

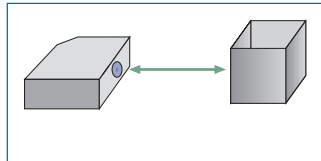
Measurably better – by far!

Efficient selection of suitable sensors for contactless distance measurement and position determination is becoming more and more important. Constantly rising requirements for machine performance and reduced budgets demand vast experience for a successful solution, particularly in the selection of the appropriate measurement method. To meet this challenge, we support you with the widest range of sensors for distance and position measurement.

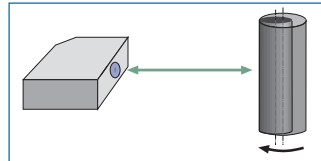
To achieve an optimum result, three physical measurement methods are available: inductive, photoelectric and ultrasonic.

Typical applications of measuring sensors

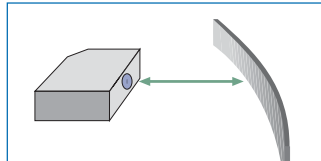
Travel / position / displacement



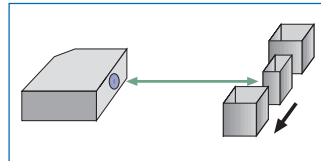
Diameter / eccentricity



Deflection / deformation

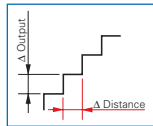


Size comparison / measurement tolerance



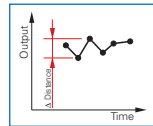
Technical definitions of measuring sensors

Resolution



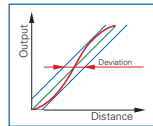
The resolution corresponds to the smallest possible distance change which causes a detectable change to the output signal.

Repeat accuracy



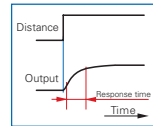
Repeat accuracy means the difference between the measured values of successive measurements within a period of 8 hours at an ambient temperature of 23 °C ± 5 °C.

Linearity



Linearity is the deviation from a proportional linear function (straight line). It is given as a percentage of the upper limit of the measuring range (full scale).

Response time



The time which the signal output of a sensor requires to rise from 10% to 90% of the maximum signal level is called the response time.

Type	Inductive							
Housing	ø 6,5 mm	M 8	M 12	M 18	M 30	12 x 12	18 x 10	20 x 12
Measuring distance ¹⁾	0...2	0...2	0...4	2...5	5...10	0...4	0...4	2...5
Measuring ranges	1	1	4	3	2	4	4	2

¹⁾ (mm)



Type series	IWRM 06	IWRM 08	IPRM 12 IWRM 12	IWRM 18	IWRM 30	IWFM 12	IWFM 18	IWFM 20	
Resolution	5 µm	5 µm	0,1 µm 1 µm	10 µm	10 µm	1 µm	1 µm	10 µm	
Repeat accuracy	± 10 µm	± 10 µm	± 5 µm	± 10 µm	± 10 µm	± 10 µm	± 10 µm	± 10 µm	
Linearity (full scale)	± 5%	± 5%	± 0,4%	± 2%	± 2%	± 0,4%	± 0,4%	± 2%	
Response time	0,70 ms ¹⁾	0,50 ms ¹⁾	0,7 ms	0,8 ms ¹⁾	2 ms ¹⁾	0,7 ms ¹⁾	2 ms	2,4 ms ¹⁾	
Outputs	Analog 4 - 20 mA Analog 0 - 10 V PNP switching output PNP alarm output Digital RS 485	0 - 10 mA 0 - 10 mA	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
Special features	Teach-in ²⁾ Measurement report on request	■ ■	■ ■	■ ■	■ ■	■ ■	■ ■	■ ■	

¹⁾ In the case of inductive sensors (without microcontroller), the response time is reduced in proportion to the measuring range which is used.

²⁾ Uniform teach-in method for defining the measuring range, inverting the characteristic curve and setting the thresholds of the switching output.

Photoelectric				Ultrasonic			
Series 12	Series 20	Series 20	Series 21	Series 20	Series 30	ø 30 mm	ø 50 mm
15...120	30...1000	30...1000	200...1000	20...150	30...700	100...700	400...2500
2	5	5	1	1	3	1	1



Type series	OADM 12	OADM 20	OADM 20 Teach-in	OADM 21	UNDK 20	UNDK 30	UNAM 30	UNAM 50	
Resolution	2 µm	10 µm	4 µm	30 µm	300 µm	300 µm	300 µm	300 µm	
Repeat accuracy	± 2 µm	± 10 µm	± 4 µm	± 30 µm	± 500 µm	± 500 µm	± 500 µm	± 1000 µm	
Linearity (full scale)	± 0,06%	± 0,06%	± 0,09%	± 0,25%	± 0,5%	± 0,5%	± 0,5%	± 0,5%	
Response time	0,9 ms	10 ms	0,9 ms	10 ms	30 ms	50 ms	80 ms	160 ms	
Outputs	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■
Special features	■ ■	■ ■	■ ■	■ ■	■ ■	■ ■	■ ■	■ ■	

Special features	LASER*	LASER*	LASER*	LASER*	Sonic beam angle: 6°	Sonic beam angle: 8°	Sonic beam angle: 10°	Sonic beam angle: 8°
Also with laser line	■	■	■	■	■	■	■	■
Hold function	■	■	■	■	■	■	■	■
Synchronization input	■	■	■	■	■	■	■	■
Also with laser line	■	■	■	■	■	■	■	■