal conditioners, but operation with ratiometric LVDT signal conditioning circuits is not recommended. Macro Sensors offers a full line of LVDT signal conditioners that will deliver optimum performance from any PR 750, PR 812, or PRH 812 Series LVDTs.

Benefits

- Available in 0.750" or 0.812" diameters
- Ranges of ±0.05" to ±10" [±1.25 mm to ±250 mm]
- Non-linearity less than ±0.25%
- 220°F (105°C) operating temperature
- Coil assembly sealed to IEC IP-61
- Magnetically shielded SS housing

Applications

- Machine tools
- Materials testing
- Industrial robots
- Checkweigher scales
- Packaging machinery
- Valve position sensing

General Specifications

Input Voltage	3.0 Vrms (nominal)
Input Frequency	2.5 to 3.3 kHz
Linearity Error	< ±0.25% of FRO
Repeatability Error	< 0.01% of FSO
Hysteresis Error	< 0.01% of FSO
Operating Temperature (PR Series)	-65 °F to +220 °F -55 °C to +105 °C
Operating Temperature (PRH Series)	-65 °F to +300 °F -55 °C to +150 °C
Thermal Coefficient of Scale Factor	-0.01%/°F (nominal) -0.02%/°C (nominal)
Vibration Tolerance	20 g to 2 kHz
Shock Survival	1000 g, 11 ms

Ordering Information

- 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 small diameter core option, add -020 after model number with range.
- For mild radiation resistant option, add -080 to model number with range.
- For multiple options, add sum of dash numbers after model number with range.

Specifications

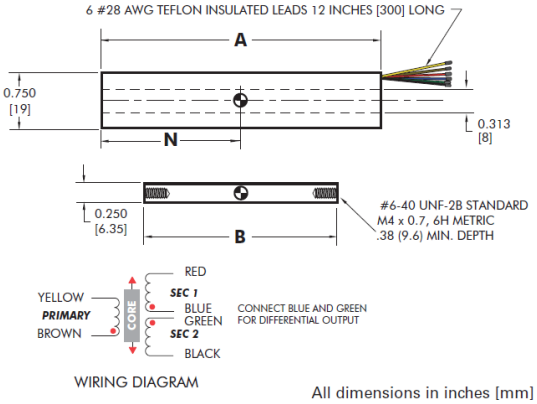
Parameter	PR 750 -050	PR 750 -100	PR 750 -200	PR 750 -500	PR 750 -1000	PR 750 -2000	PR 750 -3000	PR 750 -4000	PR 750 -5000	PR 750 -7500	PR 750 -10000
Nominal Range (inches)	±0.05	±0.10	±0.20	±0.50	±1.00	±2.00	±3.00	±4.00	±5.00	±7.50	±10.00
Nominal Range (mm)	±1.25	±2.5	±5.0	±12.5	±25	±50	±75	±100	±125	±190	±250
Sensitivity (mV/V/.001 inch)	6.5	4.0	2.4	0.65	0.65	0.39	0.26	0.18	0.13	0.12	0.08
Sensitivity (mV/V/mm)	255	155	95	25	25	15	10	7.1	5.1	4.3	3.1
Impedance, Primary (Ω)	400	1000	1900	1400	1650	1875	1950	425	1050	1380	1050
Dimension "A" (inches)	1.13	1.75	2.50	5.02	6.51	10.02	12.75	15.20	17.75	22.85	30.64
Dimension "A" (mm)	28.7	44.5	63.5	127.5	165.4	254.5	323.9	386.1	450.9	580.4	778.3
Dimension "B" (inches)	0.80	1.25	1.65	3.45	3.45	5.30	6.20	6.20	6.20	7.00	9.50
Dimension "B" (mm)	20.3	31.7	41.9	87.6	87.6	134.6	157.5	157.5	157.5	177.8	241.3
Dimension "N" (inches)	0.56	0.88	1.25	2.51	3.25	5.01	6.38	7.60	8.88	11.43	15.32
Dimension "N" (mm)	14.3	22.2	31.7	63.7	82.5	127.2	161.9	193.0	225.4	290.2	389.1
Weight, Body (ounces)	0.9	1.4	1.7	2.8	3.8	5.0	7.7	9.8	11.7	16.9	20.5
Weight, Body (grams)	26	40	48	80	108	142	218	278	332	480	582
Weight, Core (ounces)	0.14	0.22	0.30	0.72	0.72	1.20	1.34	1.34	1.34	1.51	2.20
Weight, Core (grams)	4.0	6.2	8.5	20.4	20.4	34.0	41.7	41.7	41.7	42.8	62.4

Model ▶ / Parameter ▼	PR 812 -050	PR 812 -100	PR 812 -200	PR 812 -500	PR 812 -1000	PR 812 -2000	PR 812 -3000	PR 812 -4000	PR 812 -5000	PR 812 -7500	PR 812 -10000
Nominal Range (inches)	±0.05	±0.10	±0.20	±0.50	±1.00	±2.00	±3.00	±4.00	±5.00	±7.50	±10.00
Nominal Range (mm)	±1.25	±2.5	±5	±12.5	±25	±50	±75	±100	±125	±190	±250
Sensitivity (mV/V/.001 inch)	6.5	4.0	2.4	0.65	0.65	0.39	0.26	0.18	0.13	0.12	0.08
Sensitivity (mV/V/mm)	255	155	95	25	25	15	10	7.1	5.1	4.3	3.1
Impedance, Primary (Ω)	400	1000	1900	1400	1650	1875	1950	425	1050	1380	1050
Dimension "A" (inches)	1.13	1.75	2.50	5.02	6.51	10.02	12.75	15.20	17.75	22.85	30.64
Dimension "A" (mm)	28.7	44.5	63.5	127.5	165.4	254.5	323.9	386.1	450.9	580.4	778.3
Dimension "B" (inches)	0.80	1.25	1.65	3.45	3.45	5.30	6.20	6.20	6.20	7.00	9.50
Dimension "B" (mm)	20.3	31.7	41.9	87.6	87.6	134.6	157.5	157.5	157.5	177.8	241.3
Dimension "N" (inches)	0.56	0.88	1.25	2.51	3.25	5.01	6.38	7.60	8.88	11.43	15.32
Dimension "N" (mm)	14.3	22.2	31.7	63.7	82.5	127.2	161.9	193.0	225.4	290.2	389.1
Weight, Body (ounces)	1.3	2.0	2.6	4.0	5.5	8.4	11.0	13.8	16.7	24.3	28.7
Weight, Body (grams)	37	57	74	114	156	238	312	392	474	690	814
Weight, Core (ounces)	0.14	0.22	0.30	0.72	0.72	1.20	1.34	1.34	1.34	1.51	2.20
Weight, Core (grams)	4.0	6.2	8.5	20.4	20.4	34.0	41.7	41.7	41.7	42.8	62.4

Model ▶ / Parameter ▼	PRH 812 -050	PRH 812 -100	PRH 812 -200	PRH 812 -300	PRH 812 -500	PRH 812 -1000	PRH 812 -2000	PRH 812 -3000	PRH 812 -4000	PRH 812 -5000	PRH 812 -7500	PRH 812 -10000
Nominal Range (inches)	±0.05	±0.10	±0.20	±0.30	±0.50	±1.00	±2.00	±3.00	±4.00	±5.00	±7.50	±10.00
Nominal Range (mm)	±1.25	±2.5	±5.0	±7.5	±12.5	±25	±50	±75	±100	±125	±190	±250
Sensitivity (mV/V/.001 inch)	5.9	4.2	2.4	1.3	0.65	0.39	0.22	0.23	0.18	0.15	0.11	0.07
Sensitivity (mV/V/mm)	230	165	95	51	26	15.3	8.6	9.1	7.1	5.9	4.3	2.8
Impedance, Primary (Ω)	400	1070	1900	800	460	430	670	115	275	600	775	550
Dimension "A" (inches)	1.13	1.81	2.50	3.22	5.50	6.62	10.00	12.81	15.64	17.88	22.85	30.84
Dimension "A" (mm)	28.7	46.0	63.5	81.8	139.7	168.1	254.0	325.4	397.3	454.1	580.4	783.3
Dimension "B" (inches)	0.80	1.30	1.65	1.95	3.45	4.00	5.30	5.60	7.00	7.00	7.00	8.50
Dimension "B" (mm)	20.3	33.0	41.9	49.5	87.6	101.6	134.6	142.2	177.8	177.8	177.8	215.9
Dimension "N" (inches)	0.56	0.90	1.25	1.61	2.75	3.31	5.00	6.40	7.82	8.94	11.43	15.41
Dimension "N" (mm)	14.3	23.0	31.7	40.9	69.9	84.1	127.0	162.6	198.6	227.1	290.2	391.4
Weight, Body (ounces)	1.3	2.0	2.6	2.9	4.0	4.7	8.4	11.0	13.8	16.7	24.3	28.7
Weight, Body (grams)	37	57	74	82	114	131	238	312	392	474	690	814
Weight, Core (ounces)	0.14	0.22	0.30	0.38	0.67	0.75	1.00	1.06	1.51	1.51	1.51	1.78
Weight, Core (grams)	4.0	6.2	8.5	10.8	19.0	21.3	28.3	30.0	42.8	42.8	42.8	55.4

Dimensions

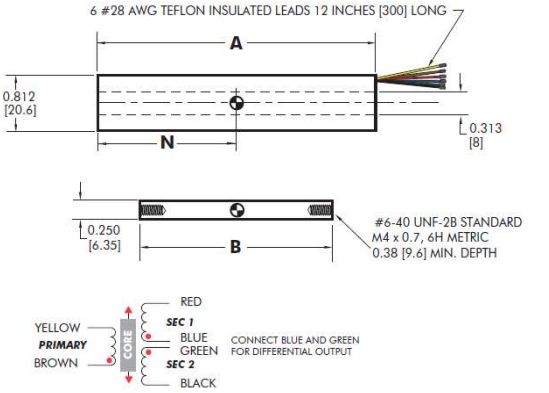
PR 750



WIRING DIAGRAM

All dimensions in inches [mm]

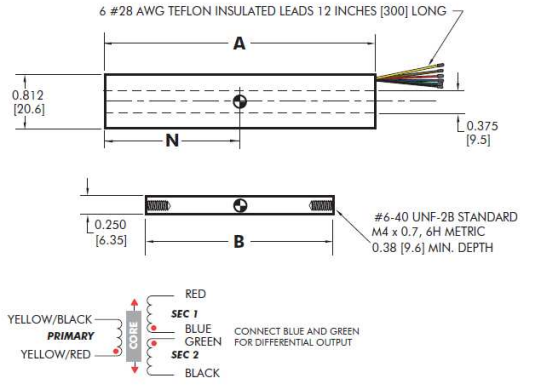
PR 812



WIRING DIAGRAM

All dimensions in inches [mm]

PRH 812



WIRING DIAGRAM

All dimensions in inches [mm]

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