

# PR 750 Series

## General Purpose LVDT Position Sensors



### Description

Macro Sensors' PR 750 Series of 3/4 inch (19 mm) diameter AC-Operated LVDTs are general purpose contactless linear position sensors for both OEM applications and end user requirements. They are available in full scale measuring ranges from  $\pm 0.050$  inch ( $\pm 1.25$  mm) to  $\pm 10$  inches ( $\pm 250$  mm) and offer a radial core-to-bore clearance of 0.031 inches (0.75 mm) with the standard 0.25 inch (6.35 mm) core supplied. PR 750 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 any of these sensors is  $\pm 0.25\%$  of full range output (FRO), 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

### Features

- Standard 3/4 inch (19 mm) diameter
- Ranges of  $\pm 0.050$  inch to  $\pm 10$  inches
- Non-linearity less than  $\pm 0.25\%$  of FRO
- 220°F (105°C) operating temperature
- Coil assembly sealed to IEC IP-61
- Magnetically shielded SS housing

### Typical Applications

- Machine Tools
- Materials Testing
- Industrial Robots
- Checkweigher Scales
- Packaging Machinery
- Valve Position Sensing
- Hydraulic Cylinder Position
- Automatic Assembly Equipment

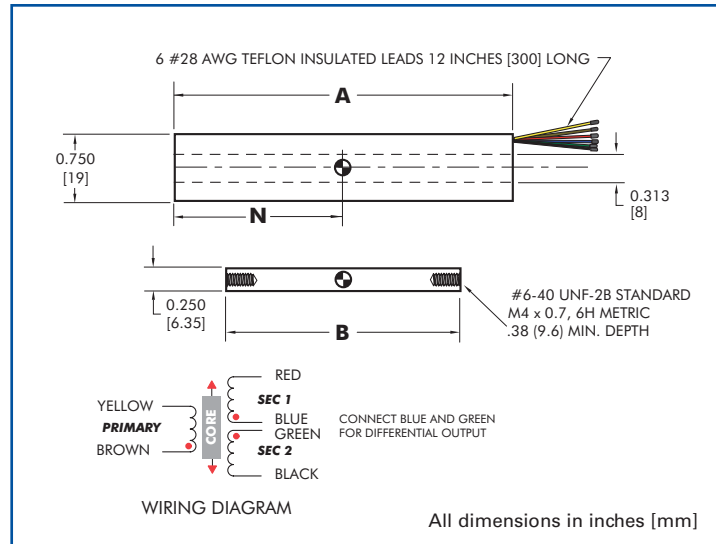
magnetic fields. Their external sealing meets IEC standard IP-61.

Macro Sensors offers several standard options that permit a user to customize PR 750 LVDTs, including Teflon® bore liners, metric threaded cores, smaller diameter cores for greater core-to-bore clearance and/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 custom PR 750 LVDTs, including units with different lead wire colors, configurations, exit points, and in-line 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 750 Series LVDTs will operate properly with any conventional differential input LVDT signal conditioners, but operation with ratiometric input 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 Series LVDTs. Details can be found in series 9000 technical bulletins.

### General Specifications

- Input Voltage:** 3.0 Vrms (nominal)
- Input Frequency:** 2.5 - 3.3 kHz
- Linearity Error:**  $\leq \pm 0.25\%$  of FRO
- Repeatability Error:**  $< 0.01\%$  of FSO
- Hysteresis Error:**  $< 0.01\%$  of FSO
- Operating Temperature:** -65°F to +220°F (-55°C to +105°C)
- Thermal Coefficient of Sensitivity:** -0.01%/°F (nominal) (-0.02%/°C nominal)
- Vibration Tolerance:** 20 g to 2 kHz
- Shock Survival:** 1000 g, 11 ms



### 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          |

### Ordering Information

- For standard PR 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 (not available with -080 option)
- For small diameter core option, add -020 after model number with range
- For mild radiation resistant option, add -080 to model number with range (not available with -010 option)
- For multiple options, add sum of dash numbers after model number with range
- For accessories, please visit our website at [www.macrosensors.com](http://www.macrosensors.com).



Innovators in Position Sensing

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