

# More Precision

# induSENSOR // Linear inductive displacement sensors



## induSENSOR LVP / LDR

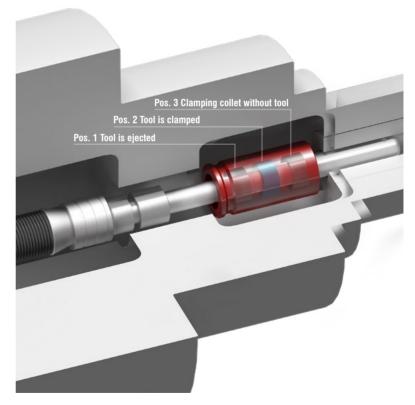
	Compact design
	High ambient temperatures
( ↑→°C	High temperature stability
	High repeatability
<b><u>IP67</u></b>	Robust design IP67

The LVP-25-Z20 and LDR-14-Z20 sensors are designed for monitoring the clamping position in machine tools.

The cylindrical sensors are integrated into the release device and detect the clamping stroke of the drawbar. The measuring object is a ring which is glued onto the drawbar.

The sensors can be universally used for different types of tools due to their extremely compact sensor design. The sensors provide an analog signal according to the stroke motion of the drawbar when clamping the tool. Consequently, continuous monitoring is possible without the switching point having to be set mechanically.

The miniature sensor controller can either be accommodated at the point of measurement or in the control cabinet. Thanks to their high accuracy, the sensors contribute significantly to meeting the ever increasing requirements for precision and availability of machine tools.

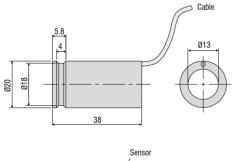


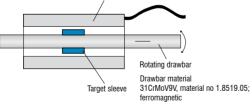


S0 Hz $50 Hz$ $6 \mu m$ $7 \mu m$ Resolution 1 $300 Hz$ $12 \mu m$ $14 \mu m$ Linearity       typ. $\leq \pm 1.5\%$ FS0 $\leq \pm 0.375  mm$ $\leq \pm 0.21  mm$ Temperature stability $(5 \pm 1.5\%$ FS0 $(5 \pm 0.375  mm$ $\leq \pm 0.21  mm$ Temperature stability $(5 \pm 1.5\%$ FS0 $(5 \pm 0.375  mm$ $(5 \pm 0.20  pm$ FS0/K         Sensitivity 3 $(5 \pm 0.375  mm)$ $(5 \pm 0.21  mm)$ $(26  mV / mm/V)$ Sensitivity 3 $(16  mV / mm/V)$ $(26  mV / mm/V)$ $(26  mV / mm/V)$ Excitation nequency $(16  kHz)$ $(23  kHz)$ $(23  kHz)$ Excitation voltage $(5 \pm 0.00  mm)^2$ $(16  kHz)$ $(23  kHz)$ Measuring object       Ring for shaft diameter 8 mm or 10 mm (included in delivery) $(16  mV - mh)^2$ Connection       Storage $(-40 \dots + 45  ^{\circ C})^2$ $(-40 \dots + 45  ^{\circ C})^2$ Temperature range       Storage $(0  p  5  ms, 6  aces, 1000  shocks each$ $(10  Hz + 49  9  Hz  2  mm)^2$ Vibration (DIN EN 60068-2-27)       Gender 10  Hz - 400  Hz  2  axees, 100  cycles each $(0  Hz + 49  9  Hz  2  mm)^2$ $(0  G  Stainles  stei), PC  Gender)$ Neight </th <th colspan="2">Model</th> <th>LVP-25-Z20</th> <th>LDR-14-Z20</th>	Model		LVP-25-Z20	LDR-14-Z20	
Resolution "       300 Hz       12 µm       14 µm         Linearity       typ. ≤ ±1.5% FSO       ≤ ±0.375 mm       ≤ ±0.21 mm         Temperature stability       ≤ 150 ppm FSO/K       ≤ 200 ppm FSO/K         Sensitivity ?1        16 mV / mm/V       26 mV / mm/V         Excitation frequency        16 kHz       23 kHz         Excitation voltage        550 mV          Measuring object        6 mV / mm/V       26 mV / mm/V         Connection        16 kHz       23 kHz         Connection        16 mV / mm/V on min. bending radius 10 mm (included in delivery)         Connection        10 mm with open ends; axia cable outlet; cable diameter 1.8 mm; min. bending radius 10 mm (fixed installation)         Temperature range       Storage       -40 +8 °C         Operation       -40 +8 °C       -40 +8 °C         Pressure resistance       atmospheric pressure         Shock (DIN EN 60068-2-27)       40 g / 5 ms, 6 axes, 1000 shocks each         Vibration (DIN EN 60068-2-6)       0/ 40 g / 49.9 Hz - 2000 Hz, 3 axes, 10 cycles each         Protection class (DIN EN 60529)       20 g / 49.9 Hz - 2000 Hz, 3 axes, 10 cycles each         Material       Sensor       approx. 40 g       approx. 30 g <td colspan="2">Measuring range</td> <td colspan="2">25 mm 14 mm</td>	Measuring range		25 mm 14 mm		
Number of the second	Resolution 1)	50 Hz	6 <i>µ</i> m	7 <i>µ</i> m	
Temperature stability     ≤ 150 ppm FSO/K     ≤ 200 ppm FSO/K       Sensitivity <sup>2</sup> 16 mV / mm/V     26 mV / mm/V       Excitation frequency     16 kHz     23 kHz       Excitation voltage     16 kHz     23 kHz       Excitation voltage     Soor Soor W       Measuring object     Ring for shaft diameter 8 mm or 10 mm (included in delivery)       Connection     integrated cable (2 m) with open ends; axial cable outlet; cable diameter 1.8 mm; min. bending radius 10 mm (fixed installation)       Temperature range     Storage     -40 + 85 °C       Operation     Operation     -40 + 85 °C       Shock (DIN EN 60068-2-27)     40 g / 5 ms, 6 axes, 1000 shocks each       Vibration (DIN EN 60068-2-6)     0     10 Hz - 49.9 Hz: 2 mm; 20 g / 49.9 Hz - 2000 Hz, 3 axes, 10 cycles each       Protection class (DIN EN 60529)     0     10 Hz - 49.9 Hz: 2 mm; 20 g / 49.9 Hz - 2000 Hz, 3 axes, 10 cycles each       Netrial     Stainless steel, PEEK       Weight     Sensor     approx. 40 g		300 Hz	12 <i>µ</i> m	14 <i>µ</i> m	
Sensitivity <sup>2</sup> )     16 mV / mm/V     26 mV / mm/V       Excitation frequency     16 kHz     23 kHz       Excitation voltage     6 KHz     50 mV       Measuring object     Ring for shaft diameter 8 mm or 10 mm (included in delivery)       Connection     integrated cable (2 m) with open ends; axial cable outlet; cable diameter 1.8 mm; min. bending radius 10 mm (fixed installation)       Temperature range     Storage       Operation     40 + 85 °C       Pressure resistance     40 + 85 °C       Shock (DIN EN 60068-2-27)     40 g / 5 ms, 6 axes, 1000 shocks each       Vibration (DIN EN 60068-2-6)     10 Hz - 49.9 Hz: 2 mm; 20 g / 49.9 Hz: 2 mm;	Linearity	typ. $\leq \pm 1.5\%$ FSO	$\leq\pm$ 0.375 mm	≤ ±0.21 mm	
Excitation frequency     16 kHz     23 kHz       Excitation voltage     6 kHz     50 mV       Measuring object     70 mm (included in delivery)       Measuring object     70 mm (included in delivery)       Connection     70 mm (integrated cable (2 m) with open ends; axial cable outlet; cable diameter 1.8 mm; min. bending radius 10 mm (fixed installation)       Temperature range     Storage       Operation     -40 +85 °C       Pressure resistance     atmospheric pressure       Shock (DIN EN 60068-2-27)     00 eration       Vibration (DIN EN 60068-2-6)     10 Hz - 49.9 Hz : 2 mm; 20 g / 49.9 Hz : 2000 Hz, 3 axes, 100 shocks each       Protection class (DIN EN 60529)     70 eration       Material     80 eration       Weight     Sensor       Approx. 40 g     approx. 40 g	Temperature stability		$\leq$ 150 ppm FSO/K	$\leq$ 200 ppm FSO/K	
Excitation voltage       550 mV         Measuring object       Storage         Connection       integrated cable (2 m) with open ends; axial cable outlet; cable diameter 1.8 mm; min. bending radius 10 mm (fixed installation)         Temperature range       Storage         Operation       -40 +85 °C         Pressure resistance       -40 +120 °C <sup>3</sup> Shock (DIN EN 60068-2-27)       Genetion         Vibration (DIN EN 60068-2-6)       10 Hz - 49.9 Hz: 2 mm; 20 g / 49.9 Hz; 2 mu; 20 g / 49.9 Hz; 2 mu; 20 g / 49.9 Hz; 2 mu; 20 g / 49.9	Sensitivity 2)		16 mV / mm/V	26 mV / mm/V	
Measuring object       Ring for shaft diameter 8 mm or 10 mm (included in delivery)         Connection       integrated cable (2 m) with open ends; axial cable outlet; cable diameter 1.8 mm; min. bending radius 10 mm (fixed installation)         Temperature range       Storage         Operation       -40 +85 °C         Pressure resistance       -40 +85 °C         Shock (DIN EN 60068-2-27)       40 g / 5 ms, 6 axes, 1000 shocks each         Vibration (DIN EN 60068-2-6)       20 g / 49.9 Hz - 2000 Hz, 3 axes, 10 cycles each         Protection class (DIN EN 600529)       70 G         Material       Sensor         Weight       Sensor	Excitation frequency		16 kHz	23 kHz	
Connection     integrated cable (2 m) with open ends; axial cable outlet; cable diameter 1.8 mm; min. bending radius 10 mm (fixed installation)       Temperature range     Storage       Operation     -40 +85 °C       Pressure resistance     Operation       Shock (DIN EN 60068-2-27)     40 g / 5 ms, 6 axes, 1000 shocks each       Vibration (DIN EN 60068-2-6)     10 Hz - 49.9 Hz: 2 mm; 20 g / 49.9 Hz: 2 mm;	Excitation voltage	ion voltage 550 mV			
Connection     Storage       Temperature range     Storage       Operation     -40 +85 °C       Pressure resistance     -40 +120 °C °       Shock (DIN EN 60068-2-27)     40 g / 5 ms, 6 axes, 1000 shocks each       Vibration (DIN EN 60068-2-6)     20 g / 49.9 Hz: 2 mm; 20 g / 49.9 Hz: 2 mm;       Protection class (DIN EN 60529)     IP67       Material     Sensor       Weinht     Sensor	Measuring object		Ring for shaft diameter 8 mm or 10 mm (included in delivery)		
Temperature range     Operation       Operation     -40 + 120 °C ³       Pressure resistance     atmospheric pressure       Shock (DIN EN 60068-2-27)     40 g / 5 ms, 6 axes, 1000 shocks each       Vibration (DIN EN 60068-2-6)     20 g / 49.9 Hz: 2 mm; 20 g / 49.9 Hz: 2 mm;       Protection class (DIN EN 60529)     IP67       Material     Sensor       Weinht     Sensor	Connection				
Operation     -40 + 120 °C ³       Pressure resistance     atmospheric pressure       Shock (DIN EN 60068-2-27)     40 g / 5 ms, 6 axes, 1000 shocks each       Vibration (DIN EN 60068-2-6)     10 Hz - 49.9 Hz: 2 mm; 20 g / 49.9 Hz - 2000 Hz, 3 axes, 10 cycles each       Protection class (DIN EN 60529)     IP67       Material     Sensor       Weight     Sensor	Temperature range	Storage	-40 +85 °C		
Shock (DIN EN 60068-2-27)     40 g / 5 ms, 6 axes, 1000 shocks each       Vibration (DIN EN 60068-2-6)     10 Hz - 49.9 Hz: 2 mm; 20 g / 49.9 Hz - 2000 Hz, 3 axes, 10 cycles each       Protection class (DIN EN 60529)     IP67       Material     Stainless steel, PEEK       Weinht     Sensor     approx. 40 g		Operation	-40 + 120 °C <sup>3)</sup>		
10 Hz - 49.9 Hz: 2 mm; 20 g / 49.9 Hz - 2000 Hz, 3 axes, 10 cycles each       Protection class (DIN EN 60529)     IP67       Material     Sensor     approx. 40 g     approx. 30 g	Pressure resistance		atmospheric pressure		
Vibration (DIN EN 60068-2-6)     20 g / 49.9 Hz – 2000 Hz, 3 axes, 10 cycles each       Protection class (DIN EN 60529)     IP67       Material     Stainless steel, PEEK       Weight     Sensor     approx. 40 g	Shock (DIN EN 60068-2-27)		40 g / 5 ms, 6 axes, 1000 shocks each		
Material Stainless steel, PEEK Weight Sensor approx. 40 g approx. 30 g	Vibration (DIN EN 60068-2-6)		,		
Weight Sensor approx. 40 g approx. 30 g	Protection class (DIN EN 60529)		IP67		
Weight	Material		Stainless steel, PEEK		
Target ring < 1 g < 1 g	Weight	Sensor	approx. 40 g	approx. 30 g	
		Target ring	< 1 g	< 1 g	
Compatibility MSC7401, MSC7802, MSC7602	Compatibility		MSC7401, MSC7802, MSC7602		

PSO = Full Scale Output <sup>1)</sup> Valid when operated with compatible Micro-Epsilon controller <sup>2)</sup> With 10 mm reference drawbar <sup>3)</sup> Max. temperature change: 3 K / min; higher temperatures on request

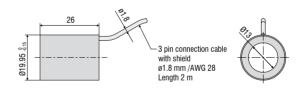
### LVP-25-Z20

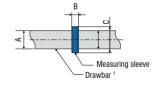




Dimensions in mm, not to scale

LDR-14-Z20





		Dimensions				
Model	Drawbar 1	А	В	С		
LVP-25-Z20	D8	ø8 mm	ø5 mm	ø11.5 mm		
	D10	ø10 mm	ø5.5 mm	ø11.5 mm		
LDR-14-Z20	D8	ø8 mm	ø3 mm	ø11.5 mm		
	D10	ø10 mm	ø5.5 mm	ø11.5 mm		
<sup>1)</sup> Not included in delivery						

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