

Linear displacement transducer system

type **LDS80 / LDT80**

LDS160 / LDT160

LDS240 / LDT240

Application

The eddy current principle based linear displacement sensor-transducer systems are plunger position to voltage devices that measure static and slowly variable distances between the plunger end and the observed target. The general application is an accurate, contacting displacement measurement in relatively harsh environment. However, the most common use is for valve position measurements on rotating machinery.

Description

One measuring system consists of the LDS sensor and the LDT transducer. The transducer radio frequency oscillator generates a radio frequency signal, that is radiated through the sensor coil into the plunger being an axially moving rod. The transducer detects in the return signal the strength loss for the eddy-currents generated in the plunger and conditions the signal for linear voltage output.

The plunger end and the housing end are equipped with standard spherical plain bearings providing convenient assembly on the machine (valve). The probe housing is made of nickel plated brass and the sensor cable is concentric with PTFE isolation. The cable is provided with steel protective armour.

The transducer circuit is placed in aluminium alloy enclosure with gland seals for sensor and supply/output cable. The electronics is epoxy-resin encapsulated.

The sensor is connected through an integral cable to the transducer. The transducer is powered from -24V DC source (from the monitor). The output voltage from the transducer is a negative DC voltage proportional to the plunger position in the coil.

A three - conductor, shielded cable provides the connection transducer - monitor providing power supply and output signal interface. The transducer can be placed up to 300 metres from monitor without degradation of performance.



This data sheet comprises three models of the sensor /transducer system for three different measuring ranges as in data below.

Performances

METROLOGICAL

Nominal measuring range:

LDS80/LDT80	LDS160/LDT160	LDS240/LDT240
0-80mm	0-160mm	0-240mm

Nominal output voltage range: -4V ÷ -20V

Frequency response: 0 ÷ 1 kHz

Max. measuring error of FS (full scale): ±1%

Maximum temperature error of FS:

Sensor: ±3%

Transducer: ±1%

ELECTRICAL

Power supply: -24 V ± 1,5 V

Current consumption: < 15 mA

Output load, minimum: 10 KΩ

ENVIRONMENTAL

Operating temperature:

Probe: -25 ÷ +125 °C

Transducer: -25 ÷ +70°C

Relative humidity:

Probe: to 95%, without condensation

Transducer: 100%, not submerged



MECHANICAL

Dimensions:

Sensor: Figure 1

Transducer: Figure 2. The dimensions are identical for LDS80, 160 and 240 models.

Weight:

Sensor: 900g (1250g with 7m cable) – LDS80
1000g (1350g with 7m cable) – LDS160
1100g (1450g with 7m cable) – LDS240

Transducer: 600g

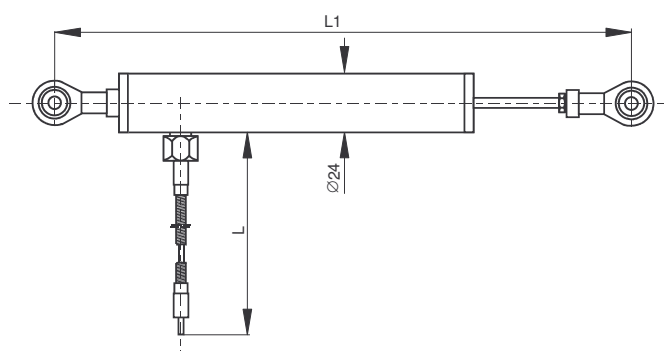
Housing material:

Sensor: nickel plated brass

Transducer: aluminium alloy

Integral cable length: 4 or 7m

The terminal block is placed inside the transducer (under the cover) and have five screw terminals: probe cable central wire, probe cable screen, common 0V, output voltage and supply -24V. Output is of -4V to -20V standard. The enclosure standard is one for all LDT transducers. The sensor-transducer system is factory calibrated for nominal range with linearity error of $\pm 1\%$ FS at $+20^\circ\text{C}$. However probes and transducers are mutually interchangeable within the same probe cable length. Without individual calibration the linearity error can grow to $\pm 3\%$ FS.



Sensor type	L1 min. (mm)	Cable length L (m)
LDS80	245	4 or 7
LDS160	355	
LDS240	445	

Fig.1 LDS 80,160, 240 sensors dimensions.

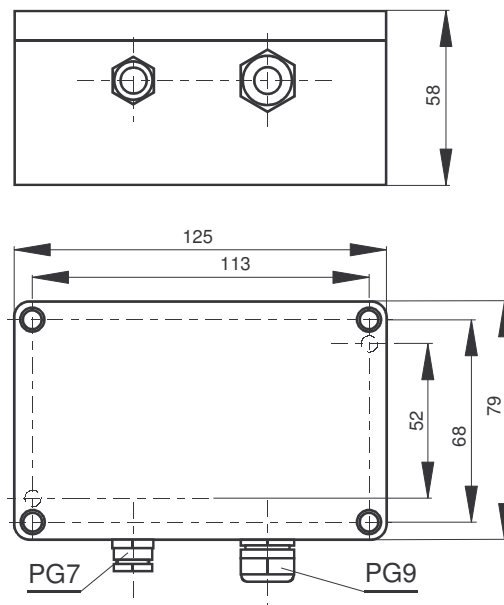


Fig.2 LDT80,160,240 transducers dimensions.

Sensor ordering Information

A B
LDS – □□□- □□

Options descriptions

A □□□ Sensor type number

0 8 0 for range 0-80mm
1 6 0 for range 0-160mm
2 4 0 for range 0-240mm

B □□ Sensor cable length

0 4 cable length 4m
0 7 cable length 7m

Transducer ordering Information

A B
LDT – □□□- □□

Options descriptions

A □□□ Transducer type number

0 8 0 for range 0-80mm and sensor LDS80
1 6 0 for range 0-160mm and sensor LDS160
2 4 0 for range 0-240mm and sensor LDS240

B □□ Sensor cable length

0 4 cable length 4m
0 7 cable length 7m

