



## Distance measuring sensors



### *Inductive*

- Tried and tested



### *Photoelectric*

- Multifunctional



### *Ultrasonic*

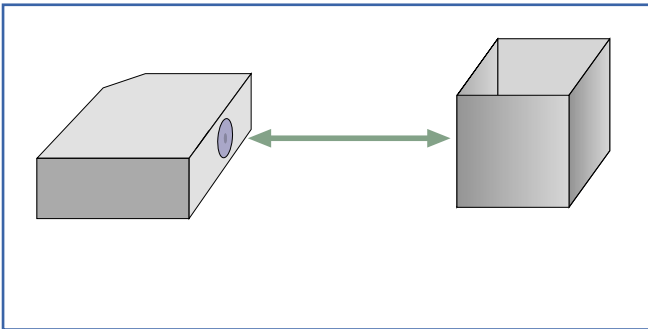
- Versatile

# Measurably better – by far!

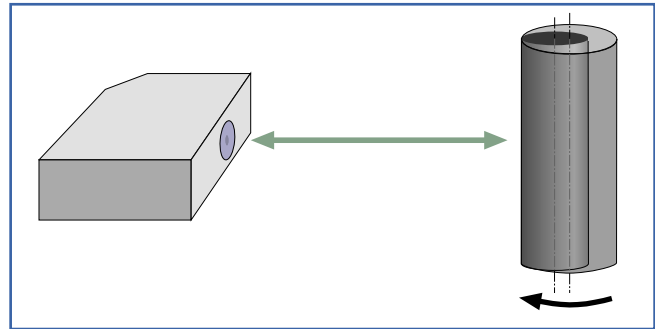
Efficient selection of suitable sensors for contactless distance measurement and position determination is becoming more and more important. Constantly rising requirements for machine performance and reduced budgets demand vast experience for a successful solution, particularly in the selection of the 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

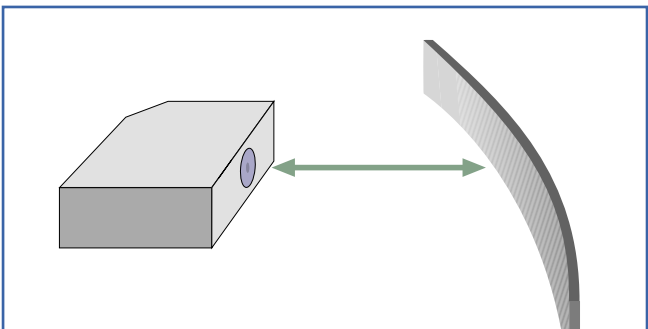
**Travel / position / displacement**



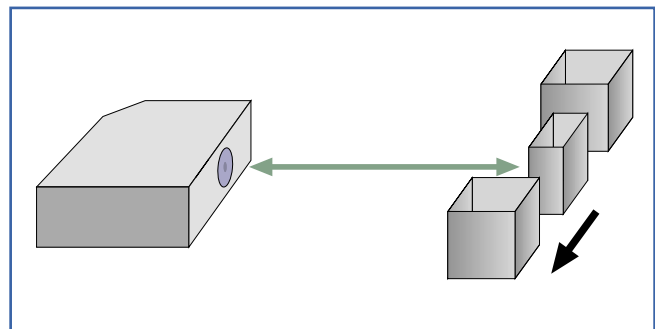
**Diameter / eccentricity**



**Deflection / deformation**

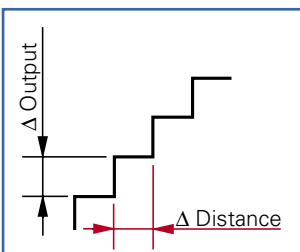


**Size comparison / measurement tolerance**



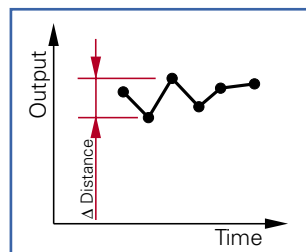
## Technical definitions of measuring sensors

**Resolution**



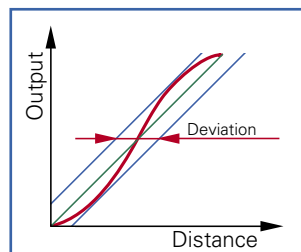
The resolution corresponds to the smallest possible distance change which causes a detectable change to the output signal.

**Repeat accuracy**



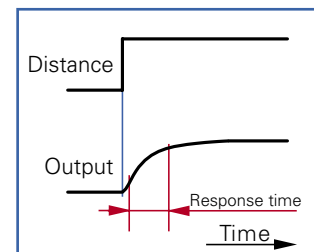
Repeat accuracy means the difference between the measured values of successive measurements within a period of 8 hours at an ambient temperature of  $23\text{ °C} \pm 5\text{ °C}$ .

**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 <sup>*1)</sup>	0...2	0...2	0...4	0...8	5...10	0...4	0...4	2...5
Measuring ranges	1	1	4	3	2	4	4	2

<sup>\*1)</sup> (mm)



Type series	IWRM 06	IWRM 08	IPRM 12 IWRM 12	IWRM 18	IWRM 30	IWFM 12	IWFM 18	IWFM 20	
Technical data	Resolution	1 μm	1 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	± 5 μm	± 5 μm	± 10 μm
	Linearity (full scale)	± 5%	± 5%	± 0,4%	± 2%	± 1,7%	± 0,4%	± 0,4%	± 2%
	Response time	0,70 ms <sup>1)</sup>	0,50 ms <sup>1)</sup>	0,35 ms	0,35 ms <sup>1)</sup>	0,7 ms <sup>1)</sup>	0,35 ms <sup>1)</sup>	2 ms	0,35 ms <sup>1)</sup>
Outputs	Analog 4 - 20 mA	0 - 10 mA	0 - 10 mA	■	■	■	■	■	■
	Analog 0 - 10 V	■	■	■	■	1 - 9 V	■	■	1 - 9 V
	PNP switching output			■			■		
	PNP alarm output								
	Digital RS 485								
Special features	Teach-in <sup>2)</sup>			■			■		
	Measurement report on request			■			■	■	
				Linearized With switching output			Linearized	Linearized With switching output	





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

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

Photoelectric

Series 12	Series 20	Series 20	Series 21
15...120	30...1000	30...1000	200...1000
2	5	5	1



OADM 12	OADM 20	OADM 20 Teach-in	OADM 21
2 µm	10 µm	4 µm	30 µm
± 2 µm	± 10 µm	± 4 µm	± 30 µm
± 0,06%	± 0,06%	± 0,09%	± 0,25%
0,9 ms	10 ms	0,9 ms	10 ms
■	■	■	■
	■	■	■
	■	■	■
	■		
■		■	■
■	■	■	■
<b><u>LASER</u></b> 	<b><u>LASER</u></b>  Also with laser line	<b><u>LASER</u></b>  Hold function  Synchroni- zation input  Also with laser line	<b><u>LASER</u></b>  Hold function  Synchroni- zation input  Also with laser line

Ultrasonic

ø 12 mm	ø 18 mm	Series 20	Series 30	ø 30 mm	ø 50 mm
20...200	100...1000	20...200	30...2000	100...700	400...2500
1	1	1	4	1	1



UNAM 12	UNAM 18	UNDK 20	UNDK 30	UNAM 30	UNAM 50
300 µm	300 µm	300 µm	300 µm	300 µm	300 µm
± 500 µm	± 500 µm	± 500 µm	± 500 µm	± 500 µm	± 1000 µm
± 0,5%	± 0,5%	± 0,5%	± 0,5%	± 0,5%	± 0,5%
30 ms	80 ms	30 ms	50 ms	80 ms	160 ms
0 - 10 mA	■	■	■	■	■
■	■	■	■	■	■
	■	■	■	■	■
■	■	■	■	■	■
Sonic beam angle: 6°	Sonic beam angle: 10°	Sonic beam angle: 6°	Sonic beam angle: 8°	Sonic beam angle: 10°	Sonic beam angle: 8°

# Inductive

Measuring distance  
0...10 mm

Resolution  
0,1  $\mu\text{m}$

Response time  
0,35 ms

- *Extra flat housings*
- *Temperature-compensated*
- *Linearized characteristic curve*
- *With teach-in functions*



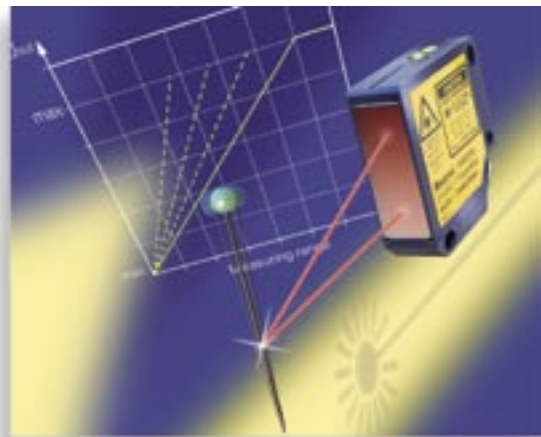
# Photoelectric

Measuring distance  
15... 1000 mm

Resolution  
2  $\mu\text{m}$

Response time  
0,9 ms

- *Smallest housing*
- *Short response time*
- *Extremely color-independent*
- *Configurable measuring range*



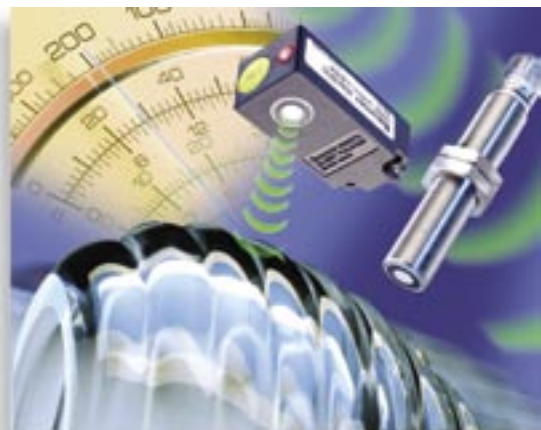
# Ultrasonic

Measuring distance  
20...2500 mm

Resolution  
300  $\mu\text{m}$

Response time  
30 ms

- *Compact square housing*
- *Short mounting depth*
- *Narrow sonic beam angle of only 6°*
- *Constant resolution*



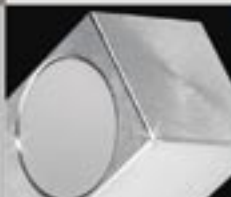
# FAXBACK

Sensors

Inductive

Photoelectric

Ultrasonic



☐ I would like to know more about \_\_\_\_\_

☐ I am interested in technical help.

☐ Please schedule an appointment with me.

I am interested in other measuring technology products:

☐ Pressure/force/strain

☐ Image processing

☐ Process controller

Company

Name

Function/Department

Number, Street

City, Postcode

Phone/Fax

E-Mail

Application

## Baumer electric

ZAS INGENIERÍA Y SERVICIO, S.A. DE C.V.  
HERRERA Y CAIRO 1065  
44200 GUADALAJARA, JALISCO

Phone (33) 3825 9338

Fax (33) 38250396

E-Mail: ventas@zas.com.mx

[www.zas.com.mx](http://www.zas.com.mx)

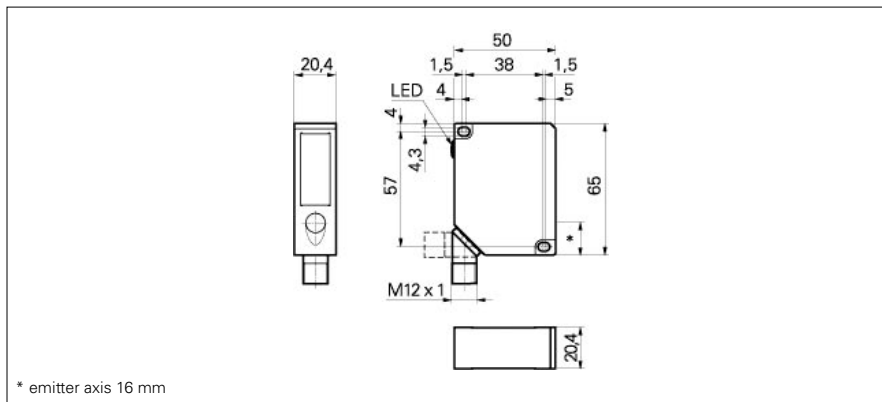
A Member of the Baumer Group

Technical data has been fully checked, but accuracy of printed matter not guaranteed. Printed in Switzerland 07/04 No. 802558

## Distance sensors

## OADM 20I4481/S14C

## dimension drawing



## general data

sensing element	photoelectric array
measuring range	200 ... 1000 mm
power on indication	LED green
soiled lens indicator	LED red / LED red blinking
resolution	< 3 mm
linearity error	2400 ... 12000 µm
light source	pulsed red laser diode
wave length	675 nm
laser class	2
beam type	point
beam diameter	2 mm

## electrical data

response time / release time	< 10 ms
voltage supply range +Vs	12 ... 28 VDC
current consumption max.	120 mA
output circuit	analog
output signal	4 ... 20 mA / 0 ... 10 VDC
output current	< 100 mA
alarm output	PNP
short circuit protection	yes
reverse polarity protection	yes, Vs to GND

## mechanical data

type	rectangular
housing material	die-cast zinc

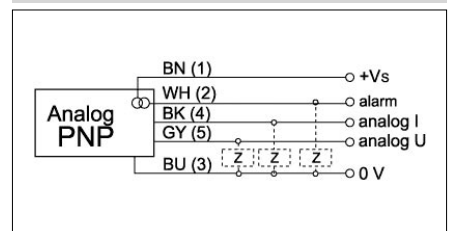
## ambient conditions

operating temperature	0 ... +50 °C
protection class	IP 67

## photo



## connection diagram



- linearity error:  $\pm 1,2\%$  of measuring distance