High-precision Incremental Displacement Sensor

Series 8738

Code:	8738 EN
Delivery:	ex stock
Warranty:	24 months

CAD data 2D/3D for this sensor:
Download directly at www.traceparts.com
Info: refer to data sheet 80-CAD-EN

- **Measuring ranges between 0 ... 2 mm and 0 ... 100 mm**
- **Accuracy up to ± 0.5 µm**
- **Diameter up to 8 mm**
- **Vibration resistant and dust proof**
- **High protection class up to IP64**

8738 EN

Application

Incremental magnetic measuring heads offer maximum precision over the full range of measurements. As a result of the magnetic operating principle and the robust mechanical construction, they are insensitive to soiling and are therefore ideally suited to use in production facilities.
Thanks to the high quality of their measurements, their high protection and long service life, these sensors are used in many technologies (industry, research, development etc.).

Typical applications include:

- ► Monitoring both slow and fast movements between machine parts
- ► Measurements of position and positional changes in components and structural foundations, of servo regulators, valve and robot controllers
- ► Measurement of growth, and so on

Description

The incremental displacement sensors are based on a magnetic principle: consisting of a magnetic scale and a multi-slot reading head that responds to changes in magnetic flux, they detect linear movements with high precision and resolution.
The scale of ferromagnetic alloy – or magnetic tape – is magnetized by an alternating magnetic field with a pole spacing of 0.2 mm. A special recording head and a laser measurement system guarantee that the graduations are very precise. From the magnetic pattern on the scale, the multi-slot reading head generates a signal proportional to the movement.
The analog signal generated by the reading head is electronically divided and digitized. Changes in length can be measured with a resolution of from 1 µm down to 0.1 µm.
Thanks to its slim shape with a diameter of 8 mm and its high accuracy over the full range of measurements, model **8738 DK** is particularly suitable for use in multi-point measuring equipment. The spindle and spindle guide are protected from dust by a bellow.

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Technical Data

Order Code	Measurement Range	Dimensions [mm]							Resolution	Accuracy	Mass of Sensor without Cable
		L	øD1	øD2	C	K	S	B	[µm]	[µm]	[kg]
8738-DK802R5	0 ... 2 mm	64.2	8	-	8.6	-	-	12.2	0.5	± 0.8	0.02
8738-DK812R5	0 ... 12 mm	105	8	-	18	-	6	29.7	0.5	± 0.8	0.03
8738-DK25PR5	0 ... 25 mm	179.5	20	6	141	20	12	33.8	0.5	± 2	0.3
8738-DK50PR5	0 ... 50 mm	286	20	6	223	20	12	44	0.5	± 2	0.36
8738-DK100PR5	0 ... 100 mm	443.5	25	8	329.5	20	12	38.5	0.5	± 2	0.63

Electrical values

Excitation voltage : 5 V ± 5 %
Output signal: A/B/Z phasing signal (line driver RS422)
Current consumption: max. 300 mA
Power consumption: 1.8 W

Environmental conditions

Nominal temperature range: from 0 °C to 50 °C
Storage temperature range: from -20 °C to 60 °C
Influence of temperature: 0.012 µm/K

Mechanical values

Maximum speed of response: 1 m/s
Rod drive: spring force (compressed air, vacuum optional)
Protection class without interpolator and connector: model 8738-DK IP64
Weight: < 0.6 kg
Bending radius: with flexible mounting position < 50 mm
with fix mounting position < 20 mm
Vibration resistance: 100 m/s
Shock resistance: 1000 m/s
Reference marker: 1
Displacement force (horizontal): < 0.4 ± 0.25 N
Durability: 5 million cycles
Electrical connections:
Shielded cable, length 5 m, interpolation box and 8 pin connector, (DK series) for 9140.

Wiring:

Output signal	8738-DK
+5 V	red
0 V/GND	white
A	blue
*A	yellow
B	orange
*B	grey
Z	green
*Z	violett

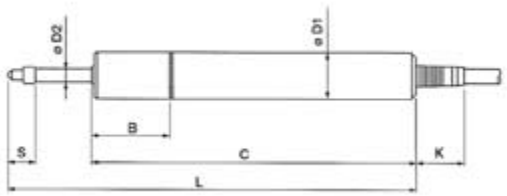
Mounting instructions
It is important to ensure that the sensor housing is not too tightly clamped when mounting. Although the shaft has been specially hardened, excessive tightening torques should be avoided (max. 0.06 Nm).
The accuracy of the measurement depends on the parallelism achieved during assembly; the mounting bracket should be designed and machined in such a way that the parallelism of the measuring head to the surface achieved during assembly is kept within 0.3 mm/100 mm.

Note:
For measurements where the required precision is lower, the DT series offers a low-cost alternative; measuring ranges: 12 mm or 32 mm (5 µm resolution) on request.

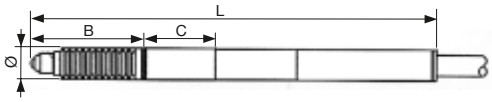
DT series
(Technical data on request)

Dimensional drawing

Model 8738-DK25/50/100



Model 8738-DK802/812



The CAD drawing (3D/2D) for this sensor can be imported online directly into your CAD system.
Download via www.burster.com or directly at www.traceparts.com. For further information about the burster traceparts cooperation refer to data sheet 80-CAD-EN.

Order Information:

Incremental displacement sensor, measurement range 2 mm, straight cable outlet, 0.8 µm accuracy **8738-DK802R5**

Incremental displacement sensor, measurement range 25 mm, straight cable outlet, 1 µm accuracy **8738-DK25PR5**

Accessories

Probe tip with carbide ball, ø 3 mm, M 2.5 (part of delivery) **Model 8738-Z001**

Indicator: **DIGIFORCE® series 9306**
please refer to section 9 of the catalog.

Options for DK series

Resolution 0.1 µm, accuracy 0.5 µm and flange **8738-DK802R5**

Pneumatic lining (Push): **8738-DK802VR**
The rod is pushed inside by spring forces and pushed outside by compressed air. minimum pressure: 0.25 bar
maximum pressure: 0.45 bar

Vacuum lifting (Pull): **8738-DK802LR**
The rod is pushed inside by spring forces and pulled outside by vacuum. minimum vacuum: 0.25 bar

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