



Monitran
Sensors for Industry



LVDT

Linear Variable Differential
Transformers





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Introduction

Monitran. A leader in the design, development and manufacture of sensors and systems for vibration, proximity and displacement measurement.

Established in 1986, Monitran remains a privately owned company, based near High Wycombe 35 miles west of London.

We manufacture in the United Kingdom and source the majority of our materials and components from selected quality-managed local and national suppliers. This enables us to respond quickly to orders both for stand products and for custom-built solutions.

We believe that customer service is of paramount importance. For this reason our experienced engineers are always on hand to offer advice and assistance in the selection of sensors and solutions to best suit your application.

Our products include general and special purpose accelerometers, velocity sensors, eddy current probes and LVDTs. They are used in a diverse range of applications including industrial processing, power stations, water treatment, wind turbines, mining and the oil and gas industry. As an OEM we can also provide a full custom design and development service.

Whilst there are several ways to measure displacement, the Linear Variable Differential Transformer (LVDT) remains a popular transducer in most industrial applications. LVDTs initially were used as a means of taking dimensional readings in laboratories. They gained popularity in a wide variety of industrial monitoring and control applications, and whilst an LVDT is used to measure displacement the technology can be employed within other transducer types.

Our LVDTs are made from stainless steel and can be sealed to most IP levels, including IP68. The rugged construction and simple principle of operation, results in high reliability and accuracy.

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Applications and Technical Specifications

Monitran LVDTs, precision instruments for displacement measurement. They provide simple, cost effective solutions whenever you need accurate and precise measurement of linear displacement.

Typical applications:

- Servo-hydraulic systems
- Automotive engine management
- Machine engine management
- Structural movement monitoring
- Test rigs
- Level monitoring

As well as many other engineering and laboratory applications.

Monitran LVDTs at a glance:

- Rugged construction to withstand harsh environments
- Measurement ranges from $\pm 0.25\text{mm}$ to $\pm 550\text{mm}$
- Efficient and accurate non-contact displacement measurement
- Available in a variety of configurations
- Zero mechanical friction models available
- Industrial, low cost and compact versions available
- High precision – non-linearity $< \pm 0.5\%$ and repeatability $< 0.1\%$
- Four output signal options - unconditioned AC, unconditioned DC (voltage), conditioned DC (voltage) or conditioned DC (current)
- Fully customisable design service for non-standard applications

Common technical specifications:

Non-linearity	$< \pm 0.5\%$ stroke length
Repeatability	$< 0.1\%$ stroke length
Operating temperature range	-50°C to 85°C (optional to 200°C) -50°C to 85°C on DC models
Vibration resistance	20g up to 2kHz
Shock resistance	1000g for 10ms
Construction material	Stainless steel core and case
Connections	2 metre screened cable

Power requirements and electrical output:

Power input	Signal output
5Vrms @3kHz 50k load	AC
9-24VDC input	0-5VDC
14-24VDC input	0-10VDC
12VDC input	4-20mA
14-24VDC input	$\pm 2.5\text{VDC}$

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Industrial, Economy or Miniature Series?



Which LVDT is right for you?

	Industrial	Economy	Miniature
General comments on use	Highest level of protection for severe factory and processing environments	Used in less demanding environments where cost is more important	Used in demanding environments where space is at a premium
Typical applications	<ul style="list-style-type: none"> · Paper mills · Process plant · Industrial test rigs 	<ul style="list-style-type: none"> · Mechanical testing machines · Automotive research · Actuator position monitoring 	<ul style="list-style-type: none"> · Materials testing · Automotive test rigs and actuators · Aerospace test rigs and actuators · Load cells · Pressure transducers · Weighing systems · Closed-loop control applications

Industrial Series

The Industrial Series has been specifically designed to meet the tough conditions that are experienced in industrial plant areas. The robust construction includes as standard, a stainless steel housing, sealing to IP65 (IP68 optional), armoured cable and a waterproof option.

To aid the engineer in fitting and replacement, the transducers come with a choice of spherical bearings, double rod ends and a spring-return core. Measuring ranges extend from $\pm 0.25\text{mm}$ to $\pm 550\text{mm}$.

Standard Spec	Electrical Output Options	Build Options	
Range: ± 0.25 to $\pm 550\text{mm}$ Body diameter: 22.2mm Sealed to IP55 Temperature range: -50°C to 85°C	Either: <ul style="list-style-type: none"> · AC (4 or 6 wires) · 0 to 5VDC (3 wire) · 0 to 10VDC (3 wire) · 4-20mA (3 wire) · $\pm 2.5\text{VDC}$ (Bipolar) (4 wire) 	<ul style="list-style-type: none"> · Plain core and extension · Spring-loaded core and extension; (± 0.25 to $\pm 125\text{mm}$) · Core and extension with rod end bearings Cable outlet: <ul style="list-style-type: none"> · Radial Sealed to IP68 · Axial Temperature range: -50°C to 200°C 	

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Industrial, Economy or Miniature Series?



Economy Series

The Economy Series is the most popular choice of engineers for general purpose use and their low cost pricing. They are ideal for OEM applications in mechanical testing machines, vehicle research, actuators etc.

To aid the engineer in fitting and replacement, the transducers come with a choice of spherical bearings, double rod ends and a spring-return core. Measuring ranges extend from $\pm 0.5\text{mm}$ to $\pm 550\text{mm}$.

Standard Spec	Electrical Output Options	Build Options	
Range: ± 0.25 to $\pm 550\text{mm}$ Body diameter: 20.6mm Sealed to IP55 Temperature range: -50°C to 85°C	Either: <ul style="list-style-type: none"> AC (4 or 6 wires) 0 to 5VDC (3 wire) 0 to 10VDC (3 wire) 4-20mA (3 wire) $\pm 2.5\text{VDC}$ (Bipolar) (4 wire) 	<ul style="list-style-type: none"> Plain core and extension Spring-loaded core and extension; (± 0.25 to $\pm 125\text{mm}$) Core and extension with rod end bearings Cable outlet: <ul style="list-style-type: none"> Radial Temperature range: -50°C to 200°C Axial 	

Miniature Series

The ranges of miniature LVDT displacement transducers are ideal where space is limited. Measuring ranges cover from $\pm 0.25\text{mm}$ to $\pm 50\text{mm}$ and a series of options are available as shown in the selection chart below.

Their small size make them suitable for OEM applications in load cells, pressure transducers, weighing systems and closed-loop control. The low mass of the core can also be advantageous in projects having minimal weight restrictions.

Standard Spec	Electrical Output Options	Build Options	
Range: ± 0.25 to $\pm 50\text{mm}$ Body diameter: 9.5mm Sealed to IP55 Temperature range: -50°C to 85°C	Either: <ul style="list-style-type: none"> AC (4 or 6 wires) In-Line signal conditioner 0-5 VDC 0-10 VDC 4-20mA 	<ul style="list-style-type: none"> Core only; Core and extension; Spring - loaded core and extension (Radial exit only) Cable outlet: <ul style="list-style-type: none"> Radial Temperature range: -50°C to 200°C Axial 	





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