

L2DT

Linear inductance-L Displacement Transducer

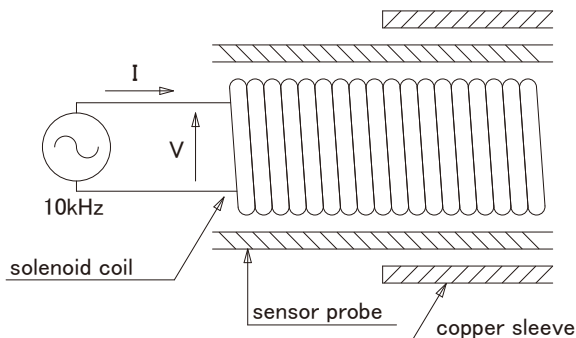
**Robust, Full-absolute,
Heat-Resistant up to 150°C**



Features

- Non contact
- Absolute linear transducer (Stroke:100–500mm)
- Operating temp. : Max.150°C (including cable)
- 0–10V (or 4–20mA) output and 2 contact outputs (open collector)
- Consists of probe with copper sleeve, cable and controller.
- The probe can be mounted in cylinder. (Max. pressure:21MPa)
- Protection : IP67
- Cable length : Max. 20m

Operating principle



L2DT is a sensor of which inductance changes with displacement of the copper sleeve covering a sensor probe.

The composition of a sensor probe is shown in the left figure. 10kHz sine wave excites the solenoid coil of the L2DT sensor. It generates the short ring effect as a copper sleeve covers a sensor probe.

The magnetic flux of the short ring effect makes decrease inductance of solenoid coil.

When the copper sleeve covers the whole sensor probe, the short ring effect is the strongest and the value of inductance becomes the smallest.

Calculating the change of this inductance, it is possible to detect the position of a copper sleeve.

The value of inductance can be calculated by the following formula.

$$L = \frac{1}{2\pi f} \cdot \frac{V}{I} \sin \theta$$

L : inductance
V : voltage
I : current
f : frequency
 θ : phase difference

L2DTC-4 controller generates 10kHz sine wave to excite solenoid coil and measures amplitude and phase of AC signal to detect change of inductance.

