Electronic Position Transmitter

MIL 400L

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

Technical features

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.

Operating 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 changes linearly within sufficient range in line with the core movement.

The 4-20mA-output current linearly varies with valve's travel irrespective of the strokes. Potentiometers are provided for zero and span Adjustments.

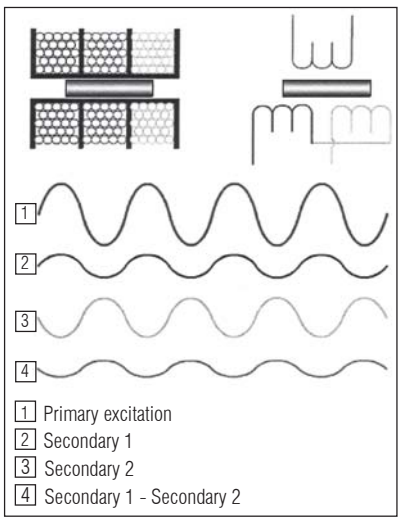
The unit is designed to operate on both Direct / Reverse action valves, without dismantling it from the valve where it is already functioning. Direct /Reverse action can be easily achievable by selecting the Dip switches provided inside the Position Transmitter.

Operation

When the core is centred between secondary windings, the voltages induced in both the secondary windings are identical and 180^0 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 instrument ensures excellent linearity characteristics, infinite resolution and long life.



Electrical Safety and Enclosures

Non-Hazardous area Application

Weather Proof : IP 65 as per IS 13947 Part I.

Hazardous Area Certification

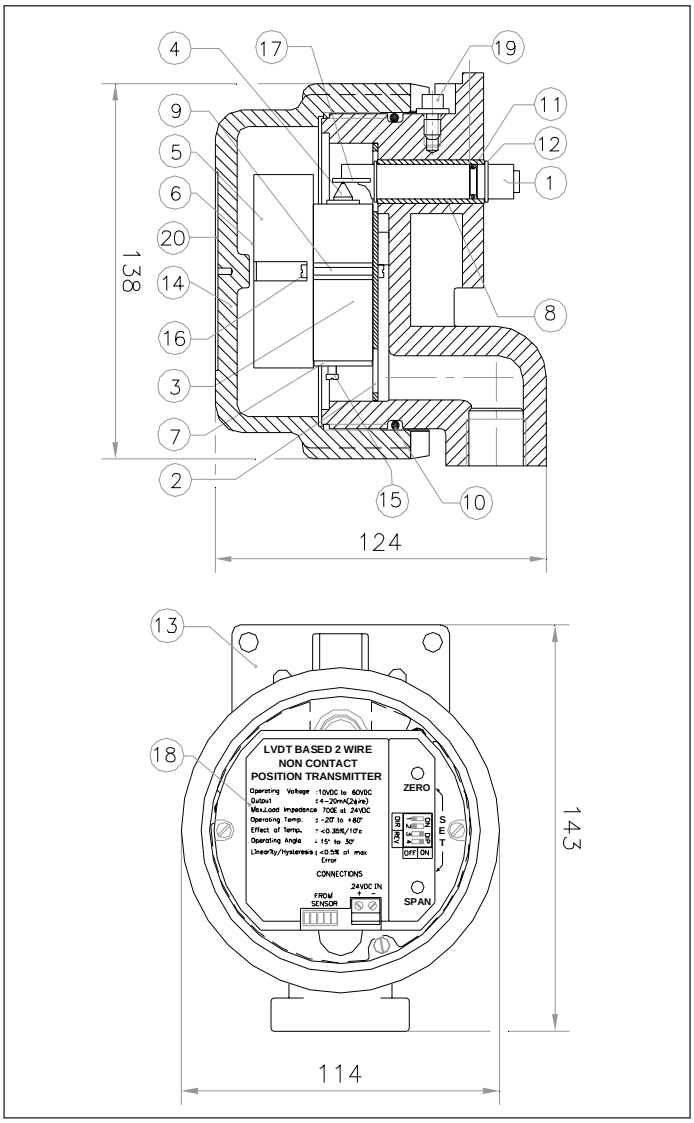
Flame Proof : Exd II A, II B, II C as per IS 2148.
Intrinsically safe : Exia IIC as per IS 5780

TECHNICAL DATA

- Output : 4-20 mA, 2 Wire
- Supply voltage : 24Vdc (12 Vdc to 33 Vdc)
- Linearity : <0.75 % I max
- Hysterisis : <0.5 % I max
- Span adjustment : -60% to +15% of I max
- Zero adjustment : -5% to +100% of I max
- Load impedance : 700Ω at 24 Vdc
- Operating angle : Min: 0^0 to 15^0 Max: 0^0 to 40^0
- Operating temperature : -20^0 C to $+80^0$ C
- Change in output due to change in load from 0-700Ω : 0.3% of I max
- Drift in output due to change in ambient temperature range - 20^oC to+80^oC : 0.4% of I max / 10 ^{o}C
- Change in output due to change in supply voltage : 0.3% of I max

Parts Description & Dimensions (mm)

No.	Description	Material	Qty
1	Shaft Assembly	ASTM A 479 TY 304	1
2	Base Plate	Aluminium	1
3	LVDT Block	Aluminium	1
4	Plunger	ASTM A 479 TY 304	1
5	Current Converter Assy.	-	1
6	C.C. Name Plate	Aluminium	1
7	Back Plate	Stainless Steel	1
8	Sleeve	Brass / Sintered Bronze	1
9	C.C. Mounting Spacer	M.S (Nickel Plated)	2
10	Case 'O' Ring	Neoprene	1
11	Shaft 'O' Ring	Neoprene	1
12	Circlip	Spring Steel	2
13	Base	Aluminium (LM6)	1
14	Cover	Aluminium (LM6)	1
15	Adjusting Screw	ASTM A 479 TY 304	1
16	C.C. Mounting Screw	ASTM A 479 TY 304	4
17	Sliding Plate	HSS	1
18	Sticker	Antiglare Polyster	1
19	Locking Screw	ASTM A 479 TY 304	1
20	Name Plate	ASTM A 479 TY 304	1



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A KSB **Company**

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