# Product E-Catalog

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LR-19 Series
LVIT Linear Position Sensor

Long Lasting, Contactless, Inductive Sensors

The LR-19 series LVIT (Linear Variable Inductance Transducer) position sensors by Alliance Sensors Group are contactless devices designed for factory automation and a variety of industrial and commercial applications such as motor sport vehicles, automotive testing, solar cell positioners, wind turbine prop pitch and brake positioners, contactless devices designed for factory automation and a variety of industrial and commercial applications. LR-19 series sensors are offered in 6 full scale ranges from 25 to 200 mm (1 to 8 inches). Operating from a variety of DC voltages, these sensors offer a choice of four analog outputs and all include ASG’s proprietary SenSet™ field calibration feature. LR-19 series products are available with axial cable or connector terminations, or with radial exiting cable and two swivel rod eye ends for easy installation.

The LR series also include a larger body version, the LR-27, for those applications needing a heavier duty unit. Additional information can be found at www.alliancesensors.com.

Features:
- LVIT Technology™ (Linear Variable Inductance Transducer)
- Contactless operation
- Excellent stroke-to-length ratio
- Proprietary SenSet™ field adjustable range scaling

Specifications:
- Analog I/Vs: 0 – 5 V or 0.5 – 4.5 V output with 8 – 30 V input, 35 mA max.
- Resolution: 0.025% of FS
- Update Rate: 300 Hz nominal
- Operating Temperature: -20 C to 85 C (40 C to 105 C extended temp.)
- Temperature Coefficient: ±0.015% of FS/°C
- Vibration: 5-20 Hz, 0.5 inch p-p; 20-2000 Hz, 4.2 g p-p
- Shock: 1000 g, 11 ms
- Humidity: 95% RH, non-condensing

Features:
- Linearity Error: ±0.15% of Full Scale Output (FSO) typical, ±0.25% max.
- Measuring Range: 25 mm to 200 mm (1 to 8 inches) full scale (nominal)
- Input Voltage: 0 – 10 V or 0.5 – 4.5 V
- Output Voltage: 0 – 5 V or 0.5 – 4.5 V
- Output Current: 4 to 20 mA
- Operating Temperature: -20 C to 85 C
- Temperature Coefficient: ±0.015% of FS/°C
- Vibration: 5-20 Hz, 0.5 inch p-p; 20-2000 Hz, 4.2 g p-p
- Shock: 1000 g, 11 ms
- Humidity: 95% RH, non-condensing

For use in:
- PV Solar Cell Positioner
- Wind Energy Systems
- Packaging Machinery
- Motorsport Vehicles
- Automotive Testing
- Factory Automation
- OEM Test Stands

LR-19 Series
LVIT Linear Position Sensor

Long Lasting, Contactless, Inductive Sensors

The LR-19 series LVIT (Linear Variable Inductance Transducer) position sensors by Alliance Sensors Group are contactless devices designed for factory automation and a variety of industrial and commercial applications such as motor sport vehicles, automotive testing, solar cell positioners, wind turbine prop pitch and brake positioner, contactless devices designed for factory automation and a variety of industrial and commercial applications.

LR-19 series sensors are offered in 6 full scale ranges from 25 to 200 mm (1 to 8 inches). Operating from a variety of DC voltages, these sensors offer a choice of four analog outputs and all include ASG’s proprietary SenSet™ field calibration feature. LR-19 series products are available with axial cable or connector terminations, or with radial exiting cable and two swivel rod eye ends for easy installation.

The LR series also include a larger body version, the LR-27, for those applications needing a heavier duty unit. Additional information can be found at www.alliancesensors.com.

Features:
- LVIT Technology™ (Linear Variable Inductance Transducer)
- Contactless operation
- Excellent stroke-to-length ratio
- Proprietary SenSet™ field adjustable range scaling

Specifications:
- Analog I/Vs: 0 – 5 V or 0.5 – 4.5 V output with 8 – 30 V input, 35 mA max.
- Resolution: 0.025% of FS
- Update Rate: 300 Hz nominal
- Operating Temperature: -20 C to 85 C (40 C to 105 C extended temp.)
- Temperature Coefficient: ±0.015% of FS/°C
- Vibration: 5-20 Hz, 0.5 inch p-p; 20-2000 Hz, 4.2 g p-p
- Shock: 1000 g, 11 ms
- Humidity: 95% RH, non-condensing

Features:
- Linearity Error: ±0.15% of Full Scale Output (FSO) typical, ±0.25% max.
- Measuring Range: 25 mm to 200 mm (1 to 8 inches) full scale (nominal)
- Input Voltage: 0 – 10 V or 0.5 – 4.5 V
- Output Voltage: 0 – 5 V or 0.5 – 4.5 V
- Output Current: 4 to 20 mA
- Operating Temperature: -20 C to 85 C
- Temperature Coefficient: ±0.015% of FS/°C
- Vibration: 5-20 Hz, 0.5 inch p-p; 20-2000 Hz, 4.2 g p-p
- Shock: 1000 g, 11 ms
- Humidity: 95% RH, non-condensing
LR-27 Series

LVIT Linear Position Sensor

Alliance Sensor Group’s LR-27 series LVIT (Linear Variable Inductance Transducer) contactless position sensors are heavy duty contactless devices designed for factory automation systems and a variety of industrial and commercial applications such as solar cell positioners, wind turbine prop pitch and brakes, chute or gate positioners on-off road or agri-vehicles, and packaging machinery. The modular design, high end performance, and excellent stroke-to-length ratio make the LR-27 sensors an ideal choice for in-plant or mobile equipment OEMs. LR-27 series sensors are currently offered in 5 full scale ranges from 50 mm to 200 mm (2 to 8 inches). Operated from a variety of DC voltages, these sensors offer a choice of four analog outputs and include ASG's propri-etary Senset™ field recalibration feature. LR-27 products are available with either a radial exiting cable and two spherical rod eye ends with axial cable or connector terminations.

The LR series also include a smaller body version, the LR-19, for applications where a reduced body envelope is required or the LRL-27 for longer strokes lengths up to 450 mm. Additional information can be found at www.alliancesensors.com.

Features:

- LVIT Technology™ (Linear Variable Inductance Transducer)
- Contactless operation prevents wearout from dithering or cycling
- Excellent stroke-to-length ratio
- Proprietary Senset™ field adjustable range scaling

Specifications:

Analog I/Os:
- 0 – 5 V or 0.5 – 4.5 V output with 8 – 30 V input, 35 mA max.
- 0 – 10 V output with 12 – 30 V input, 35 mA max.
- 4 – 20 mA (3-wire) output with 18 – 30 V input, 60 mA max. (75 C max.)

Measuring Ranges:
- 50 mm to 200 mm (2 to 8 inches) full scale (nominal)

Linearity Error:
- ±0.15% of Full Scale Output (FSO) typical, ±0.25% max.

Temperature Coefficient:
- ±0.015% of FSO/deg C

Vibration:
- 5.20 Hz 0.5 inch p-p; 20-2000 Hz 4.2 g p-p

Shock:
- 1000 g, 11 ms

Terminations:
- IEC IP-67

Humidity:
- 95% RH, non-condensing

Ordering information:

<table>
<thead>
<tr>
<th>Series</th>
<th>Output</th>
<th>Housing Diameter (mm)</th>
<th>Range (mm)</th>
<th>Electrical Terminal</th>
<th>Output</th>
<th>Housing Material</th>
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<tbody>
<tr>
<td>LR X-</td>
<td>E - Voltage</td>
<td>XXXX-</td>
<td>27 - 27 mm</td>
<td>X-</td>
<td>05 - 0.5 to 4.5 V</td>
<td>A - Aluminum</td>
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<td>LR XX-</td>
<td>050</td>
<td>A - Axial</td>
<td>00 - 1 m cable</td>
<td>X-</td>
<td>06 - 4.5 to 0.5 V</td>
<td>B - 300 Series SS</td>
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<tr>
<td>LR</td>
<td>I - Current</td>
<td>075</td>
<td>R - Radial (cable only)</td>
<td>01 - 5 pin M12</td>
<td>10 - 10.0 V</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11 - 10.0 to 0 V</td>
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<td>150</td>
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<td>20 - 4 to 20 mA</td>
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<td>21 - 20 to 4 mA</td>
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<td>50 - 0 to 5 V</td>
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<td></td>
<td></td>
<td>51 - 5 to 0 V</td>
<td></td>
</tr>
</tbody>
</table>

Alliance Sensors Group
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For Use in:
Packaging Machinery
Factory Automation
Automotive Testing
OEM Test Stands
LRL-27 Series
LVIT Linear Position Sensor for Extended Ranges
Long Lasting, Contactless, Inductive Sensors

Alliance Sensor Group’s LRL-27 series LVIT (Linear Variable Inductance Transducer) contactless position sensors complement the LR series devices with extended ranges up to 18 inches (450 mm) in a compact package. These sensors are designed for use in factory automation systems and a wide variety of industrial and commercial applications. Cost effective high-end performance and excellent stroke-to-length ratios make these sensors ideal choices for practically any industrial application.

LRL-27 sensors are offered in 5 nominal ranges from 250 to 450 mm (10 to 18 inches). Operated from a variety of DC voltages, these sensors offer a user a choice of four analog outputs and include ASG’s proprietary SenSet™ field adjustable range scaling feature. LRL-27 products are available with either a radial exiting cable and two spherical rod eye ends with axial cable or connector terminations. The LR series also include a smaller body version, the LR-19, for applications where a reduced body envelope is required or the LR-27 for shorter stroke lengths from 50 to 200 mm. Additional information can be found at www.alliancesensors.com.

Features:
- LVIT Technology™ (Linear Variable Inductance Transducer)
- Contactless operation
- Excellent stroke-to-length ratio
- Proprietary SenSet™ field adjustable range scaling

Specifications:
- Analog I/Os: 0 – 5 V or 0.5 – 4.5 V output with 8 – 30 V input, 35 mA max.
- 0 – 10 V output with 12 – 30 V input, 35 mA max.
- 4 – 20 mA (3-wire) output with 18 – 30 V input, 60 mA max. (75 C max.)
- Measuring Ranges: 250 mm to 450 mm (10 to 18 inches) full scale (nominal)
- Linearity Error: ±0.15% of Full Scale Output (FSO) typical, ±0.25% max.
- Resolution: 0.025% of FSO
- Update Rate: 300 Hz nominal
- Operating Temperature: -20°C to 85°C (-40°C to 105°C Extended Range)
- Temperature Coefficient: ±0.015% of FSO/°C
- Vibration: 5-20 Hz 0.5 inch p-p; 20-2000 Hz 4.2 g p-p
- Shock: 1000 g, 11 ms
- Terminations: IEC IP-67
- Humidity: 95% RH, non-condensing

Ordering information:

<table>
<thead>
<tr>
<th>Series</th>
<th>Output</th>
<th>Housing Diameter</th>
<th>Range (mm)</th>
<th>Electrical Terminal</th>
<th>Housing Material</th>
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</thead>
<tbody>
<tr>
<td>LRL</td>
<td>E - Voltage</td>
<td>27 - 27 mm</td>
<td>250</td>
<td>X - Axial</td>
<td>A - Aluminum</td>
</tr>
<tr>
<td></td>
<td>I - Current</td>
<td>300</td>
<td>350</td>
<td>R - Radial (cable only)</td>
<td>S - 300 Series SS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>400</td>
<td>06 - 4.5 to 0.5 V</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>450</td>
<td>10 - 0 to 10.0 V</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>500</td>
<td>11 - 10.0 to 0 V</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>550</td>
<td>20 - 4 to 20 mA</td>
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<td>600</td>
<td>21 - 20 to 4 mA</td>
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<td>650</td>
<td>50 - 0 to 5 V</td>
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<td></td>
<td></td>
<td>700</td>
<td>51 - 5 to 0 V</td>
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</tr>
</tbody>
</table>

For Use in:
Packaging Machinery
Chute/Gate Position
Factory Automation
Automotive Testing
LZ-25 Series
LVIT Linear Position Sensor
Through-bore LVIT Linear Position Sensor with superior stroke-to-body-length ratio

The LZ-25 Series of LVIT (Linear Variable Inductance Transducer) position sensors are contactless devices designed for frictionless measurement in factory automation or assembly machinery applications where space is a premium, as well as for external mounting on hydraulic cylinders to sense rod position. The LVIT is offered in nominal full scale ranges from 50 to 900 mm (2 to 36 inches) with an excellent stroke-to-length ratio, so that the sensor’s overall length is only 38 mm (1.5 inches) longer than the linear range of the unit. The sensor has a 25.4 mm (1 inch) outside diameter aluminum or optional stainless steel body with a 1 mm radial cable for I/O connections. The 7.5 mm (0.295 inch) diameter through-bore of an LZ-25 provides clearance for its 6.35 mm (0.25 inch) diameter moving rod, which is made of the same material as its housing. This through-bore feature also means that the sensor is not subject to damage from typical mechanical overstrking.

Additional information can be found at www.alliancesensors.com.

Features
- LVIT Technology™ (Linear Variable Inductance Transducer)
- Contactless operation—frictionless measurement
- Excellent stroke-to-body-length ratio
- Through-bore design
- Proprietary SenSet™ field adjustable range scaling

Specifications
- Analog I/Os: 0 – 5 V or 0.5 – 4.5 V DC output; 8 – 30 V input, 35 mA max.
- 0 – 10 V DC output; 12 – 30 V input, 35 mA max
- 0 – 20 mA (3-wire) output; 18 – 30 V input, 60 mA max. (75 C max)
- Measuring Ranges: 50 to 900 mm (2 to 36 inches) full scale (nominal)
- Linearity Error: ±0.15% of Full Scale Output (FSO) typical, ±0.25% max.
- Resolution: 0.025% of FS
- Update Rate: 300 Hz nominal
- Operating Temperature: -20 to 85 C (-40 to 105 C extended temp.)
- Temperature Coefficient: ≤0.015% of FS/C
- Vibration: 5-20 Hz 0.5 inch p-p; 20-2000 Hz 4.2 g p-p
- Shock: 1000 g, 11 msec.
- Tolerances: IEC IP-67
- Humidity: 95% RH, non-condensing

Ordering information:

<table>
<thead>
<tr>
<th>Series</th>
<th>Output</th>
<th>Housing Diameter</th>
<th>Range (mm)</th>
<th>Electrical Termination</th>
<th>Output</th>
<th>Housing/Rod Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>LZ</td>
<td>E-Voltage</td>
<td>25 - 25 mm</td>
<td>050 - 300</td>
<td>R - Radial</td>
<td>05 - 0.5 to 4.5 V</td>
<td>A - Aluminum</td>
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<tr>
<td></td>
<td>I-Current</td>
<td>(50 mm increments)</td>
<td>06 - 4.5 to 0.5 V</td>
<td>S - 300 Series SS</td>
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<td></td>
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<td>10 - 0 to 10.0 V</td>
<td>11 - 10.0 to 0 V</td>
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<td></td>
<td></td>
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<td>20 - 4 to 20 mA</td>
<td>21 - 20 to 4 mA</td>
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<td>450 - 900</td>
<td>60 - 0 to 5 V</td>
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<td>(150 mm increments)</td>
<td>61 - 5 to 0 V</td>
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</tr>
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LV-45 Series
LVIT Linear Position Sensor

For use in:
Steel, Aluminum, and Paper Mills
Power Generation Steam Valves
Material Creep Measurements
Roadway/Bridge Expansion
Hydro Power Plants

LV-45 Series LVIT Linear Position Sensor

Designed Specifically for Heavy Duty Industrial and Civil Engineering Applications

Alliance Sensors Group LV-45 series LVIT (Linear Variable Inductance Transducer) position sensors are specifically targeted for measuring applications requiring rugged devices, whether measuring position of steam turbine valves, mounted in a paper mill head box or calendar roll stand, or operating outdoors fastened to a bridge or structure. LV-45 sensors use a contactless inductive technology that allows them to replace other technology sensors like potentiometers and DC LVDTs in most applications. With a simple coil design, a captive connecting rod, and a thick walled housing, the sensors are both shorter and more robust than their DC-LVDT counterparts while operating over a wider temperature range, so they can withstand the vibration and shock levels found in mills and power plants, as well as the temperature and humidity found in outdoor applications. Once a sensor has been installed, ASG’s SenSet™ range adjustment process permits a user to match the sensor's zero and full scale output to the workpiece's actual range of motion. Additional information can be found at www.alliancesensors.com

Features:
• LVIT Technology™ (Linear Variable Inductance Transducer)
• Contactless operation
• Excellent stroke to length ratio
• Proprietary SenSet™ field adjustable range scaling

Specifications:

Analog I/Os

<table>
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<th>Range</th>
<th>Description</th>
<th>Max.</th>
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<tbody>
<tr>
<td>0 – 5 V</td>
<td>0 – 30 V input, 35 mA max.</td>
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<tr>
<td>0 – 10 V</td>
<td>0 – 30 V input, 35 mA max.</td>
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</tr>
<tr>
<td>4 – 20 mA (3-wire)</td>
<td>0 – 30 V input, 60 mA max. (75 C max.)</td>
<td></td>
</tr>
</tbody>
</table>

Measuring Range

<table>
<thead>
<tr>
<th>Length</th>
<th>Resolution</th>
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<tbody>
<tr>
<td>4 inches (100 mm)</td>
<td>±0.025% of FSO</td>
</tr>
<tr>
<td>6 inches (150 mm)</td>
<td>±0.025% of FSO</td>
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<tr>
<td>8 inches (200 mm)</td>
<td>±0.025% of FSO</td>
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<tr>
<td>10 inches (250 mm)</td>
<td>±0.025% of FSO</td>
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<tr>
<td>12 inches (300 mm)</td>
<td>±0.025% of FSO</td>
</tr>
<tr>
<td>15 inches (375 mm)</td>
<td>±0.025% of FSO</td>
</tr>
<tr>
<td>18 inches (450 mm)</td>
<td>±0.025% of FSO</td>
</tr>
</tbody>
</table>

Specifications are subject to change without notice. © Alliance Sensors Group, 2016
LRS-18 Series

Spring Loaded LVIT Linear Position Sensor

Long Lasting, Contactless, Inductive Sensors

The LRS-18 series of LVIT (Linear Variable Inductance Transducer) spring loaded position sensors by Alliance Sensors Group are contactless devices designed for dimension or position measuring applications in factory automation and in various industrial and commercial applications such as automotive testing, mil/aero test stands, robotic arms, and packaging equipment, where the sensing element cannot be attached to the object being measured. LRS-18s are offered in full scale ranges from 12.5 to 100 mm (0.5 to 4.0 inches) with excellent resolution and high stroke-to-body-length ratios. The maximum tip force on the item being measured is 1 pound.

LRS-18 sensors have a 19 mm (0.75 inch) diameter aluminum or stainless steel body with an M18 x 1 thread and come with two hex jam nuts for easy installation in place of an 18 mm analog prox sensor. These sensors use a 0.25 inch diameter probe equipped with an AGD No. 9 contact tip, and are offered with either an axial cable or a connector. Operating from a variety of DC voltages, the sensors are available with a choice of four analog outputs and they all include ASG’s proprietary SenSet™ field calibration feature.

Additional information can be found at www.alliancesensors.com.

Features:

- Spring loaded LVIT Technology™ (Linear Variable Inductance Transducer)
- Ranges from 0.5 to 4.0 inches (12.5 to 100 mm)
- Contactless operation prevents internal wearout from dithering or rapid cycling
- Excellent stroke-to-body-length ratio
- Proprietary SenSet™ field adjustable range scaling

Specifications:

- Analog I/Os: 0 - 5 V or 0.5 - 4.5 V DC output with 8 - 30 V input, 35 mA max.
- 0 - 10 V DC output with 12 - 30 V input, 35 mA max.
- 4 - 20 mA (3-wire) output with 18 - 30 V input, 60 mA max. (75 C max.)
- Measuring Ranges: 12.5 mm to 100 mm (0.5 to 4.0 inches) full scale
- Linearity Error: ≤0.15% of Full Scale Output (FSO) typical, ≤0.25% max.
- Resolution: 0.025% of FS
- Operating Temperature: -20 to 85 C (-40 to 105 C Extended Range)
- Temperature Coefficient: ≤0.015% of FS/K
- Vibration: 5-20 Hz 0.5 inch p-p; 20-2000 Hz 4.2 g p-p
- Shock: 1000 g, 11 msec.
- Terminations: IEC IP-67
- Humidity: 95% RH, non-condensing

Ordering Information

<table>
<thead>
<tr>
<th>Series</th>
<th>Output</th>
<th>Housing Thread</th>
<th>Range (mm)</th>
<th>Electrical Termination</th>
<th>Housing Material</th>
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<tbody>
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<td>LRS</td>
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Off The Shelf Connection Solutions

Standard AGD Contact Tip

Industry Standard M18 x 1 Threads

Industry Standard Connectors and Cable Options

Alliance Sensors Group
102 Commerce Drive, Unit B
Moorestown, New Jersey 08057 USA
Ph: 856-727-0250
www.alliancesensors.com
info@alliancesensors.com
GHS-19 Series
Spring-Loaded LVIT Linear Position Sensors
Low Cost, Compact, High Performance Gaging Probes

The GHS-19 series of LVIT (Linear Variable Inductive Transducer) spring-loaded position sensors by Alliance Sensors Group are contactless devices designed for dimension measurements in QA labs, or position measuring applications in factory automation systems and in various industrial and commercial applications such as automotive testing, mil/aero test stands, robotic arms, and packaging equipment, where the sensing element cannot be attached to the object being measured. GHS-19s are offered in nominal full scale ranges from 13 to 100 mm (0.5 to 4.0 inches) with excellent resolution and high stroke-to-body-length ratios. The maximum tip contact force on the item being measured is 1 pound.

GHS-19 sensors have a 0.75 inch (19 mm) diameter aluminum or stainless steel body with a 1/2-20 UNF 2A thread 1.5 inches (38 mm) long with two 19 mm (0.75 inch) hex jam nuts for drop-in installation in place of a spring-loaded DC LVDT gage head. These sensors utilize a probe equipped with a No. 9 contact tip, and are offered with a PT02-10-6P connector. Operating from a variety of DC voltages, these sensors are available with a choice of one of four analog outputs. They all include ASG’s proprietary SenSet™ field calibration feature. Additional information can be found at www.alliancesensors.com.

Features:
- Spring-loaded LVIT Technology™ (Linear Variable Inductance Transducer)
- Contactless operation prevents internal wearout from dithering or rapid cycling
- Excellent stroke-to-body-length ratio
- Proprietary SenSet™ Field Adjustable Range Scaling

Specifications:
- Analog I/Os
  - 0 - 5 or 0.5 - 4.5 VDC output with 8 - 30 VDC input, 35 mA max.
  - 0 - 10 VDC output with 12 - 30 VDC input, 35 mA max.
  - 4 - 20 mA (3-wire) output with 18 - 30 VDC input, 60 mA max. (75 C max.)
- Measuring Ranges
  - 13 mm to 100 mm (0.5 to 4.0 inches) full scale (nominal)
- Linearity Error
  - ±0.15% of Full Scale Output (FSO) typical, ±0.25% max.
- Resolution
  - 0.0025% of FS
- Operating Temperature
  - -20 to 85 C (-40 to 105 C Extended Range)
- Temperature Coefficient
  - ±0.015% of FS/K
- Vibration
  - 5-20 Hz, 0.5 inch p-p; 20-2000 Hz, 4.2 g p-p
- Shock
  - 1000 g, 11 msec.
- Terminations
  - IEC IP-67
- Humidity
  - 95% RH, non-condensing
**MHP-7 Series**

**LVIT Linear Position Sensor**

Specifically designed for position feedback of hydraulic and pneumatic cylinders

The MHP-7 Series LVIT (Linear Variable Inductance Transducer) Position Sensors from Alliance Sensors Group were designed to be installed into the rear endcap of hydraulic cylinders having a female o-ring port. Their 1-inch hex aluminum or stainless steel housings are ideal for operation up to 5000 psig (350 bar) in high pressure mobile hydraulic systems, factory automation machinery, or oil and gas exploration equipment. The MHP-7 series sensors are based on a proprietary contactless sensing technology with a high stroke-to-length ratio. They employ a 7 mm diameter sealed inductive probe inserted into a gun-drilled hole in the cylinder rod to measure its position rather than using a ring magnet or a potentiometer’s contact spool. They are offered in full scale ranges from 25 to 600 mm (1 to 24 inches), with a wide variety of analog I/Os, and either connector or cable terminations. The MHP-7 is also offered with ASG’s proprietary SenSet™ feature whereby a sensor’s analog output can be easily adjusted in the field after installation to match the range of motion of the cylinder rod. Additional information can be found at www.alliancesensors.com.

**Features:**
- LVIT Technology™ (Linear Variable Inductance Transducer)
- Senses cylinder rod...**NO MAGNET REQUIRED**
- 1-inch hex aluminum or stainless steel housing
- Easily adapts to existing cylinder designs
- Contactless sensing for long sensor life
- Proprietary SenSet™ for field adjustable range scaling

**Specifications:**

- **Analog I/Os:** 0 – 5 V or 0.5 – 4.5 V output with 8 – 30 V input, 35 mA max.
- 0 – 10 V output with 12 – 30 V input, 35 mA max.
- 4 – 20 mA (3-wire) output with 18 – 30 V input, 60 mA max. (75 C max.)
- **Measuring Ranges:** 0-25 mm to 0-600 mm (1 to 24 inches) Full Scale (nominal)
- **Linearity Error:** ±0.15% of Full Scale Output (FSO) typical, ±0.25% of FSO max.
- **Resolution:** 0.025% of FSO
- **Update Rate:** 300 Hz nominal

- **Operating Pressure:** 5000 psig (350 bar) max operating, 7500 psig (520 bar) proof
- **Temperature Coefficient:** 0.00015% of FSO/°C
- **Operating Temperature:** -20 to 80 °C (-40 to 105 °C extended temp.)
- **Resolution Error:** ±0.01% of FSO (±0.15% FSO typical)
- **Temperature Coefficient:** ±0.00015% of FSO/°C
- **Measuring Ranges:** See range table

- **Voltage Output:** 0 - 5 V DC output, 8 - 30 V DC input, 35 mA max.
- **Current Output:** 4 - 20 mA DC output, 18 - 30 V DC input, 60 mA max. (75 °C max.)

**Ordering Information**

- **Ordering Guide:** MHP X- X- XXX- XX- XX- XX- X XX- XX
- **Pressure Media:** Standard mineral oil and HWB hydraulic fluids
- **Vibration:** 5-20 Hz, 0.5 inch p-p; 20-2000 Hz, 4.2 g p-p
- **Temperature coefficient:**
  - Operating Temperature Range: -20 to 85 °C (-40 to 105 °C extended temp.)
  - Resolution: ±0.025% of FSO
  - Linearity Error: ±0.15% of FSO (±0.25% max.)

**Wiring Table**

- **I/O Function**:
  - Power Input: 1 Red
  - Ground: 2 Black
  - Voltage output: 3 Green
  - Current output: 4 Green
  - SenSet™: 5 White

**Additional Information**

More details on the product can be found on the website www.alliancesensors.com.
MR-7 Series

LVIT Linear Position Sensors

Lower cost, more robust alternative to magnetoresistive sensors

The MR-7 Series LVIT (Linear Variable Inductance Transducer) Position Sensors from Alliance Sensors Group has been designed as an alternative to magnetoresistive sensors that have more robust construction and a lower cost of ownership. The unit can be port mounted in industrial or mobile hydraulic cylinders and pneumatic actuators. These MR-7 Series sensors are based on a proprietary contactless inductive sensing technology that employs a 7 mm diameter probe with a shorter stroke-to-length ratio than most other technologies, and uses a gun drilled hole in the cylinder rod for sensing the rod position rather than requiring a ring magnet assembly.

An MR-7 has a 1.75 inch (44.5 mm) hex sensor head with a male o-ring port thread, so it can be mounted in the same SAE dash 8 or 18 mm o-ring port as magnetoresistive sensors. Because they are contactless, MR-7 Series sensors do not wear out and have no output signal deterioration over the life of the sensors, and because it uses an inductive coil, an MR-7 sensor can withstand much greater shock and vibrations than other technologies. One very useful element of MR-7 sensors is ASG’s proprietary SenSet™ feature whereby a sensor’s analog output can be easily adjusted in the field after installation to match the range of motion of the cylinder rod.

Additional information can be found at www.alliancesensors.com.

Features:
- LVIT Technology™ (Linear Variable Inductance Transducer)
- Contactless sensing for long sensor life
- Easily adapts to existing cylinder designs
- Proprietary SenSet™ field adjustable range scaling
- Senses cylinder rod...no need for magnet

Specifications:
- Analog I/Os
  - 0 – 5 V or 0 – 4.5 V output with 8 – 30 V input, 35 mA max.
  - 0 – 10 V output with 12 – 30 V input, 35 mA max.
  - 4 – 20 mA (3-wire) output with 18 – 30 V input, 60 mA max. (75 C max.)
- Measuring Ranges
  - 0.25 to 600 mm (1 inches to 24 inches) (nominal)
- Linearity Error ≤±0.015% of FSO/K (20% of Range)
- Update Rate
  - 500 psig (35 bar) nominal
- Operating Temperature
  - -20 C to 85 C (40 C to 105 C Extended Range)
- Temperature Coefficient ≤±0.015% of FSO/deg C
- Operating Pressure
  - 5000 psig (350 bar) operating, 7500 psi (520 bar) proof
- Vibration
  - 5-20 Hz 0.5 inch p-p; 20-2000 Hz 4.2 g p-p
- Shock
  - 1000 g, 11 msec
- Terminations
  - IEC IP67
- Humidity
  - 95% RH, non-condensing

ORDERING INFORMATION:

Ordering Guide

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<thead>
<tr>
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<th>Size (mm)</th>
<th>Pin Color</th>
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<tr>
<td>Z-Steel</td>
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</table>

For use in: Hydrostatic and Pneumatic Cylinders Mobile Hydraulic Equipment

For use in: Mobile Pneumatic and Hydraulic Equipment

[Image of MR-7 Series LVIT Linear Position Sensors]

For use in: Mobile Pneumatic and Hydraulic Equipment

[Image of MR-7 Series LVIT Linear Position Sensors]
**ME-7 Series**

**LVIT Linear Position Sensor**

Lower cost, more robust alternative to magnetostrictive sensors

The ME-7 Series LVIT (Linear Variable Inductance Transducer) Position Sensors from Alliance Sensors Group has been designed as an alternative to magnetostrictive sensors and has more robust construction and a lower cost of ownership. The unit can be embedded into the end cap of industrial or mobile hydraulic cylinders and pneumatic actuators. These ME-7 Series sensors are based on a proprietary contactless inductive sensing technology that employs a 7 mm diameter probe with a shorter stroke-to-length ratio than most other technologies, and uses a gun drilled hole in the cylinder rod for sensing the rod position rather than requiring a ring magnet assembly.

An ME-7 has a 1.89 inch (48 mm) diameter sensor head with an o-ring and back up ring in a groove, so it can be mounted in the same cavity in the cylinder cap and locked in with radial set screws just like a magnetostrictive sensor. An ME-7 magnet assembly.

An ME-7 (75 C max.)

- Proprietary SenSet™ feature whereby a sensor's analog output can be adjusted in the field after installation to compensate for field adjustable range scaling

**Specifications:**

- Analog I/Os: 0 – 5 V or 0.5 – 4.5 V output with 8 – 30 V input, 35 mA max.
- 0 – 10 V output with 12 – 30 V input, 35 mA max.
- 4 – 20 mA (3-wire) output with 18 – 30 V input, 60 mA max. (75 C max.)
- Measuring Ranges: 0.25 mm to 0-600 mm (1 to 24 inches) Full Scale (nominal)
- Linearity Error: ±0.15% of Full Scale Output (FSO) typical, ±0.25% of FSO max.
- Resolution: 0.025% of FSO
- Update Rate: 300 Hz nominal
- Operating Temperature: -20 to 85 °C (-40 C to 105 C Extended Range)
- Temperature Coefficient: ±0.015% of FSO/°C
- Operating Pressure: 5000 psig (350 bar) max operating, 7500 psig (520 bar) proof
- Vibration: 5-20 Hz 0.5 inch p-p; 20-2000 Hz 4.2 g p-p
- Shock: 1000g, 11 msec
- Terminations: IEC IP-67
- Humidity: 95% RH, non-condensing

**Ordering information:**

- Series: ME
- Output: Voltage, Current
- Probe Dia. Range (mm): 0.25 - 300
- Body Diameter: 48 - 46 mm
- Termination: 60 - 120 Vdc
- Housing Material: Aluminum
- Sensor Size: 35 - 80 mm
- Sensor Material: Stainless Steel

**Wiring Table:**

- Power input: Red
- Ground: Black
- Analog output: Green
- SenSet™: White

**ALLIANCE SENSORS GROUP**

A DIVISION OF H.G. SCHAEVITZ LLC

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www.alliancesensors.com
info@alliancesensors.com
**SS-7 Series**

**LVIT Linear Position Sensor for Subsea**

Specifically designed for Subsea High Pressure PBOF Environments with No Magnet Required!

The SS-7 series LVIT (Linear Variable Inductance Transducer) Position Sensors from Alliance Sensors Group have been designed to give cylinder position feedback in subsea environments with depths up to 12,000 ft or in a PBOF (pressure balanced oil filled) chamber. For oil and gas exploration, blow out preventers, ROVs, and relief valves.

The SS-7 requires no magnet and is based on a proprietary contactless inductive sensing technology that employs a 7 mm diameter probe with a good stroke to length ratio to save space and a gun drilled hole in the cylinder rod. The SS housing 1-inch diameter 316 stainless steel and comes standard with a LSG-4-BC connector. They are offered in ranges from 25 to 600 mm (1 to 24 inches) full scale with a wide variety of analog I/Os. SS-7 sensors are also offered with ASG's proprietary SenSet™ feature whereby a sensor's analog output can be easily adjusted in the field after installation to match the range of motion of the cylinder rod.

Additional information can be found at www.alliancesensors.com.

**Features:**
- LVIT Technology™ (Linear Variable Inductance Transducer)
- Contactless sensing for long sensing life
- Operational to 12,000 ft depth or 5200 psig (350 bar)
- Proprietary SenSet™ field adjustable range scaling
- Senses cylinder rod...no magnet required

**Specifications:**

Analog I/Os:
- 0 – 5 V or 0.5 – 4.5 V output with 8 – 30 V input, 35 mA max.
- 0 – 10 V output with 12 – 30 V input, 35 mA max.
- 4 – 20 mA (3-wire) output with 18 – 30 V input, 60 mA max. (75°C max.)

Measuring Ranges:
- 25 mm to 600 mm (1 to 24 inches) Full Scale (nominal)

Linearity Error:
- ±0.15% of Full Scale Output (FSO) typical, ±0.25% of FSO max.

Resolution:
- 0.025% of FSO

Update Rate:
- 300 Hz nominal

Operating Temperature:
- -20 to 85°C (-40°C to 105°C Extended Range)

Temperature Coefficient:
- ±0.015% of FS/°C

Operating Pressure:
- 5200 psig max. (350 bar)

Vibration:
- 5-20 Hz 0.5 inch p-p; 20-2000 Hz 4.2 g p-p

Shock:
- 1000g, 11 ms

Ordering information:

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<th>Range (mm)</th>
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<td>150 - 600</td>
<td>M8 x 1.2</td>
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**SPECIFICATIONS:**

- **LVIT Technology**: Linear Variable Inductance Transducer
- **Features**:
  - Contactless sensing for long sensing life
  - Operational to 12,000 ft depth or 5200 psig (350 bar)
  - Proprietary SenSet™ field adjustable range scaling
- **Senses cylinder rod...no magnet required**

**Ordering information:**

<table>
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<th>Series</th>
<th>Output Type</th>
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<th>Range (mm)</th>
<th>Port Thread</th>
<th>Termination</th>
<th>Output</th>
<th>Housing Material</th>
<th>Socket Size (mm)</th>
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<tbody>
<tr>
<td>SS</td>
<td>0-5V DC</td>
<td>3.59</td>
<td>25-600</td>
<td>1/4 - 20 UNF</td>
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<td>0-5V DC</td>
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<td>0-10V DC</td>
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<td>1/4 - 20 UNF</td>
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<td>0-10V DC</td>
<td>Stainless Steel</td>
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<td>4-20mA</td>
<td>Stainless Steel</td>
<td>15.9</td>
<td>16.8</td>
</tr>
</tbody>
</table>

**Additional Information:**

- For use in: Subsea Valves and Cylinders
- Oil and Gas Exploration
- PBOF Environments

**For Alliance Sensors Group**

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**PG Series**

**LVDT Linear Sensors**

Specifically Designed and Engineered for Applications in Power Generating Steam Turbine Control Systems

Alliance Sensors PG Series LVDT linear position sensors are designed and engineered specifically for steam turbine valve position control system applications in electric power plants. Many of the features incorporated in the design were actually requested by power generation controls engineers. PG sensor models include the PGHD Heavy Duty LVDT and the PGSD Super Duty LVDT. Both PG versions are available on special order as heavy duty, from the wire connection terminal block inside an IP-68 rated enclosure.

The PG Series LVDT linear sensors are heavy duty, from the wire connection terminal block inside an IP-68 rated enclosure. User-installable connectors are available.

Features

- Core is enclosed in 3/8 inch (9.5 mm) diameter rod... cannot vibrate loose or break off
- Dual redundant double contact shaft seals keep contaminants out of LVDT's bore
- Works in 3-wire, 4-wire, 5-wire, 6-wire, and ratiometric (A-B)/(A+B) systems
- Operates to 350°F (175°C) with over-temperature indicator built in
- Screw clamp terminal block accepts 24 to 14 AWG wires
- 2 year warranty... twice the industry standard

Electrical Specifications:

- **Excitation Frequency:** 3 kHz nominal
- **Excitation Voltage:** 3 V AC rms nominal
- **Full Scale Output:** 0.9 V AC rms output (nom.) from differentially connected (S1-S2) secondaries with 3 Vrms excitation; sum of secondaries output is constant over range for ratiometric (S1-S2)/(S1+S2) operation
- **Linearity Error:** ±0.3% of FSO nominal, ±0.5% of FSO max
- **Operating Temperature:** -40 to 175°C (-40 to 350°F)
- **Temperature Coefficient:** ≤ 0.025% FSO/degree C
- **Shock:** 1000 g, 11 msec
- **Vibration:** 5-20 Hz, 0.5 inch p-p; 20-2000 Hz, 4.2 g p-p

Ordering information:

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<th>Version</th>
<th>Operating Range</th>
<th>Coupler Type</th>
<th>Rod Coupler Size *</th>
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<td>36-100 in</td>
<td>Ball Joint</td>
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<td>6 to 6 inches</td>
<td>Rigid Nut</td>
<td>4B-1/4-28 UNF, 1/2 inch deep</td>
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<td>0609</td>
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<td>6B-3/8-24 UNF, 1/2 inch deep</td>
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<td>1215</td>
<td>12 to 15 inches</td>
<td>Lanyard Nut</td>
<td>8B-3/8-24, 60% inch deep (default)</td>
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<td>0.9 V AC ms output</td>
<td>Lanyard Nut</td>
<td>9M M6 x 1.25, 14 mm deep</td>
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<td></td>
<td></td>
<td>10M M10 x 1.5, 14 mm deep</td>
</tr>
</tbody>
</table>

* No size callout gets 6L default

All specifications are subject to change without notice.

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LA-21-A SERIES

AC LVDT

Linear position feedback for typical industrialized applications and environments

The LA-21-A series AC LVDTs offers the robust designs for which Alliance Sensors Group is known in typical industrial packages, with full ranges from 3 inches (75 mm) to 15 inches (375 mm). They are supplied in a zinc-plated-steel 0.805 inch (20.5 mm) diameter housing with 4-inch (100 mm) stripped-and-tinned axial leads. Each LVDT’s core is enclosed in a 3/8 inch (9.5 mm) diameter extension rod from which it cannot break loose and has a 5/16-24 UNF or M8 X 1.25 male thread for easy attachment.

LA-21-A AC-LVDTs are ideal for stamping or drawing press die opening, injection molding machine platen position, process valve controls, and roller gap feedback in steel or aluminum mills. Mated with ASG’s SC-100 industrial LVT DIN-rail-mountable analog output signal conditioner, and LA-21-A LVDT becomes an ideal solution for typical industrial applications requiring rugged, accurate position sensors.

Features:
- Mildly Radiation Resistant
- Core totally encased in 3/8 inch (9.5 mm) diameter core extension rod
- Environmentally sealed to IP68

Specifications:
- Available Full Ranges: 0 to 3, 6, 9, 12, or 15 inches (0 to 75, 150, 225, 300, and 375 mm)
- Excitation Frequency: 3 kHz nominal
- Excitation Voltage: 3 V ACrms nominal
- Full Scale Output: 0.9 V AC rms output (nom.) from differentially connected (S1–S2) secondaries (ref: 3 Vrms excitation); sum of secondaries output is constant over range for ratio-metric (S1–S2)/(S1+ S2) operation
- Linearity Error: ±0.3% of FSO
- Operating Temperature: -40 to 150°C (-40 to 350°F)
- Temperature Coefficient: ≤ ±0.025%/degree K
- Humidity: 95% RH non-condensing
- Shock: 1000g, 11 msec
- Vibration: 5-20 Hz 0.5 inch p-p; 20-2000 Hz 4.2 g p-p

Ordering Information:

<table>
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<th>Range inches</th>
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<td>06 - 6&quot;</td>
</tr>
<tr>
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<td>09 - 9&quot;</td>
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</tr>
<tr>
<td></td>
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<td>15 - 15&quot;</td>
</tr>
</tbody>
</table>

LA-21-A SERIES

Alliance Sensors Group
102 Commerce Drive, Unit B
Moorestown, New Jersey 08057 USA
Ph: 856-727-0250
www.alliancesensors.com
info@alliancesensors.com
LA-25-R Series

LVDT Linear Position Sensors

Designed Specifically for Power Generation and Harsh Industrial Environments

Alliance Sensors Group’s LA-25-R series of AC-LVDT linear position sensors have been designed for use in steel, aluminum, and paper mills; fluid power systems; and steam or hydro power plants. These heavy duty sensors use a thick wall aluminum housing (stainless steel available) with an open bore and radial terminations that include a cable in a cord grip, a heavy duty industrial connector, or an optional high temperature connector, with which the LA-25-R is a natural choice as a heavy duty replacement for older through-bore LVDTs with a radial connector found in some steam power plants for valve position.

The core of the LA-25-R is enclosed in a 3/8 inch diameter stainless steel connecting rod assembly from which it can never break loose, and which has a male threaded end for connection to a user’s workpiece or many optional end pieces available from ASG. Because it has an open bore, an LA-25-R has no shaft seal around the operating rod, but it still has an internal stop for the fully retracted core rod to facilitate mechanical setup. The LA-25-R series LVDT are ideal for roller gap measurement, head box feedback, control valve shaft position, and hydraulic actuator position feedback. They have the ruggedness to withstand the harsh environments in steam power plants; paper, steel, and aluminum mills; industrial fluid power systems; and hydroelectric plants, and can survive industrial wash downs and equipment cleaning operations. Mated with an Alliance Sensors’ model SC-100 DIN-rail-mounting LVDT signal conditioner, an LA-25-R LVDT based system becomes an ideal solution for almost any heavy industrial position measuring applications. For power plant applications, an ASG model S1A is the recommended DIN-rail-mounting LVDT signal conditioner to use with an LA-25-R series LVDT.

Standard Features

- Stock ranges from 3 inches to 15 inches (75 mm to 375 mm) Full Scale
- Works in 3-wire, 4-wire, 5-wire, 6-wire, and ratometric (A-B/A+B) systems
- 5/16-24 or 8 mm male threaded shaft end
- Core totally enclosed in 3/8 inch (9.5 mm) diameter core extension rod
- Open bore for easy cleanout
- Continuous operation to 250 °F (120 C)
- Environmentally sealed to IEC IP-68
- Mounting hardware including flanges, single hole mounting kits, swivel rod eye ends, ball joints, extension rods, hold down clamps, and tie bars for dual-mounted LVDTs

Options

- Stainless steel body
- Alternate termination connectors, including one for 350 °F (175 C) operation
- Mild radiation resistant version for nuclear power plants (30 Mrads for 40 years)

Electrical Specifications:

- Available FS ranges: 0 to 3, 6, 9, 12, or 15 inches (0 to 75, 150, 225, 300, or 375 mm)
- Excitation Frequency: 3 kHz nominal
- Excitation Voltage: 3 V ACrms nominal
- Full Scale Output: 0.9 V ACrms output (nom.) from differentially connected (S1-S2) secondaries (ref: 3 Vrms excitation); sum of secondaries output is constant over range for ratometric (S1-S2)/(S1+S2) operation
- Linearity Error: ≤0.3% of FSO
- Operating Temperature: -40 to 120 C (-40 to 250 °F)
- Temperature Coefficient: ≤ 0.025% FSO/degree C
- Humidity: 95% RH non-condensing
- Shock: 1000 g, 11 msec
- Vibration: 5-20 Hz, 0.5 inch p-p; 20-2000 Hz, 4.2 g p-p

Ordering information:

### Ordering information:

<table>
<thead>
<tr>
<th>Series</th>
<th>Range inches</th>
<th>Termination</th>
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<td>LA-25-R-</td>
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<tr>
<td>03</td>
<td>3”</td>
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<tr>
<td>06</td>
<td>6”</td>
<td>03 - 6-pin Turck minilat connector</td>
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### LA-25-R-XX Configurations

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<th>LA-25-R-XX</th>
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<th>Min</th>
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**Electrical Terminations**

See connection schematic

**Connection schematic**

- 6-Pin Connector
- 6-Pin Connector, PT02-10-6P
- Other terminations available upon request

All specifications are subject to change without notice. © Alliance Sensors Group, 2015

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www.alliancesensors.com
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LA-25-A Series
LVDT Linear Position Sensors
Specifically Designed for Harsh Industrial Environments

Alliance Sensors Group LA-25-A series LVDT linear position sensors are designed to handle extreme industrial environments. This robust linear sensor has a thick wall aluminum housing (also available in stainless steel), a core enclosed inside of the core extension rod assembly that cannot break loose, while offering a sturdy male thread for easy mechanical connection, and a pair of double contact shaft seals to keep fluids and solid contaminants out of its bore. The sensor's electrical termination includes the choice of an axial connector or a cord grip with a cable.

An LA-25-A LVDT is ideal for roller gap positioning, head box feedback, process valve displacement, and actuator position feedback with the durability to withstand the harsh environments found in steam and hydro power plants; paper, steel, and aluminum mills; and industrial automation and fluid power systems. It can operate in such hostile factory environments as lubricant mist, cutting oil spray, and airborne grit or dust, and it survives typical industrial steam cleaning and wash downs. Mated with ASG’s SC-100 industrial LVDT DIN-rail-mountable signal conditioner, the LA-25-A LVDT becomes an ideal solution for heavy duty industrial applications requiring position sensing. For operating an LA-25-A as a steam valve position sensor in a power plant, ASG’s model S1A signal conditioner, which is designed specifically for that application, is recommended.

Standard Features
- Stock ranges from 3 inches to 15 inches (75 mm to 375 mm) Full Scale
- Works in 3-wire, 4-wire, 5-wire, 6-wire, and ratiometric (A-B/A+B) systems
- Core totally enclosed in 3/8 inch (9.5 mm) diameter core extension rod
- Two double contact shaft seals keep out contaminants
- 5/16-24 or 8 mm male threaded shaft end
- Continuous operation to 250 °F (120 °C)
- Environmentally sealed to IEC IP-68

Options
- Stainless steel body
- Alternate termination connectors, including one for 350 °F (175 °C) operation
- Mild radiation resistant version for nuclear power plants (30 Mrads for 40 years)
- Auxiliary shaft seals
- Mounting hardware including flanges, single hole mounting kits, swivel rod eye ends, ball joints, extension rods, holddown clamps, and tie bars for dual-mounted LVDTs
- Mounting kits, swivel rod eye ends, ball joints, extension rods, holddown clamps, and tie bars for dual-mounted LVDTs
- 5/16-24 or 8 mm male threaded shaft end
- Continuous operation to 250 °F (120 °C)
- Environmentally sealed to IEC IP-68

LA-25-A Electrical Specifications:
- Available FS ranges: 0 to 3, 6, 9, 12, or 15 inches (0 to 75, 150, 225, 300, or 375 mm)
- Excitation Frequency: 3 kHz nominal
- Excitation Voltage: 3 V AC rms nominal
- Full Scale Output: 0.9 V AC rms output (nom.) from differentially connected (S1-S2) secondaries (ref: 3 V rms excitation); sum of secondaries output is constant over range for ratiometric (S1-S2)/(S1+S2) operation
- Linearity Error: <0.3% of FSO
- Operating Temperature: -40 to 120 °C (-40 to 250 °F)
- Temperature Coefficient: < 0.025% FSO/degree C
- Humidity: 95% RH non-condensing
- Shock: 1000 g, 11 msec
- Vibration: 5–20 Hz, 0.5 inch p-p; 20–2000 Hz, 4.2 g p-p

Ordering Information:

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<td>9”</td>
<td>05-06-09-12-15</td>
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<tr>
<td>12</td>
<td>12”</td>
<td>05-06-09-12-15</td>
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<tr>
<td>15</td>
<td>15”</td>
<td>05-06-09-12-15</td>
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LA-25-A-XX Configurations

Ordering Information:

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<th>Series</th>
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<td>LA-25-A-XX</td>
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<td>03-06-09-12-15</td>
</tr>
<tr>
<td>Dim ‘L’</td>
<td></td>
<td>8.12”L-11.87”L-14.87”L-18.87”L-22.87”L</td>
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</table>

For use in:
- Steam and Hydroelectric Power Plants
- Industrial Fluid Power Equipment
- LVDT Linear Position Sensors
- Factory Automation Systems
LA-27-R Series
LVDT Linear Position Sensors

Designed Specifically for Power Generation and Harsh Industrial Environments

Alliance Sensors Group’s LA-27-R series of AC-LVDT linear position sensors have been designed for use in steel, aluminum, and paper mills; fluid power systems; and steam or hydro power plants. These heavy-duty sensors use a thick wall aluminum housing (stainless steel available) with an open bore and radial terminations that include a cable in a cord grip, a heavy duty industrial connector, or an optional high temperature connector, with which the LA-27-R is a natural choice as a heavy duty replacement for older through-bore LVDTs with a radial connector found in some steam power plants for valve position.

The core of the LA-27-R is enclosed in a 3/8 inch diameter stainless steel connecting rod assembly from which it can never break loose, and which has a male threaded end for connection to a user’s workpiece or many optional end pieces available from ASG. Because it has an open bore, an LA-27-R has no shaft seal around the operating rod, but it still has an internal stop for the fully retracted core rod to facilitate mechanical setup.

The LA-27-R series LVDT are ideal for roller gap measurement, head box feedback, control valve shaft position, and hydraulic actuator position feedback. They have the ruggedness to withstand the harsh environments in steam power plants; paper, steel, and aluminum mills; industrial fluid power systems; and hydroelectric plants, and can survive industrial wash downs and equipment cleaning operations. Mated with an Alliance Sensors’ model SC-100 DIN-rail-mounting LVDT signal conditioner, an LA-27-R LVDT based system becomes an ideal solution for almost any heavy industrial position measuring applications. For power plant applications, an ASG model S1A is the recommended DIN-rail-mounting LVDT signal conditioner to use with an LA-27-R series LVDT.

**Standard Features**
- Stock ranges from 3 inches to 15 inches (75 mm to 375 mm) Full Scale
- Works in 3-wire, 4-wire, 5-wire, 6-wire, and ratiometric (A/B/A+B) systems
- 5/16-24 or 8 mm male threaded shaft end
- Core totally enclosed in 3/8 inch (9.5 mm) diameter core extension rod
- Open bore for easy cleanout
- Continuous operation to 250 °F (120 C)
- Environmentally sealed to IEC IP-68

**Options**
- Stainless steel body
- Alternate termination connectors, including one for 350 °F (175 C) operation
- Mild radiation resistant version for nuclear power plants (30 Mrads for 40 years)
- Mounting hardware including flanges, single hole mounting kits, swivel rod eye ends, ball joints, extension rods, hold-down clamps, and tie bars for dual-mounted LVDTs
- Cord Grip with cable
- Length: See data sheet
- 6-Pin Connector, 7/8-16 UN Thd.
- Other terminations available upon request

**Electrical Specifications**
- Available FS ranges: 0 to 3, 6, 9, 12, or 15 inches (0 to 75, 150, 225, 300, or 375 mm)
- Excitation Frequency: 3 kHz nominal
- Excitation Voltage: 3 V ACrms nominal
- Full Scale Output: 0.9 V ACrms output (nom.) from differentially connected (S1-S2) secondaries (ref: 3 Vrms excitation); sum of secondaries output is constant over range for ratiometric (S1-S2)/(S1+S2) operation
- Linearity Error: ≤ 0.025% FSO/degree C
- Operating Temperature: -40 to 250 °F (-40 to 120 C)
- Temperature Coefficient: ≤ 0.025% FSO/degree C
- Humidity: 95% RH non-condensing
- Shock: 1000 g, 11 msec
- Vibration: 5-20 Hz, 0.5 inch p-p; 20-2000 Hz, 4.2 g p-p

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<td>LA-27-R-XX</td>
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</tr>
<tr>
<td>LA-27-R-XX</td>
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<tr>
<td>LA-27-R-XX</td>
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**Dimensions**

- B/2
- C/3
- E/5
- F/6
- G/7
- H/8

See connection schematic

**Alliance Sensors Group**
A DIVISION OF H.G. SCHAEVITZ LLC

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LA-27-A Series
LVDT Linear Position Sensors

Designed Specifically for Power Generation and Harsh Industrial Environments

Alliance Sensors Group LA-27-A series LVDT linear position sensors are designed to handle extreme industrial environments. This robust linear sensor has a thick wall aluminum housing (also available in stainless steel), a core enclosed inside of the core extension rod assembly that cannot break loose, while offering a sturdy male thread for easy mechanical connection, and a pair of double contact shaft seals to keep fluids and solid contaminants out of its bore. The sensor’s electrical termination includes the choice of an axial connector or a cord grip with a cable.

An LA-27-A LVDT is ideal for roller gap positioning, head box feedback, process valve displacement, and actuator position feedback with the durability to withstand the harsh environments found in steam and hydro power plants; paper, steel, and aluminum mills; and industrial automation and fluid power systems. It can operate in such hostile factory environments as lubricant mist, cutting oil spray, and airborne grit or dust, and it survives typical industrial steam cleaning and wash downs. Mated with ASG’s SC-100 industrial LVDT DIN-rail-mountable signal conditioner, the LA-27-A LVDT becomes an ideal solution for heavy duty industrial applications requiring position sensing. For operating an LA-27-A as a steam valve position sensor in a power plant, ASG’s model S1A signal conditioner, which is designed specifically for that application, is recommended.

Standard Features

- Stock ranges from 3 inches to 15 inches (75 mm to 375 mm) Full Scale
- Works in 3-wire, 4-wire, 5-wire, 6-wire, and ratiometric (A-B/A+B) systems
- Core totally enclosed in 3/8 inch (9.5 mm) diameter core extension rod
- Two double contact shaft seals keep out contaminants
- 5/16-24 or 8 mm male threaded shaft end
- Continuous operation to 250 °F (120 C)
- Environmentally sealed to IEC IP-68

Options

- Stainless steel body
- Alternate termination connectors, including one for 350 °F (175 C) operation
- Mild radiation resistant version for nuclear power plants (30 Mrads for 40 years)
- Auxiliary shaft seals
- Mounting hardware including flanges, single hole

Electrical Specifications:

- Available FS ranges: 0 to 3, 6, 9, 12, or 15 inches (0 to 75, 150, 225, 300, or 375 mm)
- Excitation Frequency: 3 kHz nominal
- Excitation Voltage: 3 V ACrms nominal
- Full Scale Output: 0.9 V ACrms output (nom.) from differentially connected (S1-S2) secondaries (ref: 3 Vrms excitation); sum of secondaries output is constant over range for ratiometric (S1-S2)/(S1+S2) operation
- Linearity Error: ≤±0.3% of FSO
- Operating Temperature: -40 to 120 °C (-40 to 250 °F)
- Temperature Coefficient: ≤ 0.025% FSO/degree C
- Humidity: 95% RH non-condensing
- Shock: 1000 g, 11 msec
- Vibration: 5-20 Hz, 0.5 inch p-p; 20-2000 Hz, 4.2 g p-p

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<td>14.87&quot; L</td>
<td>18.87&quot; L</td>
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<td></td>
<td>22.87&quot; L</td>
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</table>

LA-27-A Series

For use in:
- Steam and Hydroelectric Power Plants
- Industrial Fluid Power Equipment
- LVDT Linear Position Sensors
- Factory Automation Systems

Alliance Sensors Group
102 Commerce Drive, Unit B
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info@alliancesensors.com
DGP Series
Spring-Loaded LVDT Gaging Probes
Specifically Designed for Dimensional Gaging and Metrology

The DGP Series Dimensional Gaging Probes by Alliance Sensors Group are AC-LVDT based, spring-loaded linear position sensors designed for high precision dimensional gaging applications. Widely used in the automotive, aerospace, and medical industries for machined parts manufacture, Gage R&R, and Cpk data, the DGP Series has the precision necessary to make measurements to uphold six-sigma programs.

Available in three ranges, the DGP Series spring loaded LVDT has an 8mm diameter, IP-65 rated housing that is slightly shorter than most competitive units. A light spring force of less than 1.25 lbs/inch holds the DGP shaft keeps contamination out of the linear bearing. An anti-rotation pin allow the DGP to hold sub-micron repeatability and resolution. A rubber boot over the probe keeps contamination out of the linear bearing.

Alliance Sensors Group offers the SC-100 DIN-rail signal conditioner for use with the DGP Series LVDT probes, permitting the user very easy push button calibration. The SC-100 excites a DGP with the proper AC voltage and frequency, and then demodulates and amplifies the DGP’s AC output to produce the user’s choice of several analog DC voltages or 4-20 mA current output signal.

Features:
- Units available from stock in 3 measuring ranges: ±0.5 mm, ±1.0 mm, and ±2.5 mm
- 8 mm diameter plain (unthreaded) body is standard
- Optional 0.375 inch threaded adapter sleeves for plain body models available from stock
- Better than 0.5 micron resolution and repeatability
- Adjustable probe pre-travel
- 2 m cable with Right Angle Exit Adapter included
- Meets EMC standards - directive 89/336/EEC

Specifications:
- Excitation Voltage: 3.5 Vrms
- Excitation Freq: 7.5 kHz
- Max Current: 9 mA rms
- Phase Shift: <10 deg
- Operating Temp: -10 to 65 C
- ±0.5 mm, ±1.0 mm, ±2.5 mm
- Pre Travel: .65 mm 1.15 mm 2.65 mm
- Over Travel: >.65 mm >1.5 mm >3 mm
- Repeatability: .15 micron .15 micron .2 micron
- Linearity: 0.30% 0.25% 0.50%
- Sensitivity (mV/V/mm): 230 230 115

Dimensions

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<th>±1.0 mm</th>
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<tr>
<td>C</td>
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<td>D</td>
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<td>9.5</td>
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</table>

DGP Series has the precision necessary to make measurements to uphold six-sigma programs.

For use in:
- Automotive and Aerospace test stands
- Dimensional Gaging Fixtures
- X-Y Stages or Tables
- Metrology Labs

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LP-22 Series
Linear Potentiometer
Linear Potentiometer Designed specifically for the factory automation industry

The LP-22 series linear potentiometer is a cost effective solution for factory automation linear position sensing applications like robotic motion control, X-Y table position feedback, flow control valve position, suspension travel, press and die position, injection molding machines, and mil/aero test stand applications. This 3-wire resistive film sensor is available in stroke lengths from 25 to 300 mm, with a maximum linearity error of 0.1% of full scale. The sensor is provided with swivel rod eyes at each end for self-alignment and easy mounting. A 22 mm diameter anodized aluminum housing rated IP-64 protects the unit from airborne contaminants, and the sensor is rugged enough to withstand the typical shock and vibration environments of industrial shop floors.

Features:
• Full ranges from 25 to 300 mm (1 to 12 inches)
• Self-aligning swivel rod eyes on both ends
• 1 m long, 3-conductor cable
• 22 mm OD anodized aluminum housing

Environmental Specifications:
Operating temperature: -40 to 150 °C
Temperature coefficient: <1.5 ppm/°C
Shock: 50 g (IEC 68-2-29, single hit)
Vibration: 20 g (IEC 68-2-6)
Environmental protection: IEC IP-64

Performance Specifications:
Input current: ≤12 mA
Resolution: Infinite
Output range: 0 to 100% of input
Repeatability: 0.01 mm (0.0004 inch)
Max operating speed: 5 m/s

Ordering Information:

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For use in:
Factory Automation
Robotic Motion Control
X/Y Table position feedback
Mil/aero test stands

For use in:
Factory Automation
Robotic Motion Control
X/Y Table position feedback
Mil/aero test stands

Alliance Sensors Group
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The S1A DIN-rail-mounting smart LVDT Signal Conditioner module from Alliance Sensors Group ends the difficulties that accompany AC-LVDT setup with built-in null indicators and front panel pushbuttons to set zero and full scale output. Engineered to work with the widest range of AC-LVDTs and inductive half-bridge LVRTs, the S1A module offers a choice of 4 excitation frequencies and 8 analog outputs, operates LVDT sensors with over a 40 dB dynamic range of AC output, indicates most common system failures, and incorporates a 2-wire RS-485 digital communications port. Along with color-coded plug-in screw terminal connectors and a 2 year warranty, these are just a few of the many advanced features that make Alliance Sensors Group’s S1A module a truly superior smart LVDT signal conditioner.

Features:
- Smart setup with front panel push buttons --- no pots, no calculations
- Built-in null indication --- front panel LEDs and DC null voltage output
- Auto-mastering provides fail-safe excitation syncing for multiple units
- Self-diagnostics for LVDT failure or disconnect; open-collector output
- Half-duplex digital communications via RS-485 2-wire multi-drop bus
- Hot swapability --- setup can be saved and reloaded via RS-485 port

Specifications:
- Operating power: +15 to +30 V DC (+24 V nominal), 60 mA max. at 24 V DC; +15 V DC and -15 V DC needed for ±10 V DC bipolar output
- Excitation voltage: 3.0 Vrms (nominal) push-pull drive (factory default) 4.5 Vrms (nominal) push-pull drive (via jumper change) 1.5 Vrms (nom) single ended drive (for low impedance primary)
- Excitation frequencies: 1 kHz, 3 kHz, 5 kHz, 10 kHz (nominal)
- Auto-master syncing: Master output couples up to fifteen slave units; if master fails, new master is automatically generated for fail-safe excitation
- LVDT AC output range: 50 mVrms to 5000 mVrms at LVDT’s full scale position
- Analog DC outputs: 0 - 5 V, 1 - 5 V, 0.5 - 4.5 V, 0.5 - 9.5 V, 0 - 10 V, -10 to +10 V, 0 -20 mA sourcing, 4 -20 mA sourcing
- Loop resistance: 850 Ohms max. with 24 V DC supply
- Output non-linearity: ±0.025% of Full Span Output (FSO)
- -3 dB response: 10% (minimum) of excitation frequency (normal setting); 10 Hz (default) user adjustable (low noise setting)
- Noise and ripple: ≤2.5 mVrms (voltage output); ≤5 µArms (current loop output)

Specifications (cont.):
- Fault detection: Open LVDT winding, cable disconnected, loss of excitation
- Failure indication: Flashing LEDs; analog output out of range; open-collector switch
- Null output signal: Up to ±3 V DC
- Operating temperature: 0 to 75 C
- Temperature coefficient: ±0.002% of FSO/C (combined zero and span shift)
- Zero set: Front panel push button or RS-485 command
- Full scale set: Front panel push button or RS-485 command
- Digital interface: RS-485 2-wire multi-drop network, 16 addresses

Use with LVDTs for:
- Steam Valve Position Feedback
- Governor and Throttle Valves
- Interceptor and Stop Valves
- Boiler Feedwater Pumps
- Turbine Control Systems
SC-100 LVDT Signal Conditioner

Smart Industrial AC-LVDT Signal Conditioner Module

Alliance Sensors Group’s new SC-100 DIN-rail-mounting smart LVDT signal conditioner module makes setting up and calibrating an AC-LVDT installation very easy by offering built-in null indicators and front panel pushbuttons to set zero and full scale output. Engineered to work with the widest range of LVDT and inductive half-bridge linear sensors, the SC-100 module offers a choice of 4 excitation frequencies, works over a 40 dB range of full scale sensor outputs, and features 8 analog DC outputs, including a bipolar voltage output for legacy systems. Using its 2-wire RS-485 digital communications port, a user can remotely set up and operate an SC-100 module from a personal computer, and can get information for data acquisition. The very reliable SC-100 module comes with a 2-year limited warranty and offers many additional features that make it the easiest to use and best value of any industrial single channel AC-LVDT signal conditioner currently available.

Features:
- Smart calibration setup with front panel push buttons --- no pots, no calculations
- Built-in null indication --- front panel LEDs and DC null voltage output
- 2.5 kHz, 5.0 kHz, 7.5 kHz, and 10.0 kHz nominal excitation frequencies
- Fail-safe excitation syncing by auto-mastering prevents cross talk in multiple units
- Works with LVDT full scale outputs ranging from 50 mV to 5000 mV
- Half-duplex digital communications via RS-485 2-wire multi-drop bus

Specifications:
- ±3 dB response 10% of excitation frequency minimum (normal setting);
  10 Hz (default) user adjustable (low noise setting)
- Noise and ripple ≤2.5 mVrms (voltage output); ≤5 μArms (current loop output)
- Null indicators Front panel LEDs
- Null output signal Up to ±3 V DC
- Operating temperature -20 to 75 C
- Temperature coefficient ≤±0.002% of FSO/°C (combined zero and span shift)
- Zero set Front panel push button or RS-485 command
- Full scale set Front panel push button or RS-485 command
- Digital interface RS-485 2-wire multi-drop network, 16 addresses

Use with:
- Pencil Gaging Probe Systems
- Industrial LVDT Position Sensors
- Inductive Half-Bridge Linear Sensors
- LVDT-based Redundant Control Systems

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