

MIL 400L Electronic Position Transmitter





Table of Contents

Introduction	01
Features	01- 02
Technical Information	02
• General Data	
• Electrical Safety and Enclosures	
Construction	02- 03
Materials of Construction & Dimensions	03



Introduction

MIL 400L is an inductive type position transmitter with LVDT (Linear Variable Differential Transformer) and is considered as an optimum transducer element, which can be mounted on valve actuators for transmitting angular as well as linear movements with proper linkages.

Features

Inductive Type LVDT

MIL 400L is a two wire inductive type instrument using a non-contact type LVDT as the sensing element. It continuously transmits the position of control valve stem.



Direct and Reverse Action

The unit is designed to operate on both direct or reverse action, without dismantling it from the valve, where it is already functioning.

Excellent Linearity

The instrument ensures excellent linearity characteristics, infinite resolution and long life.

Technical Information

General Data

Configuration	: 2 Wire
Output	: 4-20 mA DC
Operating voltage	: 10-28V DC for Intrinsic safe (Exia) 10-60V DC for Flame proof (Exd)
Linearity(Accuracy)	: <math><0.75\% I_{max}</math>
Hysterisis	: <math><0.5\% I_{max}</math>
Load impedance	: 700Ω at 24 V DC
Operating angle	: 15° to 30°
Ambient temperature	: -20 °C to +80 °C
Electrical conduit entry:	1/2 " NPT(F)*
Weight	: 2.5 kg

* Other options are available by adaptors

Electrical Safety and Enclosures

A. Enclosure

Ingress Protection IP 65 as per IS /IEC 60529

B. Hazardous area

Intrinsically safe : Ex ia IIC as per IS/IEC 60079 - 11

Flame proof : Ex d II A, I1 B, II C as per IS/IEC 60079-1

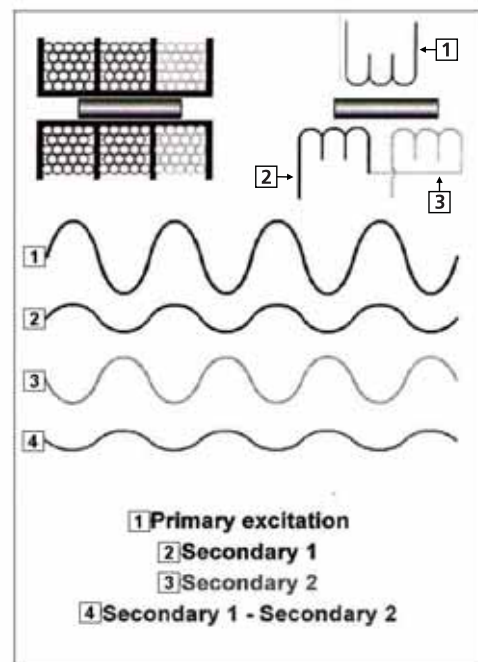
Construction

The instrument utilises an LVDT, a mutual inductance element as the sensing element. The coil system consists of a primary coil and two separate secondary coils, which are spaced symmetrically with respect to the primary. Coupling between primary and secondary coil is varied by a movable and non-contacting magnetic iron core, called armature.

The secondary is connected externally in a series but opposing circuit, Motion of the magnetic core varies the mutual inductance of each secondary to the primary, which determines the voltage induced in each secondary from primary.

Working Principle

Valve stem is connected to the position transmitter through a lever, which converts the linear motion of the valve travel into rotary motion inside the position transmitter. This rotary motion is again converted into linear motion of the armature.





An alternating current with fixed frequency (generated by the alternating voltage generator in the electronic part) and required voltage is fed to the terminals of the primary coil. Depending upon the position of the movable armature, alternating current with different amplitude is induced in the secondary coils. The difference of the two induced coil voltages change linearly, within sufficient range, in line with the core movement.

When the core is centred between secondary windings, the voltages induced in both the secondary windings are identical and 180° out of phase. The net output is zero.

As the core is moved from the centre, the mutual inductance of the primary with one secondary will be greater than the other and a differential voltage will appear across the secondary in series. This voltage is linear to the displacement of the core.

This emf is converted and amplified to a linear 4-20 mA signal. Two potentiometers (zero and span potentiometers) are provided for adjusting zero and span.

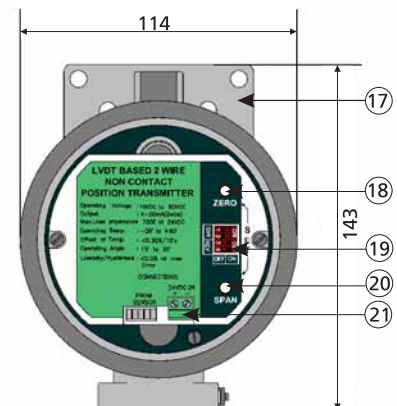
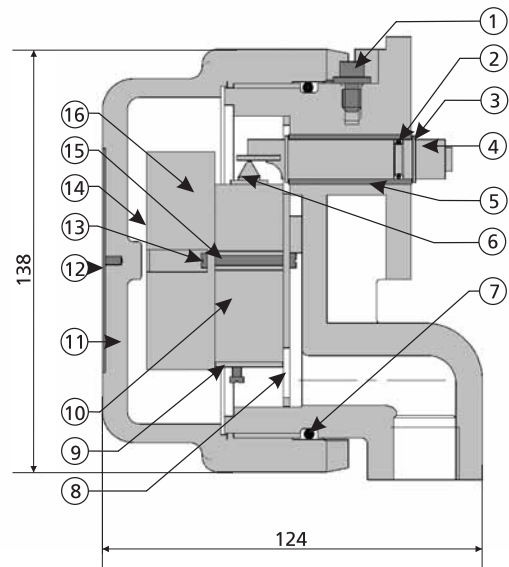
The 4-20 mA, output current linearly varies with valve's travel irrespective of the strokes.

Direct or reverse action can be easily achieved by selecting the dip switches provided inside the position transmitter.

Materials of Construction & Dimensions (mm)

No.	PART NAME	STANDARD MATERIAL
1	Locking Screw	304 SST
2	Shaft 'O' Ring	Neoprene
3	Circlip	Spring Steel
4	Shaft Assembly	304 SST
5	Sleeve	Brass / Sintered Bronze
6	Plunger	304 SST
7	Case 'O' Ring	Neoprene
8	Base Plate	Aluminium
9	Back Plate	Stainless Steel
10	LVDT Block	Aluminium
11	Cover	Aluminium
12	Name Plate	304 SST
13	C.C.* Mounting Screw	304 SST
14	C.C.* Name Plate	Aluminium
15	C.C.* Mounting Spacer	Mild Steel (Nickel Plated)
16	Current Converter Assy.	
17	Base	
18	Zero Adjustment	
19	Dip Switch	
20	Span Adjustment	
21	Terminals	

* Current Converter





Product Highlights

- Inductive type position transmitter using LVDT
- Continuously transmits the position of control valve stem
- Two wire mechanism
- Field reversible
- Suitable for all stroke ranges
- Two potentiometers are provided for adjusting zero and span



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