

Subsea / Marine Series

Custom Submersible LVDT Position Transmitters



Description

Macro Sensors are specialists in the design and manufacture of high-pressure and seawater resistant LVDT-based linear position sensors for incorporation into a wide variety of subsea measurement systems. Some typical applications include monitoring structural movement for long-term FEA (Finite Element Analysis) of pipelines, derricks, moorings and other critical high stress members on offshore oil platforms. LVDTs are designed for use in either pressure-balanced, oil-filled containers or directly in seawater.

As measurements must often be obtained in seawater to depths of 15,000 ft. and at external pressures of approximately 7500 psi, Macro Sensors designs its high-pressure and seawater resistant LVDTs from Monel 400, Inconel 625, and 316L stainless steel for pressure and corrosion resistance. These materials enhance the already high-reliability of the LVDT assembly, ensuring that it can meet service life requirements of at least 20 years, even if the device is fully exposed to seawater.

Features

- Long term reliability (20+ years)
- Inconel 625, Monel 400, and 316L stainless steel construction
- High pressure applications (to 7,500 psi)
- High level output (4-20 mA / 0-10 V DC)
- Non-linearity of $\pm 0.25\%$ of FRO or better
- High resolution
- Rugged design

Applications

- Off-shore drilling platforms
- Pipeline monitoring
- Choke valves
- ROV and exploration
- Mooring cables
- Extensometers

Macro Sensors' LVDTs also resolve the problem of getting a signal back to the surface, even at great water depths. To minimize the number of pressure-sealed I/O connections and to minimize noise over long transmission lines, a 4-20mA two-wire, loop-powered I/O can be utilized. Offsets can be easily made in the data acquisition system on the platform above. High pressure subsea connectors (Impulse, Seacon, Ametek, etc.) are also available and can be supplied in either an axial or radial configuration.

Another major advantage of using LVDTs for subsea applications is their extraordinary repeatability, regardless of offsets due to pressure and/or temperature. For more information on high pressure and chemically resistant LVDTs and other custom LVDT units from Macro Sensors, please contact the factory at sales@macrosensors.com.

Typical Specifications

Loop Supply Voltage:	10 V to 28 V DC	Repeatability Error:	<0.01% of FRO
Loop Resistance (Min.):	50 Ohms	Hysteresis Error:	<0.01% of FRO
Output:	4-20 mA, 0 - 10 V DC	Operating Temperature:	-20°F to +175°F (-30°C to +80°C)
Output Noise & Ripple:	≤ 10 μArms	Thermal Coefficient of Scale Factor:	-0.015%/°F (nominal) (-0.027%/°C nominal)
Frequency Response (-3dB):	50 Hz (nominal)	Vibration Tolerance:	20 g to 2 kHz
Linearity Error:	≤ ±0.25% of FRO ≤ ±0.10% optional	Shock Survival:	100 g, 11 ms

Typical Configurations

Custom design lengths, diameters, connectors and other specifications available. Please contact Macro Sensors for additional information.

