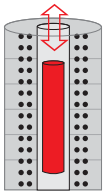
MICRO-EPSILON

More Precision.

induSENSOR

Linear inductive displacement sensors



Series LVP DC: Inductive sensors with measuring plunger and integrated electronics

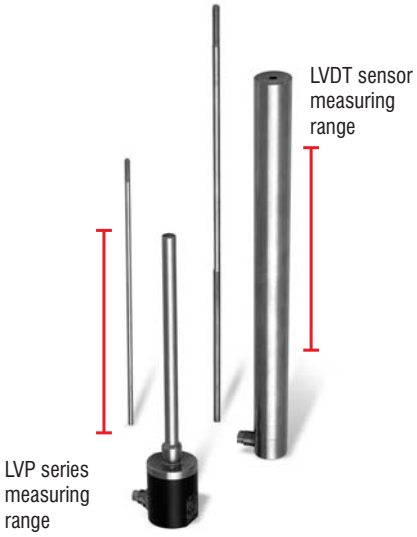
No wear and no maintenance

Integrated microelectronics

Compact design - short installed length

Shielded against EMI

For use in difficult ambient conditions

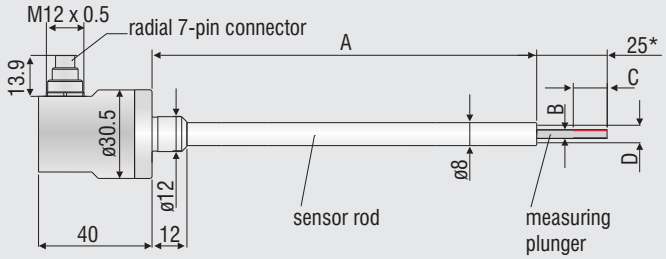


Comparison of the installed length of the LVP sensor with a conventional LVDT sensor

Comparison of the installed length of the LVP sensor with a conventional LVDT sensor

An important advantage of the LVP measuring technique lies in the short length of the installed sensor. This difference in lengths becomes clear in a direct comparison with an LVDT sensor.

LVP series **housing version -ZA-**



* measuring plunger start position I_{out} = 4 mA

Measuring range	A	B	C	D
50	77	M2	10	4
100	138	M3	12	4
200	261	M3	12	4

All data in mm

Model		LVP-50	LVP-100	LVP-200
Measuring range		50 mm	100 mm	200 mm
Linearity	standard ±0.5 % FSO	0.25 mm	0.5 mm	1.0 mm
	option±0.25 % FSO	0.125 mm	0.25 mm	-
Resolution	<0.03 % FSO	0.015 mm	0.03 mm	0.06 mm
Temperature range		-40 °C ... +85 °C		
Temperature stability	zero	±50 ppm / °C		
	sensitivity	±150 ppm / °C		
Frequency response (-3 dB)		300 Hz		
Output		4 - 20 mA		
Output load		500 Ohm		
Power supply		18 - 30 VDC		
Current consumption		max. 40 mA		
Protection class		IP 67		
Electromagnetic compatibility (EMC)		EN 50 081-2 spurious emission EN 50 082-2 interference immunity		
Shock[1]	IEC 68-2-29 IEC 68-2-27	40 g, 3000 shocks / axis; 100 g radial, 300 g axial		
Vibration	IEC 68-2-6	5 Hz ... 44 Hz ± 2.5 mm; 44 Hz ... 500 Hz ±20 g		

FSO = Full Scale Output

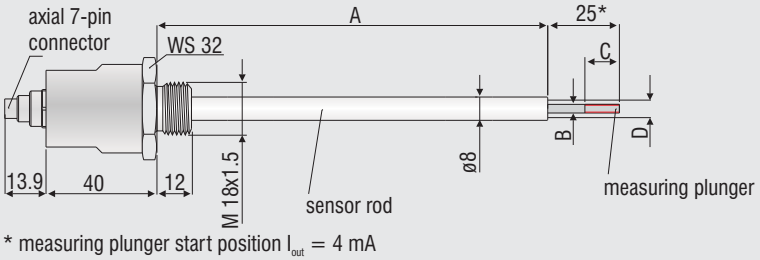
1) Half sinusoid 6 ms

Article

LVP - ***50*** - ***ZA*** - ***2.5*** - ***SR7*** - I

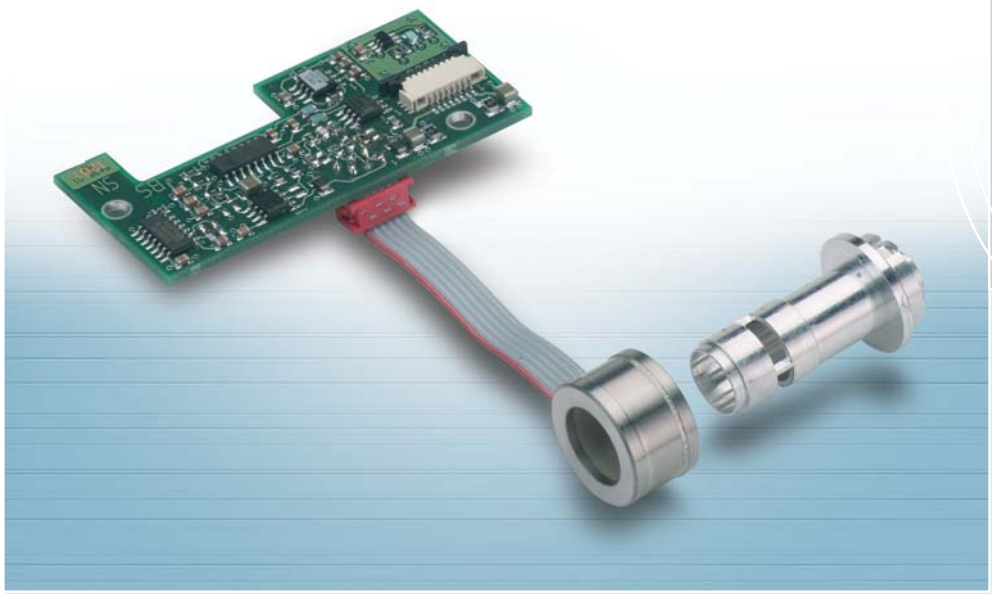
- Electrical output
- SA7= connector, axial (housing version GA)
  SR7= connector, radial (housing version ZA)
- Linearity 5 = 0.5 % FSO
  2.5 = 0.25 % FSO
- ZA= housing, cylindical (standard)
  GA= housing, threaded (option)
- measuring range in mm

LVP series **housing version -GA- (option)**



* measuring plunger start position I_{out} = 4 mA

Sensor system with on-board electronics
LVP-0,3-Z20-2-CR-AC



Excellent ratio of installed length to measurement range

On-board electronics

Rugged and wear-free

High dynamic

Functional target

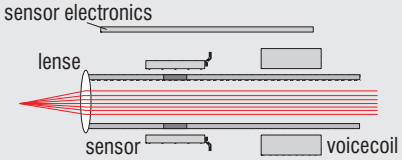
Voice coil actuators are used for positioning with small displacements, with a high dynamic response, high repeatability and positioning accuracy as well as with strong accelerations. In conjunction with a servo system the voice coil actuator and the displacement sensor are operated in a closed circuit. These systems are used in applications in the optical industry, such as for optical scanning, focusing, tracking and stabilizing. Through the use of the sensor the optical beam path and the mechanical system can be set up on one axis. The optical path is combined with the line of center of gravity for the motor and the measurement object.

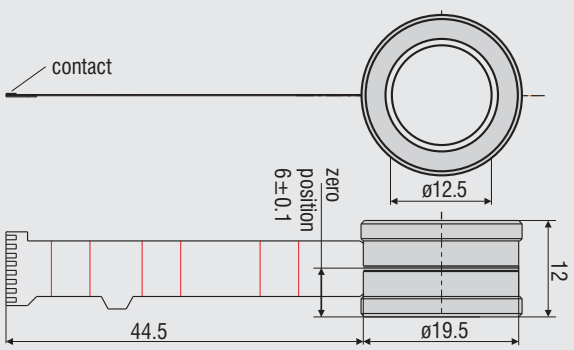
This produces a simpler mechanical construction, higher stability and a smaller installation space.

Model		LVP-0,3-Z20-2-CR-AC
Article		2617009
Measuring principle		LVP (page 10-11)
Measuring range		0.3 mm
Target		customer specific, not included
Linearity		0.25 % FSO (0.75 µm)
Resolution		0.025 % FSO (0.1 µm)
Frequency response		3 kHz
Housing		stainless steel
Temperature stability		± 200 ppm / °C
Output		digital, TTL
Power supply		+ 3.3 VDC
Temperature range	sensor	-10 °C ... +40 °C
	electronics	-10 °C ... +65 °C
Protection class		IP 65
Electronics		including PCB electronics 4111006.03, MSC739/CRF-AD

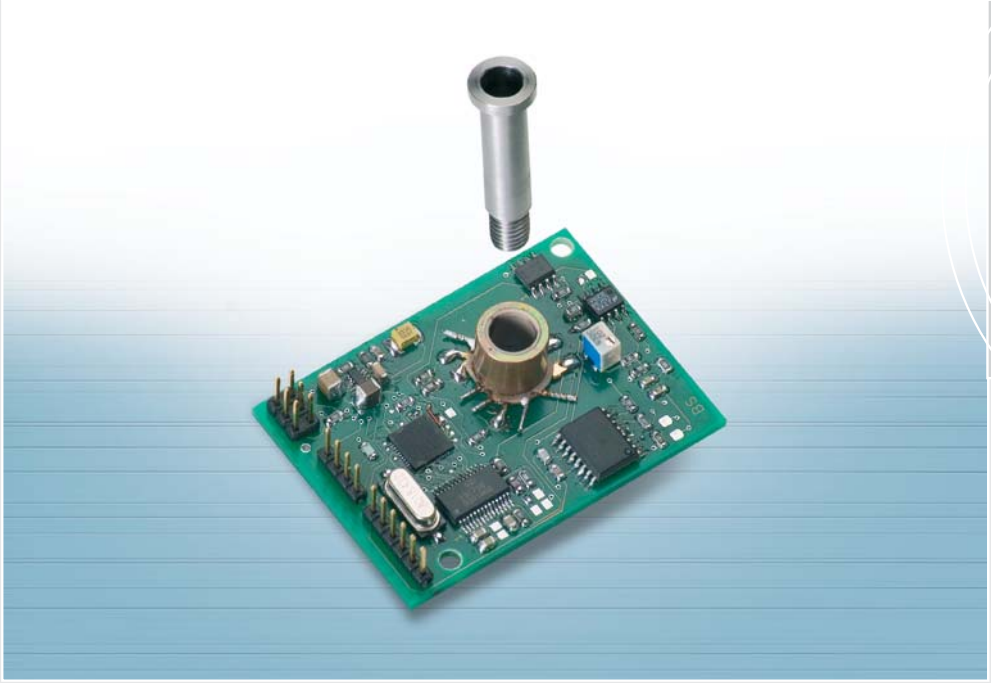
FSO = Full Scale Output

Sensor integrated in an optical and mechanical voice coil axis.





Sensor module with ASIC electronics LVPxx-P-LP-I/D



Market leading technology

Stroke measurement in hydraulic and solenoid valves

Measurement ranges from 1 to 10 mm with only one sensor module

Customer specific target

Model	**LVPxx-P-LP-I/D**				
Article	2616079				
Measuring principle	LVP (page 10-11)				
Measuring range	±1 mm	±2 mm	±3 mm	±4 mm	±5 mm
Target, plunger length	10.5 mm	8.5 mm	8 mm	7 mm	5 mm
Linearity	0.2 % FSO			0.5 % FSO	1 % FSO
Resolution	2 µm	4 µm	6 µm	8 µm	10 µm
	10 bit				
Frequency response	200 Hz ... 1 kHz (-3dB)				
Temperature stability	± 100 ppm / °C (zero)				
	± 150 ppm / °C (sensitivity)				
Output	0.5 ... 4.5 VDC and 4 ... 20 mA				
	option: PWM, digital (serial)				
Power supply	+ 8 ... 35 VDC				
Temperature range	-40 °C ... +85 °C				
Storage temperature	-40 °C ... +100 °C				
Circuit dimensions	41 x 52 mm				
Alu tube dimensions	ø7 x 0.5 mm, 35 mm long				

FSO = Full Scale Output

The sensor system LVP-xx-P-LP-I/D is used as a testing system for the verification and inspection of the functionality of the system in electro-hydraulic servo valves.

The modular sensor construction facilitates a fast and simple adaptation to the specific application for use in large-scale production. The sensor and electronic system can be constructed as one unit or with a sensor cable. The LVP principle enables matching of the measurement ranges in a span from ±1 to ±5 mm by simply changing the target length.

The sensor element is mounted in the pressure-free space and is protected by a pressure pipe. The acquisition of the target position occurs through the pressure pipe.

Sensor for needle stroke movements LVP-3-Z13-5-CA

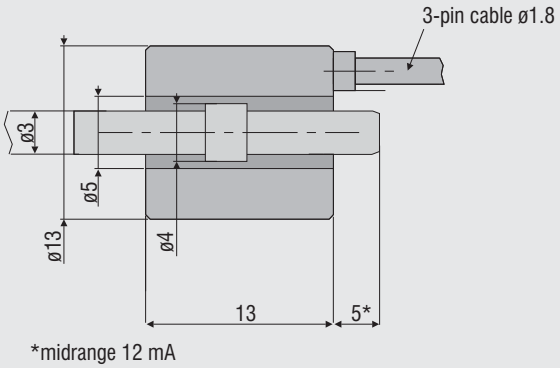
Compact design

Measurement object and sensor on one axis

No extension of the overall installed length due to sensor

Model	LVP-3-Z13-CA
Article	2617014
Measuring principle	LVP (page 10-11)
Measuring range	3 mm
Target (not included)	ø3 x 30 long with thread M3 and alu sleeve ø4 x 3.3
Linearity	typisch 0.3 % FSO (9 µm)
Housing	stainless steel
Temperature stability sensor	±100 pmm / °C
Temperature range sensor	-40 °C ...+150 °C
Protection class sensor	IP 67
Electronics	series MSC7210
	series ISC7001

FSO = Full Scale Output



*midrange 12 mA

The compact displacement sensor LVP-3-Z13-5-CA is suitable for acquiring small measurement ranges with high accuracy. The large free hole for the passage of the core also facilitates large excessive strokes. The measurement object, realized as a simple aluminum ring, is mounted on the rod, plunger, pin, needle or other similar part to be measured. In a typical application the displacement sensor LVP-3-Z13-5-CA is used in automatic glue application guns. The continuously measuring sensor monitors the switching point, also for wear of the needle seating. Additionally, the continuous measurement offers the option of checking the needle for the correct stroke position. The small, compact sensor is easy to integrate even in tight installation spaces.

More Precision.

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Sensors and systems
for displacement, position and dimension

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for non-contact temperature measurement

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MICRO-EPSILON Headquarters
Koenigbacher Str. 15 · 94496 Ortenburg / Germany
Tel. +49 (0) 8542 / 168-0 · Fax +49 (0) 8542 / 168-90
info@micro-epsilon.com

MICRO-EPSILON UK Ltd.
Dorset House, West Derby Road · Liverpool, L6 4BR
Phone +44 (0) 151 260 9800 · Fax +44 (0) 151 261 2480
info@micro-epsilon.co.uk

MICRO-EPSILON USA
8120 Brownleigh Dr. · Raleigh, NC 27617 / USA
Phone +1/919/787-9707 · Fax +1/919/787-9706
info@micro-epsilon.us

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