

# Innovative Sensor Solutions

## Product Overview – Edition 2015



Partnership.  
Precise.  
Pioneering.

# Visibly better: Baumer sensors.

The Baumer Group is leading at international level in the development and production of sensors, shaft encoders, measuring instruments as well as components for automatic image processing. As an owner-managed family business, we employ about 2300 workers worldwide in 38 subsidiaries and 19 countries. With marked customer orientation, consistently high quality and vast innovation capability, Baumer develops specific solutions for many industries and applications worldwide.

## Our standards – your benefits.

- Passion coupled with expertise – both have made us a sensor pioneer and technology leader
- Our range of services is hard to beat – we have the right product, developed by our own team, for every task
- Inspiring through innovation – a challenge Baumer employees take on every day
- Reliability, precision and quality – our customers' requirements are what drives us
- Partnership from the start – together with our customers we develop suitable solutions
- Always a step ahead – thanks to our production depth, our flexibility and our delivery reliability
- Available worldwide – Baumer is Baumer everywhere





## Baumer sensors – precise, compact and reliable

Baumer offers a broad portfolio of standard products based on a multitude of sensor technologies. Our customers benefit from the comprehensive consultation and reliable service we provide around the world. In close collaboration with them we develop specific solutions with distinct advantages in cost and performance. Our customers benefit from our international development teams, the considerable diversity of our production facilities and optimized business processes, which guarantee maximum flexibility and promptness in the implementation of customer requirements.



Learn more.  
Detailed technical information, data sheets, tutorials and the Baumer product finder can be found at:  
[www.baumer.com](http://www.baumer.com)



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# Innovative sensors from Baumer

Baumer as your partner in automation offers a broad product and technology portfolio to suit your needs and to provide you with the perfect sensor - from robust to miniature. Our high-performance position and distance sensors master most demanding applications, are easy to install and absolutely reliable in operation to save your time and money from the planning stage through to sustainment and service.

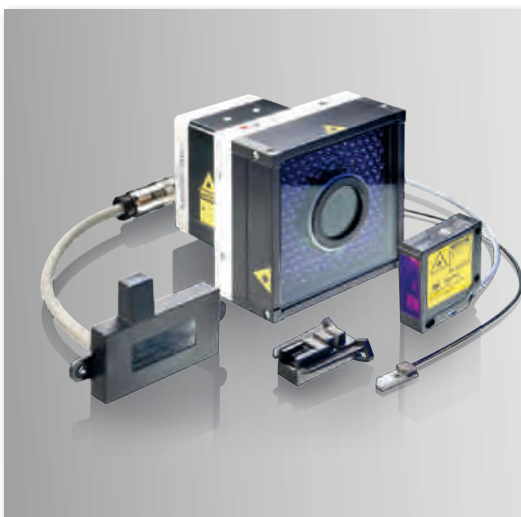
# The perfect sensor for every application

Hallmarks like precision, reliability, robustness and a compact design are key factors for a cost-effective and safe automation solution. Sensors are used to measure, count, sort and monitor. They identify size, position, color, shape and individual objects. They respond to force and strain. They detect and control movements. Baumer develops and manufactures sensors and provides services that meet the the most demanding industry-specific standards.

Our quick-to-install solutions and compact, cutting-edge sensors master versatile tasks in quality assurance and control where conventional position and distance sensors reach their limits.

As a market leader, Baumer keeps on setting new standards and investing in their technological edge. Partnership in project management and implementation provides our customers with competitive advantages in the market.

The Baumer brand stands for innovative sensor solutions.



## Customized solutions

Customer requirements are often so specific that the features of standard market components are too limited, or the overall system does not provide the best solution in terms of cost and performance. Baumer particularly excels at producing custom OEM products – whether they are modifications to standard products or special turnkey designs of complex multi-sensor systems.

# Inductive sensors

## Distance measuring – cylindrical *AlphaProx*

- High-resolution up to 4 nm
- Absolute distance measuring up to 16 mm
- High repeat accuracy
- Quick response time up to 0,5 ms
- Low temperature drift
- Linearized output signals
- No external signal processing required
- Teach-in functions



**IWRM 04  
*AlphaProx***



**IWRM 06 / IR 06  
*AlphaProx***



**IWRM 08 / IR 08  
*AlphaProx***



**IWRM 12 / IR 12  
*AlphaProx***

	<b>IWRM 04 <i>AlphaProx</i></b>	<b>IWRM 06 / IR 06 <i>AlphaProx</i></b>	<b>IWRM 08 / IR 08 <i>AlphaProx</i></b>	<b>IWRM 12 / IR 12 <i>AlphaProx</i></b>
characteristics	<ul style="list-style-type: none"> <li>■ Very high resolution</li> <li>■ Quick response time</li> <li>■ Fully integrated electronics</li> <li>■ With M5 connector</li> </ul>	<ul style="list-style-type: none"> <li>■ Large measuring distance</li> <li>■ Very high resolution</li> <li>■ Quick response time</li> <li>■ Fully integrated electronics</li> <li>■ Short design</li> </ul>	<ul style="list-style-type: none"> <li>■ Large measuring distance</li> <li>■ Very high resolution</li> <li>■ Quick response time</li> <li>■ Fully integrated electronics</li> <li>■ Linearized output signal</li> <li>■ Short design</li> </ul>	<ul style="list-style-type: none"> <li>■ Adjustable measuring range</li> <li>■ Linearized output signal</li> <li>■ External Teach-in</li> <li>■ Fully integrated electronics</li> </ul>
dimensions	ø 4 mm	ø 6,5 mm	M8	M12 x 1
measuring distance Sd	0 ... 1 mm	0 ... 3 mm	0 ... 3 mm	0 ... 6 mm
resolution	< 1 µm	< 1 µm	< 1 µm	< 1 µm
response time	< 0,5 ms	< 0,5 ms	< 0,5 ms	< 2 ms
output signal	0 ... 10 VDC	0 ... 10 mA 0 ... 10 VDC	0 ... 10 mA 0 ... 10 VDC	4 ... 20 mA 0 ... 10 VDC
connection types	connector M5	connector M8 cable	connector M8 cable	connector M12 cable
housing material	stainless steel	stainless steel	stainless steel	brass nickel plated
operating temperature	10 ... +60 °C	-10 ... +70 °C 10 ... +60 °C	-10 ... +70 °C 10 ... +60 °C	-25 ... +75 °C 10 ... +60 °C
protection class	IP 67	IP 67	IP 67	IP 67
specific features				<ul style="list-style-type: none"> <li>■ ATEX sensors</li> <li>■ Additional digital PNP output with programmable window function</li> <li>■ External Teach-in adapter as an accessory</li> <li>■ Factor 1 IR 12 sensors (same sensing distance towards any metal)</li> </ul>



## Distance measuring – cylindrical *AlphaProx*



**IPRM 12**  
*AlphaProx*

- Very high resolution
- Very small temperature drift
- Fully integrated electronics



**IWRM 18 / IR 18**  
*AlphaProx*

- Adjustable measuring range
- Linearized output signal
- External Teach-in
- Fully integrated electronics



**IWRR 18**  
*AlphaProx*

- Robust stainless steel housing 1.4404 (V4A)
- IP 68 / IP 69K
- Ecolab-tested
- FDA-compliant
- Extended operating temperature range -40 ... +70 °C



**IWRM 30**  
*AlphaProx*

- Adjustable measuring range
- Linearized output signal
- External Teach-in
- Fully integrated electronics

M12 x 1

M18 x 1

M18 x 1

M30 x 1,5

0 ... 3 mm

0 ... 8 mm

0 ... 7 mm

0 ... 16 mm

< 4 nm

< 5 µm

< 5 µm (stat.)  
< 10 µm (dynam.)

< 5 µm

< 2 ms

< 2 ms

< 2 ms

< 2 ms

0 ... 20 mA

4 ... 20 mA  
0 ... 10 VDC

4 ... 20 mA

4 ... 20 mA  
0 ... 10 VDC

connector M12

connector M12  
cable

connector M12

connector M12

steel 9 SMn (Pb) 28/36

brass nickel plated

stainless steel 1.4404  
(V4A)

brass nickel plated

0 ... +60 °C

-10 ... +70 °C

-40 ... +70 °C

-10 ... +70 °C

IP 67

IP 67

IP 68/69K & proTect+

IP 67

- Additional digital PNP output with programmable window function
- External Teach-in adapter as an accessory
- Factor 1 IR 18 sensors (same sensing distance towards any metal)

- Additional digital PNP output with programmable window function
- External Teach-in adapter as an accessory

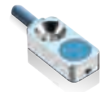
# Inductive sensors

## Distance measuring – rectangular *AlphaProx*

- High repeat accuracy
- Quick response time up to 0,5 ms
- Low temperature drift
- Linearized output signals
- No external signal processing required
- Teach-in functions



**IWFM 05**  
*AlphaProx*



**IWFM 08**  
*AlphaProx*



**IWFM 12**  
*AlphaProx*



**IWFM 18 / 20**  
*AlphaProx*

	<b>IWFM 05</b> <i>AlphaProx</i>	<b>IWFM 08</b> <i>AlphaProx</i>	<b>IWFM 12</b> <i>AlphaProx</i>	<b>IWFM 18 / 20</b> <i>AlphaProx</i>
characteristics	<ul style="list-style-type: none"> <li>■ Very high resolution</li> <li>■ Quick response time</li> <li>■ Fully integrated electronics</li> <li>■ With M5 connector</li> </ul>	<ul style="list-style-type: none"> <li>■ Very high resolution</li> <li>■ Compact model</li> <li>■ Fully integrated electronics</li> </ul>	<ul style="list-style-type: none"> <li>■ Integrated current and voltage output</li> <li>■ Fully integrated electronics</li> <li>■ Robust housing</li> </ul>	<ul style="list-style-type: none"> <li>■ Integrated current and voltage output</li> <li>■ Fully integrated electronics</li> <li>■ Small linearity deviation</li> <li>■ Quick response time</li> </ul>
dimensions	5 x 5 x 32 mm	8 x 16 x 4,7 mm	12 x 60 x 12 mm	18 x 30 x 10 mm 20 x 30 x 8 mm
measuring distance Sd	0 ... 1 mm	0 ... 2 mm	0 ... 4 mm	0 ... 4 mm
resolution	< 1 µm	< 1 µm	< 1 µm	< 1 µm
response time	< 0,5 ms	< 1 ms	< 2 ms	< 2 ms
output signal	0 ... 10 VDC	0 ... 10 VDC 0 ... 5 VDC	0 ... 10 VDC / 4 ... 20 mA	0 ... 10 VDC / 4 ... 20 mA
connection types	connector M5	cable	connector M8	connector M8 flylead connector
housing material	brass nickel plated	die-cast zinc nickel plated	brass nickel plated	brass nickel plated
operating temperature	10 ... +60 °C	10 ... +60 °C	-10 ... +70 °C	-10 ... +70 °C 0 ... +60 °C
protection class	IP 67	IP 67	IP 67	IP 67
specific features	<ul style="list-style-type: none"> <li>■ Smallest inductive sensor with analog output</li> </ul>	<ul style="list-style-type: none"> <li>■ Extremely low-profile version with front-side single-hole installation</li> </ul>		



IWFK 20  
*AlphaProx*

- Adjustable measuring range
- Teach-in button housing-integrated
- Large measuring range
- Plastic housing
- Fully integrated electronics

20 x 42 x 15 mm

0 ... 10 mm

< 5  $\mu\text{m}$

< 2 ms

0 ... 10 VDC

connector M8

polyester

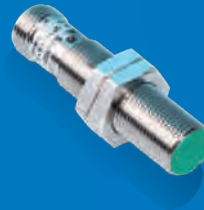
-10 ... +70 °C

IP 67

# Inductive sensors

## Positions sensors – cylindrical

- Smallest deviations in series production
- Extremely temperature-stable
- High switching frequency
- Enhanced distance
- Factor 1
- Miniature sensors
- Several housing lengths per dimension
- Expanded temperature ranges
- Output PNP/NPN



IFRM 03



IFRM 04

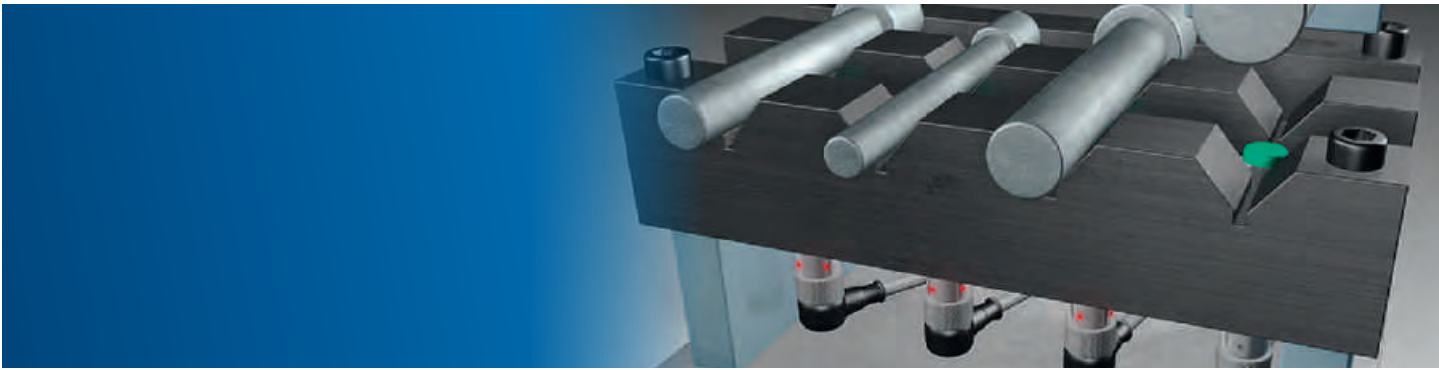


IFRM 05



IFRM 06

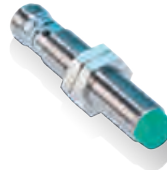
characteristics	<ul style="list-style-type: none"> <li>■ Robust stainless steel housing</li> <li>■ Cable connection</li> </ul>	<ul style="list-style-type: none"> <li>■ Robust stainless steel housing</li> <li>■ With M5 connector</li> <li>■ High installation torque</li> </ul>	<ul style="list-style-type: none"> <li>■ Robust stainless steel housing</li> <li>■ With M5 connector</li> <li>■ High installation torque</li> </ul>	<ul style="list-style-type: none"> <li>■ Robust stainless steel housing</li> <li>■ Short design</li> </ul>
dimensions	∅ 3 mm	∅ 4 mm M4 x 0,5	M5 x 0,5	∅ 6,5 mm
nominal sensing distance $S_n$	0,8 mm	0,8 ... 1,6 mm	1 ... 1,6 mm	1,5 ... 6 mm
switching frequency	< 3 kHz	< 5 kHz	< 5 kHz	< 5 kHz
output signal	PNP NPN	PNP NPN	PNP NPN	PNP NPN
connection types	connector M8 cable 2 m flylead connector M8 wires	connector M5 connector M8 cable 2 m flylead connector M8 wires	connector M5 connector M8 cable 2 m flylead connector M8 wires	connector M8 cable 2 m flylead connector M8
housing material	stainless steel	stainless steel	stainless steel	stainless steel
operating temperature	-25 ... +75 °C	-25 ... +75 °C	-25 ... +75 °C	-25 ... +75 °C 0 ... +60 °C
protection class	IP 67	IP 67	IP 67	IP 67
specific features	<ul style="list-style-type: none"> <li>■ Short sensor head with remote electronics</li> </ul>	<ul style="list-style-type: none"> <li>■ NAMUR sensors</li> <li>■ Short housing with wire output</li> </ul>	<ul style="list-style-type: none"> <li>■ NAMUR sensors</li> <li>■ Short housing with wire output</li> </ul>	<ul style="list-style-type: none"> <li>■ High temperature resistant sensors up to +100 °C</li> <li>■ NAMUR/ATEX sensors</li> <li>■ <i>GammaProx</i> for large sensing distances</li> </ul>



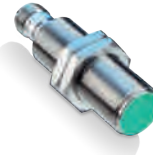
IFRM 08 / IR 08



IFRM 12 / IR 12



IFRM 12, IFRM 18



IFRM 18 / IR 18



IFRM 30

- Robust stainless steel housing
- Short design

- Metal housing brass nickel plated

- Metal housing brass nickel plated
- Cable and connector versions
- Extended working temperature range -40 ... +80 °C

- Metal housing brass nickel plated

- Metal housing brass nickel plated
- Voltage supply range 10 ... 50 VDC

M8 x 1

M12 x 1

M12 x 1  
M18 x 1

M18 x 1

M30 x 1,5

1,5 ... 6 mm

2 ... 10 mm

6 ... 12 mm

5 ... 20 mm

10 ... 15 mm

< 5 kHz

< 2 kHz

< 500 Hz  
< 1 kHz

< 500 Hz

< 500 Hz

PNP  
NPN

PNP  
NPN

PNP  
NPN

PNP  
NPN

PNP

connector M8  
connector M12  
cable 2 m  
flylead connector M8

connector M8  
connector M12  
cable 2 m

connector M8  
connector M12  
cable 2 m

connector M12  
cable 2 m

connector M12

stainless steel

brass nickel plated

brass nickel plated

brass nickel plated

brass nickel plated

-25 ... +75 °C  
0 ... +60 °C

-25 ... +75 °C  
0 ... +60 °C

-40 ... +80 °C

-25 ... +75 °C

-25 ... +75 °C

IP 67

IP 67

IP 67

IP 67

IP 67

- High temperature resistant sensors up to +180 °C
- Hardened steel banking screw
- NAMUR/ATEX sensors
- *GammaProx* for large sensing distances
- Factor 1 IR sensors (same sensing distance towards any metal)

- High temperature resistant sensors up to +180 °C
- High pressure sensors up to 500 bar
- Welding and magnetic noise up to 90 mT
- Hardened steel banking screw
- NAMUR/ATEX sensors
- Factor 1 IR sensors (same sensing distance towards any metal)

- High temperature resistant sensors up to +180 °C
- High pressure sensors up to 500 bar
- Immune to welding and magnet fields up to 90 mT
- *GammaProx* for large sensing distances
- NAMUR/ATEX sensors
- Factor 1 IR sensors (same sensing distance towards any metal)

### Position sensors with full metal housing *DuroProx*

- Housing of stainless steel 1.4404 (V4A)
- Compact and extremely robust versions
- Protection class IP 69K
- Expanded temperature ranges
- Output PNP/NPN



**IFRD 06**  
*DuroProx*



**IFRD 08**  
*DuroProx*



**IFRD 12**  
*DuroProx*



**IFRD 18**  
*DuroProx*

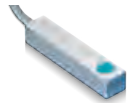
	<b>IFRD 06</b> <i>DuroProx</i>	<b>IFRD 08</b> <i>DuroProx</i>	<b>IFRD 12</b> <i>DuroProx</i>	<b>IFRD 18</b> <i>DuroProx</i>
characteristics	<ul style="list-style-type: none"> <li>■ Sealed stainless steel housing 1.4404 (V4A)</li> <li>■ Expanded temperature range up to +100 °C</li> </ul>	<ul style="list-style-type: none"> <li>■ Sealed stainless steel housing 1.4404 (V4A)</li> <li>■ Expanded temperature range up to +100 °C</li> </ul>	<ul style="list-style-type: none"> <li>■ Sealed stainless steel housing 1.4404 (V4A)</li> <li>■ Expanded temperature range up to +100 °C</li> </ul>	<ul style="list-style-type: none"> <li>■ Sealed stainless steel housing 1.4404 (V4A)</li> <li>■ Expanded temperature range up to +100 °C</li> </ul>
dimensions	ø 6,5 mm	M8 x 1	M12 x 1	M18 x 1
nominal sensing distance $S_n$	2 mm	2 mm	4 mm	6 mm
response time	< 150 Hz	< 150 Hz	< 100 Hz	< 100 Hz
output signal	PNP NPN	PNP NPN	PNP NPN	PNP NPN
connection types	connector M8	connector M8	connector M12	connector M12
housing material	stainless steel 1.4404 (V4A)	stainless steel 1.4404 (V4A)	stainless steel 1.4404 (V4A)	stainless steel 1.4404 (V4A)
operating temperature	-25 ... +75 °C -25 ... +100 °C	-25 ... +75 °C -25 ... +100 °C	-25 ... +75 °C -25 ... +100 °C	-25 ... +75 °C -25 ... +100 °C
protection class	IP 69K IP 68/67	IP 69K IP 68/67	IP 69K IP 68/67	IP 69K IP 68/67
specific features	<ul style="list-style-type: none"> <li>■ M8 connector (PVC) with stainless steel cap nut as an accessory</li> </ul>	<ul style="list-style-type: none"> <li>■ M8 connector (PVC) with stainless steel cap nut as an accessory</li> </ul>	<ul style="list-style-type: none"> <li>■ M12 connector (PVC) with stainless steel cap nut as an accessory</li> </ul>	<ul style="list-style-type: none"> <li>■ M12 connector (PVC) with stainless steel cap nut as an accessory</li> </ul>

Position sensors – rectangular

- High switching point accuracy
- Small series variance
- Extremely temperature-stable
- High switching frequency
- Wide product range
- Output PNP/NPN



IFFM 04



IFFM 06



IFFM 08



IFFM 12



IFFM 20

- Robust stainless steel housing
- Cable connection
- Smallest rectangular type

- Metal housing brass nickel plated
- With M5 connector
- Smallest rectangular type in connector version

- Metal housing brass nickel plated
- Extremely low-profile-version in die-cast zinc housing with front-side single-hole installation
- With M5 connector

- Metal housing brass nickel plated
- With M5 connector
- Flat version

- Metal housing brass nickel plated
- With M8 connector
- Voltage supply range 10 ... 50 VDC

4 x 22 x 4 mm

6 x 20 (30) x 6 mm

8 x 20 (30/40/60) x 8 mm  
8 x 16 x 4,7 mm

12 x 28 x 8 mm

20 x 41 x 10 mm

0,8 mm

1 mm

2 mm

4 mm

5 ... 8 mm

< 3 kHz

< 5 kHz

< 5 kHz

< 2 kHz

< 1 kHz

PNP  
NPN

PNP  
NPN

PNP  
NPN

PNP  
NPN

PNP  
NPN

cable 2 m

connector M5  
cable 2 m

connector M8  
cable 2 m  
flylead connector M8

connector M5

connector M5

stainless steel

brass nickel plated

brass nickel plated  
die-cast zinc nickel plated

brass nickel plated

brass nickel plated

-25 ... +75 °C

-25 ... +75 °C

-25 ... +75 °C

-25 ... +75 °C

-25 ... +75 °C

IP 67

IP 67

IP 67

IP 67

IP 67

- NAMUR sensors

- Inductive code readers, versions with 3 or 6 readers (ILFK 12)

# Inductive sensors

## Position sensors in hygienic and washdown design

- Robust stainless steel housing 1.4404 (V4A)
- *proTect+* sealing concept
- Protection class IP 68 / IP 69K
- EHEDG-certified / Ecolab tested / FDA compliant
- Expanded temperature ranges
- Enhanced sensing distance



IFBR 06



IFBR 11



IFBR 17



IFRR 08

characteristics	<ul style="list-style-type: none"> <li>■ Robust stainless steel housing 1.4404 (V4A)</li> <li>■ IP 68 / IP 69K</li> <li>■ EHEDG-certified</li> <li>■ Ecolab-tested</li> <li>■ FDA-compliant</li> <li>■ Extended operating temperature range -40 ... +100 °C</li> </ul>	<ul style="list-style-type: none"> <li>■ Robust stainless steel housing 1.4404 (V4A)</li> <li>■ IP 68 / IP 69K</li> <li>■ EHEDG-certified</li> <li>■ Ecolab-tested</li> <li>■ FDA-compliant</li> <li>■ Extended operating temperature range -40 ... +100 °C</li> </ul>	<ul style="list-style-type: none"> <li>■ Robust stainless steel housing 1.4404 (V4A)</li> <li>■ IP 68 / IP 69K</li> <li>■ EHEDG-certified</li> <li>■ Ecolab-tested</li> <li>■ FDA-compliant</li> <li>■ Extended operating temperature range -40 ... +100 °C</li> </ul>	<ul style="list-style-type: none"> <li>■ Robust stainless steel housing 1.4404 (V4A)</li> <li>■ IP 68 / IP 69K</li> <li>■ Ecolab-tested</li> <li>■ FDA-compliant</li> <li>■ Extended operating temperature range -40 ... +100 °C</li> </ul>
dimensions	ø 6,5 mm	ø 11 mm	ø 17 mm	M8 x 1
nominal sensing distance $S_n$ / measuring distance $S_d$	3 mm	4 ... 6 mm	8 ... 12 mm	3 mm
switching frequency / response time	< 3 kHz	< 1 kHz	< 0,5 kHz	< 3 kHz
output signal	PNP NPN	PNP NPN	PNP NPN	PNP NPN
connection types	connector M12	connector M12 cable 2 m	connector M12 cable 2 m	connector M12
housing material	stainless steel 1.4404 (V4A)	stainless steel 1.4404 (V4A)	stainless steel 1.4404 (V4A)	stainless steel 1.4404 (V4A)
operating temperature	-40 ... +80 °C	-40 ... +80 °C	-40 ... +80 °C	-40 ... +80 °C
protection class	IP 68/69K & proTect+	IP 68/69K & proTect+	IP 68/69K & proTect+	IP 68/69K & proTect+
versions	■ plug connection	■ cable and plug connection	■ cable and plug connection	■ plug connection



# Position sensors in hygienic and washdown design



**IFRR 12**



**IFRR 18**



**IWRR 18  
AlphaProx**

- Robust stainless steel housing 1.4404 (V4A)
- IP 68 / IP 69K
- Ecolab-tested
- FDA-compliant
- Extended operating temperature range -40 ... +100 °C

- Robust stainless steel housing 1.4404 (V4A)
- IP 68 / IP 69K
- Ecolab-tested
- FDA-compliant
- Extended operating temperature range -40 ... +100 °C

- Robust stainless steel housing 1.4404 (V4A)
- IP 68 / IP 69K
- Ecolab-tested
- FDA-compliant
- Extended operating temperature range -40 ... +70 °C

M12 x 1

M18 x 1

M18 x 1

4 ... 6 mm

8 ... 12 mm

0 ... 7 mm

< 1 kHz

< 0,5 kHz

< 2 ms

PNP  
NPN

PNP  
NPN

0 ... 10 VDC

connector M12  
cable 2 m

connector M12  
cable 2 m

connector M12

stainless steel 1.4404  
(V4A)

stainless steel 1.4404  
(V4A)

stainless steel 1.4404  
(V4A)

-40 ... +80 °C

-40 ... +80 °C

-40 ... +70 °C

IP 68/69K & proTect+

IP 68/69K & proTect+

IP 68/69K & proTect+

- cable and plug connection

- cable and plug connection

# Capacitive sensors

## Position sensors – cylindrical & rectangular

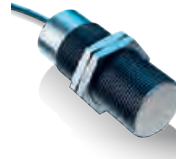
- Material-independent detection
- Detection possible even through container wall
- Reduced susceptibility to contamination using compensation electrode
- Various housings
- Expanded temperature ranges
- Active area made of PTFE
- No blind region



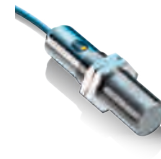
CFAK 12



CFAK 12/18/30



CFAK 18/30



CFAM 12/18/30

characteristics	<ul style="list-style-type: none"> <li>■ For applications in contaminated, water-based media</li> <li>■ Level control, in contact with medium</li> <li>■ Sealed housing</li> <li>■ Compact, smooth surface</li> <li>■ Suppression of dirt and cleaning agents</li> </ul>	<ul style="list-style-type: none"> <li>■ Unshielded</li> <li>■ Fix sensing distance</li> <li>■ Sealed housing</li> <li>■ Level control, in contact with medium</li> <li>■ Reliable detection via suppression of mist and contamination</li> </ul>	<ul style="list-style-type: none"> <li>■ Unshielded</li> <li>■ Sensing distance adjustable</li> <li>■ Sealed housing</li> <li>■ Level control, in contact with medium</li> <li>■ Reliable detection via suppression of mist and contamination</li> </ul>	<ul style="list-style-type: none"> <li>■ Shielded</li> <li>■ Housing material brass nickel plated</li> <li>■ Sensitivity adjustment using potentiometer</li> <li>■ Cable and connector versions</li> </ul>
dimensions	M12 x 1	M12 x 1 M18 x 1 M30 x 1,5	M18 x 1 M30 x 1,5	M12 x 1 M18 x 1 M30 x 1,5
nominal sensing distance $S_n$	0,1 mm	0,5 ... 8 mm	2 ... 30 mm	0,5 ... 15 mm
switching frequency	< 15 Hz	< 15 Hz	< 50 Hz	< 50 Hz
output signal	PNP NPN	PNP NPN	PNP NPN	PNP NPN
connection types	cable 2 m flylead connector M8	cable 2 m	cable 2 m	cable 2 m connector M12
housing material	POM EPDM50	PBT	PBT	brass nickel plated
operating temperature	0 ... +50 °C	-25 ... +75 °C 0 ... +70 °C	-25 ... +75 °C	-25 ... +75 °C
protection class	IP 67	IP 67/65	IP 67/65	IP 65
specific features			<ul style="list-style-type: none"> <li>■ Sensitivity adjustment using potentiometer</li> </ul>	

## Position sensors – cylindrical & rectangular



CFBM 20



CFAH 30



CFDM 20



CFDK 25



CFDK 30

- Shielded
- Unthreaded metal housing
- Sensitivity adjustment using potentiometer

- Unshielded
- Sensitivity adjustment via potentiometer
- Expanded temperature range -40 °C to +200 °C
- Anti-stick sensor head made of PTFE and V2A stainless steel
- Highly resistant to aggressive media

- Shielded
- Fix sensing distance
- Robust and compact metal housing
- M8 connector

- Shielded
- Fix sensing distance
- For filling levels and object identification
- Flexible installation options thanks to innovative mounting frame
- Extra flat design

- Shielded
- Sensitivity adjustment using potentiometer
- Cable and connector versions

ø 20 mm

M30 x 1,5

20 x 35 x 12 mm

25 x 53 x 6 mm

30 x 65 x 18,5 mm

2 ... 10 mm

4 ... 15 mm

5 mm

2 / 3 / 4 / 8 / 12 / 15 mm

4 ... 15 mm

< 50 Hz

< 50 Hz

< 50 Hz

< 35 Hz

< 50 Hz

PNP  
NPN

PNP

PNP  
NPN

push-pull

PNP  
NPN

cable 2 m

cable M12

connector M8

cable 2 m  
flylead connector M8

cable 2 m  
connector M12

brass nickel plated

V2A/PTFE

brass nickel plated

PA 12

PBT

-25 ... +75 °C

-40 ... +200 °C

-25 ... +75 °C

-25 ... +75 °C

-25 ... +75 °C

IP 65

IP 67

IP 65

IP 65

IP 65

# Photoelectric sensors

## Distance measuring

- Precise distance measuring up to 13 m
- Virtually independent of the object
- Maximum resolution up to 2  $\mu\text{m}$
- Suitable for high-speed processes
- Measuring range programmable by Teach-in
- Extremely compact housing
- Fully integrated evaluation electronics
- High temperature stability



OADM 12



OBDM 12



OADM 13



FADK 14

IO-Link

characteristics	<ul style="list-style-type: none"> <li>■ Smallest laser distance sensor</li> <li>■ Adjustable measuring range</li> <li>■ Highest resolution</li> </ul>	<ul style="list-style-type: none"> <li>■ Difference sensor for sensing steps, changes in distance, distance windows or tolerance ranges</li> </ul>	<ul style="list-style-type: none"> <li>■ Large measuring distance in a small housing</li> <li>■ Adjustable measuring range</li> <li>■ Spot or line laser beam</li> </ul>	<ul style="list-style-type: none"> <li>■ Red light point source LED</li> <li>■ Adjustable measuring range</li> <li>■ IO-Link</li> </ul>
dimensions	12,4 x 37 x 34,5 mm	12,4 x 37 x 34,5 mm	13,4 x 48,2 x 40 mm	14,8 x 43 x 31 mm
measuring distance	16 ... 120 mm	16 ... 120 mm	50 ... 550 mm	50 ... 400 mm
resolution	2 $\mu\text{m}$		10 $\mu\text{m}$	0,1 mm
response time	< 0,9 ms	< 1 ms	< 0,9 ms	< 5 ms
output signal	4 ... 20 mA 0 ... 10 V	PNP NPN	4 ... 20 mA 0 ... 10 V RS 485 / RS 232	4 ... 20 mA 0 ... 10 V
connection types	connector M8	connector M8	connector M8	cable 2 m connector M8 connector M12
housing material	die-cast zinc	die-cast zinc	aluminum	plastic (ASA, MABS)
operating temperature	0 ... +50 °C	0 ... +50 °C	0 ... +50 °C	0 ... +50 °C
protection class	IP 67	IP 67	IP 67	IP 67
specific features	<ul style="list-style-type: none"> <li>■ Suppression of incorrect measuring operations, the last measured value is retained at the output for up to 30 ms</li> </ul>	<ul style="list-style-type: none"> <li>■ Step height, differences, ranges to be evaluated set using Teach-in</li> <li>■ Teach-in using cabling or button</li> </ul>	<ul style="list-style-type: none"> <li>■ Suppression of incorrect measuring operations, the last measured value is retained at the output for up to 30 ms</li> </ul>	<ul style="list-style-type: none"> <li>■ An alarm output indicates an incorrect measurement or that the object is outside of the measuring range</li> <li>■ Maintenance status can be retrieved</li> </ul>



OADM 20



OADM 20



OADM 21



OADM 250



OADM 260

- Adjustable measuring range
- Spot or line laser beam

- Line beam
- Increased vibration immunity
- Increased ambient light immunity 100K lux
- Suitable for outdoor applications

- High resolution at large measuring distance
- Adjustable measuring range
- Spot or line laser beam

- High resolution
- Measurement up to 4 m independent of colors
- Alarm output
- Adjustable measuring range

- Large measuring range up to 13 m
- Alarm output
- Adjustable measuring range

20,6 x 65 x 50 mm

20,6 x 65 x 50 mm

20,4 x 135 x 45 mm

25,4 x 66 x 51 mm

25,4 x 66 x 51 mm

30 ... 1000 mm

50 ... 1000 mm

100 ... 1000 mm

0,5 ... 4 m

0,5 ... 13 m

4 µm

10 µm

10 µm

1,2 mm

5 mm

< 0,9 ms

< 2,5 ms

< 5 ms

< 10 ms

< 10 ms

4 ... 20 mA  
0 ... 10 V  
RS 485

4 ... 20 mA  
0 ... 10 V

4 ... 20 mA  
0 ... 10 V

4 ... 20 mA  
0 ... 10 V

4 ... 20 mA  
0 ... 10 V

connector M12  
cable 2 m

connector M12  
cable 2 m

connector M12

connector M12

connector M12

die-cast zinc

die-cast zinc

aluminum

aluminum

aluminum

0 ... +50 °C

0 ... +50 °C

0 ... +50 °C

-25 ... +50 °C

-25 ... +50 °C

IP 67

IP 67

IP 67

IP 67

IP 67

- Alarm output to signalize any incorrect measuring operation or out-of-range object
- Input for synchronizing measurements
- Laser diode can be switched on/off

- Missing measurement signals or incorrect measurements are suppressed

- Alarm output to signalize any incorrect measuring operation or out-of-range object
- Input for synchronizing measurements
- Laser diode can be switched on/off

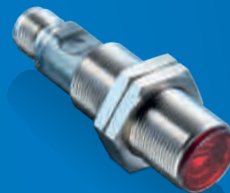
- Alarm output to signalize any incorrect measuring operation or out-of-range object

- Alarm output to signalize any incorrect measuring operation or out-of-range object

# Photoelectric sensors

## Position sensors – cylindrical & rectangular

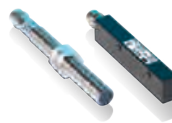
- *SmartReflect*® – the first light barrier without a reflector
- Precise background suppression
- Response time up to 50  $\mu$ s
- Sensing distance up to 20 m
- Laser beams with diameters up to 0,1 mm
- Extremely small housings
- Sensors in robust metal housing
- Sensors for transparent objects



**FHDK 04**  
IO-Link



**FxxK 07**  
MINOS



**FxxM 08**



**FxDK 10, OxDK 10**

### characteristics

- Diffuse sensor with background suppression
- Can be integrated in rails
- Fix sensing distance
- IO-Link

- World's smallest adjustable sensor family
- *SmartReflect*®

- Robust metal housing
- Fix sensing distance

- Different beam cones optimized for the application
- Compact and high-performance sensor family

### dimensions

4 x 44,8 x 6,2 mm

8 x 16,2 x 10,8 mm

M8 x 56 mm  
8 x 58 x 12 mm

10,4 x 27 x 14 mm

### ranges

diffuse sensors background suppression 30 mm / 50 mm 10 ... 60 mm 20 ... 130 mm

*SmartReflect*™ light barriers 10 ... 45 mm

diffuse sensors 20 ... 150 mm 40 mm / 80 mm 200 mm

retro-reflective sensors 0,6 m 4,5 m

through beam sensors 2,5 m 1 m / 3 m 10 m

response time < 0,5 ms < 0,5 ms < 1 ms < 1 ms

output push-pull push-pull PNP NPN PNP NPN

connection types cable connector M8 flylead connector cable 2 m connector M8 cable 2 m connector M8 flylead connector

housing material plastic (ASA) plastic (PMMA, MABS, PA) aluminum brass nickel plated plastic (ASA)

operating temperature -10 ... +50 °C -20 ... +50 °C -25 ... +65 °C -10 ... +50 °C

protection class IP 65 IP 65 IP 65 IP 67

### specific features

- Sensors with laser light source
- Sensors for transparent objects

## Position sensors – cylindrical & rectangular



FxDM 12, OxDM 12



FxDK 14, OxDK 14

IO-Link



FxDM 16, OxDM 16



FxAM 18



OR18

- Robust metal housing
- Diffuse laser sensors with negligible black/white shift

- The sensor family for a wide range of applications
- *SmartReflect*<sup>®</sup> light barrier

- Robust metal housing
- Red light and laser versions

- Robust metal housing
- Doubling lenses to double the range

- Robust metal housing
- qTeach
- *SmartReflect*<sup>®</sup> light barrier or background suppression
- Baumer PinPoint LED

12,4 x 35 x 35 mm

14,8 x 43 x 31 mm

15,4 x 50 x 50 mm

M18 x 50 mm

M18 x 65 mm

15 ... 300 mm

20 ... 500 mm

20 ... 600 mm

45 ... 200 mm

25 ... 800 mm

55 ... 300 mm

30 ... 250 mm

5 ... 600 mm

0 ... 400 mm

60 ... 430 mm

5,5 m

8 m

9 m

4 m

7,5 m

15 m

10 m

20 m

< 1 ms

< 1 ms

< 1 ms

< 1 ms

< 0,5 ms

push-pull

push-pull  
PNP  
NPN

PNP  
NPN

push-pull  
PNP  
NPN

push-pull  
PNP  
NPN

cable 2 m  
connector M8

cable 2 m  
connector M12

cable 2 m  
connector M8

cable 2 m  
connector M12  
flylead connector

connector M12

die-cast zinc

plastic (ASA, MABS)

die-cast zinc

plastic (ASA)

brass nickel plated  
plastic (ASA)

-25 ... +65 °C  
-20 ... +50 °C

-25 ... +65 °C  
-10 ... +50 °C

-25 ... +65 °C  
-10 ... +50 °C

-10 ... +50 °C

-25 ... +60 °C

IP 67

IP 67

IP 67

IP 67

IP 67

- Sensors with single lens optics

- Sensors for transparent objects
- Laser sensors in laser class 1

- Sensors with laser light source
- Laser sensors for wafer detection

- Sensor can be used with glass fiber optics

# Photoelectric sensors

## Position sensors – *NextGen*

- Maximum flexibility: two housing sizes, three different light sources and five sensor principles
- Easy to operate, reliable and wear-free thanks to *qTeach*®
- Time savings during installation thanks to *qTarget*®
- Long service life and high reliability (excellent MTTF values)



O300.GP, O300.GI,  
O300.GR

IO-Link



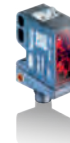
O300.RP, O300.RR

IO-Link



O300.SP

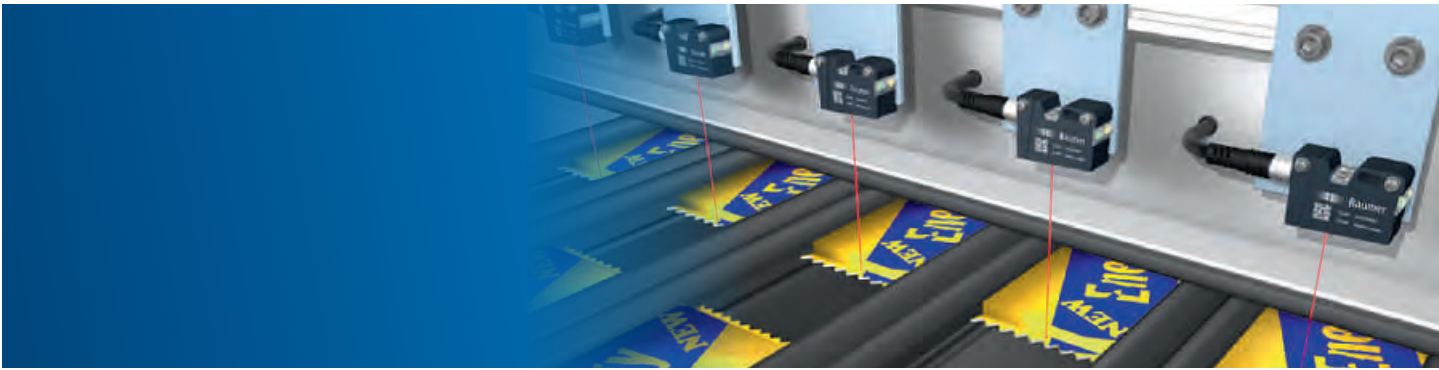
IO-Link



O300.ZR

	O300.GP, O300.GI, O300.GR	O300.RP, O300.RR	O300.SP	O300.ZR
characteristics	<ul style="list-style-type: none"> <li>■ One inch class</li> <li>■ Standard LED, Baumer PinPoint LED or Infrarot LED</li> <li>■ qTeach</li> <li>■ short response time</li> <li>■ small beam diameter</li> </ul>	<ul style="list-style-type: none"> <li>■ One inch class</li> <li>■ Standard LED or PinPoint LED</li> <li>■ qTeach</li> <li>■ Polarization filter for detection of reflective objects</li> <li>■ small beam diameter</li> </ul>	<ul style="list-style-type: none"> <li>■ One inch class</li> <li>■ PinPoint LED</li> <li>■ qTeach</li> <li>■ short response time</li> <li>■ <i>SmartReflect</i>®</li> </ul>	<ul style="list-style-type: none"> <li>■ One inch class</li> <li>■ Standard LED</li> <li>■ qTeach</li> </ul>
dimensions	12,9 x 32,3 x 23 mm	12,9 x 32,3 x 23 mm	12,9 x 32,3 x 23 mm	12,9 x 32,3 x 23 mm
ranges				
diffuse sensors with background suppression	200 mm / 300 mm			
diffuse sensors with intensity difference				400 mm
<i>SmartReflect</i> ®			300 mm	
Light barriers				
Retro-reflective sensors		4 m / 5 m		
response time	< 1 ms	< 1 ms	< 1 ms	< 1 ms
output	push-pull PNP NPN	push-pull PNP NPN	push-pull PNP NPN	push-pull
connection types	cable 2 m connector M8	cable 2 m connector M8	cable 2 m connector M8	cable 2 m connector M8
housing material	plastic (ASA, PMMA)	plastic (ASA, PMMA)	plastic (ASA, PMMA)	plastic (ASA, PMMA)
operating temperature	-25 ... +60 °C	-25 ... +60 °C	-25 ... +60 °C	-25 ... +60 °C
protection class	IP 67	IP 67	IP 67	IP 67
specific features				





O500.GP, O500.GI,  
O500.GR  
IO-Link

- Standard LED, Baumer PinPoint LED or Infrarot LED
- qTeach
- short response time
- small beam diameter



O500.RP, O500.RR  
IO-Link

- Standard LED or PinPoint LED
- qTeach
- Polarization filter for detection of reflective objects
- small beam diameter



O500.SP  
IO-Link

- PinPoint LED
- qTeach
- short response time
- SmartReflect®



O500.ZR

- Standard LED
- range 600 mm
- qTeach
- short response time

18 x 45 x 32 mm

18 x 45 x 32 mm

18 x 45 x 32 mm

18 x 45 x 32 mm

400 mm / 550 mm

600 mm

600 mm / 800 mm

7,5 m

< 1 ms

< 1 ms

< 1 ms

< 1 ms

push-pull  
PNP  
NPN

push-pull  
PNP  
NPN

push-pull  
PNP  
NPN

push-pull

cable 2 m  
connector M12

cable 2 m  
connector M12

cable 2 m  
connector M12

cable 2 m  
connector M12

plastic (ASA, PMMA)

plastic (ASA, PMMA)

plastic (ASA, PMMA)

plastic (ASA, PMMA)

-25 ... +60 °C

-25 ... +60 °C

-25 ... +60 °C

-25 ... +60 °C

IP 67

IP 67

IP 67

IP 67

# Photoelectric sensors

## Position sensors – hygienic and washdown design

- Stainless steel housing V4A
- *proTect+* sealing concept
- Ecolab-tested and -certified
- EHEDG-certified
- FDA-compliant materials
- *SmartReflect*® – the first light barrier without reflectors guarantees maximum reliability and reduced operating costs
- Washdown design for wet zone applications – Traditional mounting concept
- Hygienic design for applications in the food industry – No grooves in the design to eliminate potential dirt accumulation



**FxDR 14**  
 IO-Link



**FxDH 14**  
 IO-Link



**O500W**  
 IO-Link



**O500H**  
 IO-Link

	FxDR 14 IO-Link	FxDH 14 IO-Link	O500W IO-Link	O500H IO-Link
characteristics	<ul style="list-style-type: none"> <li>■ Washdown design</li> <li>■ IP 68 / IP 69K</li> <li>■ IO-Link</li> </ul>	<ul style="list-style-type: none"> <li>■ Hygienic design</li> <li>■ 100% groove-free design</li> <li>■ IP 68 / IP 69K</li> <li>■ IO-Link</li> </ul>	<ul style="list-style-type: none"> <li>■ robust washdown design</li> <li>■ Baumer PinPoint LED</li> <li>■ qTeach</li> <li>■ small beam diameter</li> </ul>	<ul style="list-style-type: none"> <li>■ Hygienic design</li> <li>■ Baumer PinPoint LED</li> <li>■ magnetic teach</li> <li>■ small beam diameter</li> </ul>
dimensions	19,6 x 62,4 x 33,8 mm	19,6 x 99,5 x 33,6 mm	20,2 x 57 x 37,7 mm	20,2 x 124 x 36,4 mm
<b>ranges</b>				
diffuse sensors with background suppression	400 mm	400 mm	400 mm	400 mm
<i>SmartReflect</i> ™ Light barriers	800 mm	800 mm	600 mm / 800 mm	600 mm / 800 mm
Retro-reflective sensors	3,5 m	3,5 m	7,5 m	7,5 m
response time	< 1,8 ms	< 1,8 ms	< 1 ms	< 1 ms
output	push-pull	push-pull	push-pull	push-pull
connection types	connector M12	cable 2 m flylead connector M12	connector M12	cable 2 m flylead connector M12
housing material	stainless steel 1.4404 (V4A)	stainless steel 1.4404 (V4A)	stainless steel 1.4404 (V4A)	stainless steel 1.4404 (V4A)
operating temperature	-30 ... +70 °C	-30 ... +70 °C	-25 ... +60 °C	-25 ... +60 °C
protection class	IP 68 / IP 69K & proTect+	IP 68 / IP 69K & proTect+	IP 68 / IP 69K & proTect+	IP 68 / IP 69K & proTect+
specific features	<ul style="list-style-type: none"> <li>■ Level of sensitivity adjustable by external teach input</li> </ul>	<ul style="list-style-type: none"> <li>■ Level of sensitivity adjustable by external teach input</li> </ul>	<ul style="list-style-type: none"> <li>■ Adjustable sensitivity using external teach-in input or qTeach™</li> </ul>	<ul style="list-style-type: none"> <li>■ Level of sensitivity adjustable by external teach input or magnetic teach-in</li> </ul>



**FKDR 14, FKDH 14**

- |                 |  |
|-----------------|--|
| characteristics | <ul style="list-style-type: none"> <li>■ Contrast sensor</li> <li>■ Washdown / hygienic design</li> <li>■ IP 68 / IP 69K</li> <li>■ White light</li> </ul> |
|-----------------|--|

dimensions	19,6 x 62,4 x 33,8 mm
------------	-----------------------

sensing distance Tw	12,5 mm
---------------------	---------

response time	50 µs
---------------	-------

output	push-pull
--------	-----------

connection types	cable 2 m connector M12 flylead connector M12
------------------	---

housing material	stainless steel 1.4404 (V4A)
------------------	------------------------------

operating temperature	-25 ... +60 °C
-----------------------	----------------

protection class	IP 68 / IP 69K & proTect+
------------------	---------------------------

specific features	<ul style="list-style-type: none"> <li>■ Level of sensitivity adjustable by external teach input</li> </ul>
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# Photoelectric sensors

## Distance measuring – hygienic and washdown design

- Stainless steel housing V4A
- *proTect+* sealing concept
- Ecolab-tested and -certified
- EHEDG-certified
- FDA-compliant materials
- Washdown design for wet zone applications
  - Traditional mounting concept
- Hygienic design for applications in the food industry
  - No grooves in the design to eliminate potential dirt accumulation



**FADR 14**  
**IO-Link**



**FADH 14**  
**IO-Link**



**OADR 20**

	FADR 14 <b>IO-Link</b>	FADH 14 <b>IO-Link</b>	OADR 20
characteristics	<ul style="list-style-type: none"> <li>■ Distance measuring sensor</li> <li>■ Washdown design</li> <li>■ IP 68 / IP 69K</li> <li>■ Adjustable measuring range</li> <li>■ Red light</li> </ul>	<ul style="list-style-type: none"> <li>■ Distance measuring sensor</li> <li>■ Hygienic design</li> <li>■ 100% groove-free design</li> <li>■ IP 68 / IP 69K</li> <li>■ Adjustable measuring range</li> <li>■ Red light</li> </ul>	<ul style="list-style-type: none"> <li>■ Distance measuring sensor</li> <li>■ Washdown design</li> <li>■ IP 69K</li> <li>■ Adjustable measuring range</li> <li>■ Laser beam</li> </ul>
dimensions	19,6 x 62,4 x 33,8 mm	19,6 x 99,5 x 33,6 mm	20,3 x 65 x 50 mm
sensing distance	50 ... 400 mm	50 ... 400 mm	30 ... 600 mm
resolution	0,1 mm	0,1 mm	5 µm
response time	< 5 ms	< 5 ms	< 0,9 ms
output	4 ... 20 mA 0 ... 10 V	4 ... 20 mA 0 ... 10 V	4 ... 20 mA 0 ... 10 V
connection types	connector M12	cable 2 m flylead connector M12	connector M12
housing material	stainless steel 1.4404 (V4A)	stainless steel 1.4404 (V4A)	stainless steel 1.4404 (V4A)
operating temperature	0 ... +50 °C	0 ... +50 °C	0 ... +50 °C
protection class	IP 68 / IP 69K & <i>proTect+</i>	IP 68 / IP 69K & <i>proTect+</i>	IP 68 / IP 69K & <i>proTect+</i>
specific features	<ul style="list-style-type: none"> <li>■ Alarm output to signalize any incorrect measuring operation or out-of-range object</li> <li>■ Service status indicator when soiled</li> </ul>	<ul style="list-style-type: none"> <li>■ Alarm output to signalize any incorrect measuring operation or out-of-range object</li> <li>■ Service status indicator when soiled</li> </ul>	<ul style="list-style-type: none"> <li>■ Alarm output to signalize any incorrect measuring operation or out-of-range object</li> <li>■ Input for synchronizing measurements</li> <li>■ Laser diode can be switched on/off</li> </ul>

## Distance measuring – hygienic and washdown design



Unique proTect+ impermeability concept guarantees impermeability even after significant temperature cycles; high reliability and a long service life



Ecolab-tested and FDA-compliant for reliable chemical resistance to cleaning agents and consistent use of materials that conform to food standards and regulations



Operating temperature range up to 60 °C facilitates versatile use and results in long service life even with high temperatures.



Stainless steel housing V4A with protection class IP 69K for incredible robustness and a long service life



Integral hygienic design of sensors and fitting accessories meets design guidelines for hygienic applications, enables them to be used in immediate proximity to food, and simplifies the certification process for machines



Laser inscription ensures that the sensor can always be clearly identified

# Photoelectric sensors

## Fork sensors

- Quick response times up to 0,01 ms
- High repeat accuracy
- Robust metal housing
- Narrow parallel light beam
- Smallest detectable object 0,05 mm
- Different gap widths 3 ... 158 mm
- Output PNP/NPN



FGUM



FGLM



OGUM

characteristics	<ul style="list-style-type: none"> <li>■ Potentiometer or Teach-in version</li> <li>■ Narrow, virtually parallel light beam</li> <li>■ Sensors can be mounted side-by-side</li> </ul>	<ul style="list-style-type: none"> <li>■ Special L-type</li> <li>■ Narrow, virtually parallel light beam</li> <li>■ Sensors can be mounted side-by-side</li> </ul>	<ul style="list-style-type: none"> <li>■ Very precise</li> <li>■ Extremely narrow laser light beam</li> <li>■ Sensors can be mounted side-by-side</li> </ul>
fork widths	20 mm 30 mm 50 mm 80 mm 120 mm	60 mm 100 mm 158 mm	30 mm 50 mm 80 mm 120 mm
object size	> 0,3 mm	> 0,5 mm	> 0,5 mm
repeat accuracy	< 0,02 mm	< 0,06 mm	< 0,01 mm
response / release time	< 0,125 ms	< 0,125 ms	< 0,166 ms
connection types	connector M8	connector M8	connector M12
housing material	die-cast zinc	die-cast zinc	anodized aluminum
operating temperature	-10 ... +60 °C	-10 ... +60 °C	+5 ... +45 °C
protection class	IP 67	IP 67	IP 67
specific features			



# Photoelectric sensors

## Fiber optics and fiber optic sensors

- Plastic and glass fiber optics
- Outstanding variety of fiber optic heads
- Very compact housings
- Level of sensitivity adjustable by Teach-in or potentiometer
- Quick response times up to 0,05 ms
- Adjustable on / off delay
- Master-Slave systems (minimized wiring effort)
- Output PNP/NPN, analog



Plastic fiber optic



FVDK 10



FWDK 84



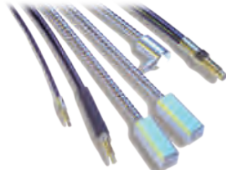
FVDK 66

version	Plastic fiber optic	Plastic fiber optic	Plastic fiber optic	
characteristics	<ul style="list-style-type: none"> <li>■ Extremely varied beam geometries: spot, coaxial, focused, line</li> <li>■ Fiber optics resistant to chemicals</li> <li>■ High temperature fiber</li> <li>■ Lateral beam emission</li> </ul>	<ul style="list-style-type: none"> <li>■ Smallest fiber optic sensor</li> <li>■ Sensitivity adjustable with potentiometer</li> </ul>	<ul style="list-style-type: none"> <li>■ Sensitivity adjustable with potentiometer</li> <li>■ Analog output</li> </ul>	<ul style="list-style-type: none"> <li>■ Sensitivity adjustable with Teach-in</li> <li>■ Minimized installation effort (master slave)</li> <li>■ Logical output linking available (Duplex version)</li> <li>■ Timer functions</li> </ul>
dimensions	10,4 x 27 x 19,5 mm	10 x 29,7 x 60 mm	10 x 33,8 x 70,2 mm	
ranges (optical fiber dependent)				
with through beam (max.)	600 mm	90 mm	1500 mm	
with reflective (max.)	70 mm	45 mm	130 mm	
response time	< 1 ms	1 ... 5 ms	0,25 ... 1 ms	
output	NPN PNP	Analog	NPN PNP	
connection types	cable 2 m flylead connector M8	cable 2 m	cable 2 m connector M8	
housing material	plastic (ASA)	polycarbonate / ABS	polycarbonate / ABS	
operating temperature	-25 ... +55 °C	-20 ... +60 °C	-20 ... +55 °C	
protection class	IP 40	IP 40	IP 40	
additional functions		<ul style="list-style-type: none"> <li>■ Off delay</li> </ul>	<ul style="list-style-type: none"> <li>■ Alarm output</li> <li>■ External Teach-in</li> </ul>	
specific features		<ul style="list-style-type: none"> <li>■ Version with analog output</li> </ul>	<ul style="list-style-type: none"> <li>■ Master slave</li> </ul>	





FVDK 67



Glass fiber optic



FZAM 18



FZAM 30



FVDM 15

Plastic fiber optic

- Multi-functional device
- Sensitivity adjustable with Teach-in
- Minimized installation effort (master slave)
- Timer functions

10 x 33,8 x 70,2 mm

4000 mm

550 mm

0,05 ... 5 ms

NPN  
PNP

cable 2 m  
connector M8

polycarbonate / ABS

-20 ... +55 °C

IP 40

- Response / release time adjustable
- Adjustable minimum pulse length

- Version with 2 switching points
- Master slave

Glass fiber optic

- Sensitivity adjustable with Teach-in or potentiometer
- Robust metal housing

M18 x 50 mm

800 mm

150 mm

< 0,5 ms / < 1 ms

NPN  
PNP

cable 2 m  
connector M12

brass nickel plated / PC

-25 ... +55 °C

IP 67

Glass fiber optic

- Sensitivity adjustable with Teach-in or potentiometer
- Robust metal housing
- For large ranges

M30 x 50 mm

1400 mm

230 mm

< 0,25 ms / < 2,5 ms

NPN  
PNP

cable 2 m

brass nickel plated

0 ... +65 °C

IP 65

- Fast version
- Versions with high sensitivity

Glass fiber optic

- Sensitivity adjustable with potentiometer
- Robust metal housing
- Quick response and release times

15 x 60 x 45 mm

500 mm

240 mm

< 0,1 ms / < 1 ms

NPN  
PNP

cable 2 m  
connector M12

die-cast aluminum

-25 ... +55 °C

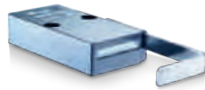
IP 65

- Fast version

# Photoelectric sensors

## Edge sensors *ParCon*, *PosCon* and *PosCon 3D*

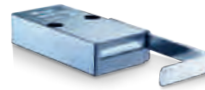
- High resolution up to 0,03 mm
- Measuring frequency up to 1 kHz
- Measuring range of 24 mm to 875 mm
- Robust metal housing
- Simple operation at the sensor
- Integrated evaluation electronics
- Measuring or digital version



ZADM 034P  
*ParCon*



ZADM 034I  
*ParCon*



ZADM 034I  
*ParCon*

characteristics	<ul style="list-style-type: none"> <li>■ Detecting small parts</li> <li>■ Quick response time</li> <li>■ Parallel light beams</li> </ul>	<ul style="list-style-type: none"> <li>■ Measurement of edge positions and object widths</li> <li>■ Quick response time</li> <li>■ Parallel light beams</li> </ul>	<ul style="list-style-type: none"> <li>■ Measurement of edge positions and object widths</li> <li>■ Quick response time</li> <li>■ Parallel light beams</li> <li>■ For large distances</li> </ul>
dimensions	34 x 67 x 16,5 mm	34 x 67 x 16,5 mm	34 x 67 x 16,5 mm
measuring distance to object	0 ... 40 mm	0 ... 40 mm	0 ... 200 mm
measuring field size	24 mm	24 mm	22 mm
resolution	< 0,1 mm	< 0,05 mm	< 0,2 mm
smallest object recognizable	0,5 mm	1 mm	3 mm
response time	< 0,25 ms	< 0,6 ms	< 0,9 ms
output	PNP	4 ... 20 mA	4 ... 20 mA
connection types	connector M8	connector M8	connector M8
housing material	aluminum	aluminum	aluminum
operating temperature	0 ... +55 °C	0 ... +55 °C	0 ... +55 °C
protection class	IP 67	IP 67	IP 67
functions	<ul style="list-style-type: none"> <li>■ minimum detectable object size can be set using Teach-in</li> </ul>		
specific features	<ul style="list-style-type: none"> <li>■ lateral or front optics</li> </ul>	<ul style="list-style-type: none"> <li>■ lateral or front optics</li> </ul>	<ul style="list-style-type: none"> <li>■ lateral or front optics</li> </ul>



**ZADM 023**  
*PosCon*



**OXE7.E25T**  
*PosCon 3D*

characteristics	<ul style="list-style-type: none"> <li>■ Measurement of edge positions, object widths and object center positions</li> <li>■ Integrated filter for detecting transparent objects</li> <li>■ Interface: RS 485</li> </ul>	<ul style="list-style-type: none"> <li>■ Measurement of edge position, object width, gap width and object center positions</li> <li>■ Flexible installation</li> <li>■ Operation without reflector</li> <li>■ Visible Class 1 laser line</li> </ul>
dimensions	22,9 x 50 x 50 mm	26 x 74 x 55 mm
measuring distance to object	50 ... 1400 mm	150 ... 250 mm
measuring field size	30 ... 875 mm	75 ... 125 mm
resolution	< 0,03 mm	30 ... 50 µm
smallest object recognizable	0,3 mm	1,5 mm
response time	< 2 ms	< 6,5 ms measurement with reduced field of view
output	4 ... 20 mA	4 ... 20 mA 0 ... 10 VDC
connection types	connector M12	connector M12
housing material	die-cast zinc	aluminum
operating temperature	0 ... +55 °C	-20 ... +50 °C
protection class	IP 67	IP 67
functions	<ul style="list-style-type: none"> <li>■ alarm output</li> <li>■ up to 2 adjustable thresholds</li> </ul>	<ul style="list-style-type: none"> <li>■ alarm output</li> <li>■ up to 2 adjustable thresholds</li> </ul>
specific features		<ul style="list-style-type: none"> <li>■ Distance-independent measurement of edge positions</li> <li>■ Touch display</li> <li>■ Measurement result display in mm</li> </ul>

### Edge sensors SCATEC

- Counting rate up to 3 million copies/h
- Large operating range 0 ... 120 mm
- Detects single sheets up to 0,1 mm
- False pulse suppression
- Trailing edge suppression and direct gap detection
- Synchronized input
- Diagnostic software available
- Output push-pull



SCATEC-J



SCATEC-2



SCATEC-10



SCATEC-15

characteristics	<ul style="list-style-type: none"> <li>■ Compact type</li> <li>■ Plug &amp; Play</li> </ul>	<ul style="list-style-type: none"> <li>■ <i>ScaDiag</i> diagnostic and programming software available</li> <li>■ Compact type</li> <li>■ Adjustable output pulse length</li> </ul>	<ul style="list-style-type: none"> <li>■ Integrated copy counters</li> <li>■ <i>ScaDiag</i> diagnostic and programming software available</li> <li>■ Trailing edge suppression</li> <li>■ Adjustable output pulse length</li> </ul>	<ul style="list-style-type: none"> <li>■ Integrated copy counters</li> <li>■ CAN interface</li> <li>■ <i>ScaDiag</i> diagnostic and programming software available</li> <li>■ Trailing edge suppression</li> <li>■ Adjustable output pulse length</li> </ul>
dimensions	33 x 110 x 50 mm	33 x 110 x 50 mm	30 x 170 x 70 mm	30 x 170 x 70 mm
measuring distance	0 ... 55 mm	0 ... 120 mm	0 ... 90 mm	0 ... 120 mm
sensitivity	single sheet/edge thickness 1,5 mm	single sheet/edge thickness 0,2 mm	single sheet/edge thickness 0,1 mm	single sheet/edge thickness 0,15 mm
counting rate	280'000 copies/h	600'000 copies/h	3'000'000 copies/h	3'000'000 copies/h
false pulse suppression		on/off switchable	4 program options	4 program options
connection types	connector M12	connector M12	DIN 45322 (main connector) DIN 45326 (interface)	DIN 45322 (main connector) DIN 45326 (interface)
housing material	PA 6	PA 6	die-cast zinc	die-cast zinc
operating temperature	0 ... +50 °C	0 ... +50 °C	0 ... +50 °C	0 ... +50 °C
protection class	IP 54	IP 54	IP 54	IP 54
specific features		<ul style="list-style-type: none"> <li>■ Opto isolated output</li> <li>■ Version for copy counting on conveying chains</li> </ul>	<ul style="list-style-type: none"> <li>■ Opto isolated output</li> </ul>	<ul style="list-style-type: none"> <li>■ Opto isolated output</li> </ul>

## Level monitoring and leak detecting sensors

- Liquid level sensors up to 40 bar nominal pressure
- Liquid level sensors for installation on risers
- Chemically resistant
- Sensors for leak monitoring
- Fiber optic versions (FOC / FSL)
- Output PNP/NPN



FFAK



FFAM



FODK



FFDK

functions	Liquid level sensor	Liquid level sensor	Leakage sensor	Liquid level sensor
characteristics	<ul style="list-style-type: none"> <li>■ Sensitivity adjustable</li> <li>■ Chemically resistant</li> <li>■ Up to 10 bar nominal pressure</li> </ul>	<ul style="list-style-type: none"> <li>■ Sensitivity adjustable</li> <li>■ Stainless steel housing</li> <li>■ Chemically resistant</li> <li>■ Up to 40 bar nominal pressure</li> </ul>	<ul style="list-style-type: none"> <li>■ Holder for quick installation and simple cleaning</li> <li>■ Detects liquid amounts of typ. 1 ml</li> </ul>	<ul style="list-style-type: none"> <li>■ Level monitoring sensor for installation in riser/hose</li> <li>■ For pipe diameters of 3 ... 7 mm / 8 ... 13 mm</li> </ul>
dimensions	thread: G3/8" or M16 x 1 mm	thread: G3/8" or M16 x 1 mm	23 x 40 x 10,5 mm	26 x 28 x 16 mm
connection types	cable 2 m	cable 2 m	cable 2 m	cable 2 m
material (sensing device)	polysulphone	glass (borosilicate)	PFA	
housing material	polysulphone	stainless steel DIN 1.4305/ AISI 303	PFA / PVC	PC
operating temperature	0 ... +65 °C	0 ... +65 °C	-25 ... +50 °C	-10 ... +50 °C
protection class	IP 67	IP 67	IP 67	IP 50
specific features				

# Photoelectric sensors

## Contrast sensor

- Basic print mark recognition
- Compact size



FKDK 14

characteristics	<ul style="list-style-type: none"><li>■ Contrast sensor</li><li>■ White light</li><li>■ Small differences in contrast detectable</li><li>■ Adjustable during process</li></ul>
dimension	14,8 x 43 x 31 mm
sensing distance Tw	12,5 mm
response time	50 µs
size of measuring spot	1 mm x 2,2 mm
output	push-pull
connection types	cable 2 m connector M12 connector M8
housing material	plastic (ASA, MABS)
operating temperature	-25 ... +65 °C
protection class	IP 67
specific features	

## Color sensor *LOGIPAL*

- 4 color channels
- Adjustable color tolerance
- Quick response time of 0,34 ms
- Different spot sizes
- Output PNP/NPN



FKDM 22  
*LOGIPAL*

characteristics	<ul style="list-style-type: none"> <li>■ Can differentiate 4 finely nuanced colors</li> <li>■ Robust metal housing</li> <li>■ Adjustable color tolerance</li> </ul>
dimension	22,9 x 50 x 50 mm
sensing distance Tw	40 mm
response / release time	< 0,34 ms
size of measuring spot	3 mm x 5 mm
output	PNP NPN
connection types	connector M12 connector M8
housing material	die-cast zinc
operating temperature	-10 ... +55 °C
protection class	IP 67
specific features	

# Photoelectric sensors

## Vision sensors *VeriSens*<sup>®</sup>

- **User-friendly**
  - Intuitive user interface – simplified setup within 4 steps
  - Fully integrated flash controller *VeriFlash*<sup>®</sup> for external illumination and *Color FEX*<sup>®</sup> 3D color assistant (XC series)
- **Powerful**
  - Reliable 360° recognition for part location powered by *FEXLoc*<sup>®</sup> technology
  - C-mount design with resolutions up to 2 MP
- **Reliable**
  - Protection class IP 67 / IP 69K and rugged metal housing
  - Secure operation with user levels and password protection



VeriSens<sup>®</sup> ID-100



VeriSens<sup>®</sup> ID-110



VeriSens<sup>®</sup> CS-100



VeriSens<sup>®</sup> XF-100

characteristics	<ul style="list-style-type: none"> <li>■ Multi-code reader for 1D and 2D codes</li> <li>■ Determines quality according to ISO / AIM</li> </ul>	<ul style="list-style-type: none"> <li>■ Multi reader for text and 1D/2D codes (incl. GS1)</li> <li>■ Reads different fonts without font training</li> <li>■ Verifies text (OCR/OCV), quality control of codes</li> </ul>	<ul style="list-style-type: none"> <li>■ Presence and completeness check</li> <li>■ Part recognition and part sorting</li> <li>■ Checking part geometries</li> </ul>	<ul style="list-style-type: none"> <li>■ Presence and completeness check</li> <li>■ Acquisition of part location and correct position</li> <li>■ Process interface</li> </ul>
dimensions	53 x 99,5 x 38 mm	53 x 99,5 x 38 mm	53 x 99,5 x 38 mm	53 x 99,5 x 38 mm
protection class	IP 67	IP 67	IP 67	IP 67
resolution	752 × 480 pixel	752 × 480 pixel	752 × 480 pixel	752 × 480 pixel
objectif	10 mm / 16 mm	10 mm	10 mm / 16 mm	10 mm / 16 mm
illumination	white	white / infrared	white / infrared	white / infrared
field of view (min.)	17,7 x 11,3 mm	26,4 x 16,9 mm	17,7 x 11,3 mm	17,7 x 11,3 mm
speed	max. 50 inspections / sec.	max. 50 inspections / sec.	max. 50 inspections / sec.	max. 100 inspections / sec.
communication: digital inputs digital outputs setup process interface	5 3 - 5 Ethernet TCP/UDP (Ethernet), RS485, PROFINET <sup>®</sup> (via gateway)	5 3 - 5 Ethernet TCP/UDP (Ethernet), RS485, PROFINET <sup>®</sup> (via gateway)	5 5 Ethernet	5 3 - 5 Ethernet TCP/UDP (Ethernet), RS485, PROFINET <sup>®</sup> (via gateway)
functions	<ul style="list-style-type: none"> <li>■ Barcode: e.g. Code 128, EAN 13, UPC, 2/5, GS1 128</li> <li>■ Matrix code: DataMatrix (GS1), QR, PDF 417</li> <li>■ Password protection</li> </ul>	<ul style="list-style-type: none"> <li>■ Any font style, even Dot Matrix</li> <li>■ Barcode: e.g. Code 128, EAN 13, UPC, 2/5, GS1 128</li> <li>■ Matrix code: DataMatrix (GS 1), QR, PDF 417</li> <li>■ Password protection</li> </ul>	<ul style="list-style-type: none"> <li>■ 360° part location</li> <li>■ Geometry: distance, circle</li> <li>■ Feature comparison: count contour points, contour comparison, brightness</li> </ul>	<ul style="list-style-type: none"> <li>■ 360° part location</li> <li>■ Geometry: 5 functions</li> <li>■ Feature comparison: 7 functions</li> <li>■ Coordinate conversion</li> <li>■ Password protection</li> </ul>





VeriSens<sup>®</sup> XF-200



VeriSens<sup>®</sup> XC-100,  
also color\*



VeriSens<sup>®</sup> XC-200



VeriSens<sup>®</sup> XC-105



VeriSens<sup>®</sup> XC-205

- Presence and completeness check
- Acquisition of part location and correct position
- Identification
- Process interface

- Presence and completeness check
- Acquisition of part location and correct position
- Process interface

- Presence and completeness check
- Acquisition of part location and correct position
- Identification
- Process interface

- Presence and completeness check
- Acquisition of part location and correct position
- Process interface

- Presence and completeness check
- Acquisition of part location and correct position
- Identification
- Process interface

53 x 99,5 x 38 mm

53 x 99,5 x 49,8 mm

53 x 99,5 x 49,8 mm

53 x 99,5 x 38 mm

53 x 99,5 x 38 mm

IP 67

IP 67

IP 67

IP 69K

IP 69K

752 × 480 pixel

640 × 480 pixel (1/4")\*  
1280 × 960 pixel (1/3")\*  
1600 × 1200 pixel (1/1.8")

640 × 480 pixel (1/4")\*  
1280 × 960 pixel (1/3")\*  
1600 × 1200 pixel (1/1.8")

752 × 480 pixel

752 × 480 pixel

10 mm / 16 mm

changeable lens (C-mount)

changeable lens (C-mount)

10 mm / 16 mm

10 mm / 16 mm

white / infrared

flash controller

flash controller

white / infrared

white / infrared

17,7 x 11,3 mm

depending on the lens

depending on the lens

17,7 x 11,3 mm

17,7 x 11,3 mm

max. 100 inspections / sec.

max. 100 inspections / sec.

max. 100 inspections / sec.

max. 100 inspections / sec.

max. 100 inspections / sec.

5  
3 - 5  
Ethernet  
TCP/UDP (Ethernet), RS485,  
PROFINET<sup>®</sup> (via gateway)

5  
3 - 5  
Ethernet  
TCP/UDP (Ethernet), RS485,  
PROFINET<sup>®</sup> (via gateway)

5  
3 - 5  
Ethernet  
TCP/UDP (Ethernet), RS485,  
PROFINET<sup>®</sup> (via gateway)

5  
3 - 5  
Ethernet  
TCP/UDP (Ethernet)

5  
3 - 5  
Ethernet  
TCP/UDP (Ethernet)

- 360° part location
- Geometry: 5 functions
- Feature comparison: 7 functions
- Identification: Barcode, Matrix code, Text
- Coordinate conversion
- Password protection

- Integrated flash controller for external illuminator
- Free choice of lenses due to C-mount and modular tube system
- CCD sensor with resolution of 0.3 MP\* / 1.2 MP\* / 2 MP
- Functions like XF-100 (incl. color)

- Integrated flash controller for external illuminator
- Free choice of lenses due to C-mount and modular tube system
- CCD sensor with resolution of 0.3 MP / 1.2 MP / 2 MP
- Functions like XF-200

- 360° part location
- Geometry: 5 functions
- Feature comparison: 7 functions
- Coordinate conversion
- Password protection

- 360° part location
- Geometry: 5 functions
- Feature comparison: 7 functions
- Identification: Barcode, Matrix code, Text
- Coordinate conversion
- Password protection

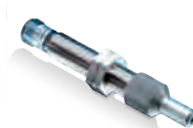
# Ultrasonic sensors

## Distance measuring – cylindrical

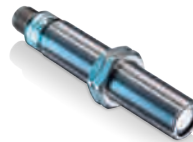
- Measuring range up to 6000 mm
- Individual measuring range adjustable
- Reliable detection of high-reflective and transparent objects
- Tolerant of dust and dirt
- For level measurement in liquids, granulates and pasty media
- Narrow and wide sonic beam angles



UNAM 12



UNAM 12  
with beam columnator



UNAM 18, UNAR 18



UR18

characteristics	<ul style="list-style-type: none"> <li>■ Narrow and wide sonic beam angles</li> <li>■ External Teach-in</li> <li>■ M12 connector</li> </ul>	<ul style="list-style-type: none"> <li>■ External Teach-in</li> <li>■ M12 connector</li> <li>■ Beam columnator for very narrow sonic cone profile</li> </ul>	<ul style="list-style-type: none"> <li>■ Stainless steel housing V4A</li> <li>■ Chemically resistant sensor front</li> <li>■ FDA-compliant materials</li> <li>■ Internal and external Teach-in</li> <li>■ M12 connector</li> </ul>	<ul style="list-style-type: none"> <li>■ <i>qTeach</i> – easy to operate, safe and wear-free</li> <li>■ Short design</li> </ul>
dimensions	M12 x 1	M12 x 1	M18 x 1	M18 x 1
measuring distance	20 ... 400 mm	2 ... 82 mm	60 ... 1000 mm	100 ... 1000 mm
resolution	< 0,3 mm	< 0,3 mm	< 0,3 mm	< 0,3 mm
response time	< 30 ms	< 30 ms	< 60 ms	< 80 ms
output	0 ... 10 mA / 10 ... 0 mA 0 ... 10 V / 10 ... 0 V	0 ... 10 mA / 10 ... 0 mA 0 ... 10 V / 10 ... 0 V	4 ... 20 mA / 20 ... 4 mA 0 ... 10 V / 10 ... 0 V	4 ... 20 mA / 20 ... 4 mA 0 ... 10 V / 10 ... 0 V
connection types	connector M12	connector M12	connector M12	connector M12
housing material	brass nickel plated	brass nickel plated	brass nickel plated stainless steel 1.4435 (V4A)	brass nickel plated
operating temperature	-10 ... +60 °C	-10 ... +60 °C	-10 ... +60 °C	-25 ... +70 °C (+60 °C in current mode)
protection class	IP 67	IP 67	IP 67	IP 67
specific features	<ul style="list-style-type: none"> <li>■ with or w/o beam columnator</li> </ul>		<ul style="list-style-type: none"> <li>■ optional sonic deflection bracket</li> </ul>	



UNAM 30



UNAM 50



UNAM 70

- Internal and external Teach-in
- Cable and connector versions
- Potentiometer versions

- Large sensing range
- Internal and external Teach-in
- Cable and connector versions
- Potentiometer versions

- Large sensing range
- Internal and external Teach-in
- M12 connector

M30 x 1,5

M30 x 1,5

M30 x 1,5

100 ... 1000 mm

400 ... 2500 mm

600 ... 6000 mm

< 0,3 mm

< 0,3 mm

< 2 mm

< 80 ms

< 160 ms

< 640 ms

4 ... 20 mA / 20 ... 4 mA  
0 ... 10 V / 10 ... 0 V

4 ... 20 mA / 20 ... 4 mA  
0 ... 10 V / 10 ... 0 V

4 ... 20 mA / 20 ... 4 mA  
0 ... 10 V / 10 ... 0 V

connector M12  
cable 2 m

connector M12  
cable 2 m

connector M12

brass nickel plated

brass nickel plated

brass nickel plated

-10 ... +60 °C

-10 ... +60 °C

-25 ... +60 °C

IP 67

IP 67

IP 67

# Ultrasonic sensors

## Distance measuring – rectangular

- Measuring range up to 2000 mm
- Individual measuring range adjustable
- Reliable detection of high-reflective and transparent objects
- Tolerant of dust and dirt
- For level measurement in liquids, granulates and pasty media
- Narrow and wide sonic beam angles
- Protection class IP 67



UNxK 09

IO-Link



UNDK 10  
SONUS



UNDK 20



UNDK 30

	UNxK 09 IO-Link	UNDK 10 SONUS	UNDK 20	UNDK 30
characteristics	<ul style="list-style-type: none"> <li>■ High resolution</li> <li>■ Minimal blind region</li> <li>■ RS 232</li> <li>■ Various mounting options</li> <li>■ Flat housing</li> <li>■ Narrow sonic beam angle for detection in openings of up to 3 mm</li> </ul>	<ul style="list-style-type: none"> <li>■ Smallest ultrasonic sensor</li> <li>■ Internal and external Teach-in</li> <li>■ Very low weight: 4 g</li> <li>■ Narrow sonic beam angle</li> <li>■ Cable and flylead connector versions</li> </ul>	<ul style="list-style-type: none"> <li>■ Flat type</li> <li>■ Internal and external Teach-in</li> <li>■ Narrow and wide sonic beam angles</li> <li>■ M8 connector</li> </ul>	<ul style="list-style-type: none"> <li>■ Compact type</li> <li>■ Large sensing range</li> <li>■ Teach-in on the sensor</li> <li>■ Potentiometer version</li> <li>■ Narrow and wide sonic beam angles</li> <li>■ Cable and connector versions</li> </ul>
dimensions	8,6 x 48,8 x 57,5 mm	10,4 x 27 x 14 mm	20 x 42 x 15 mm	30 x 65 x 31 mm
measuring distance	3 ... 200 mm	20 ... 200 mm	20 ... 1000 mm	30 ... 2000 mm
resolution	< 0,1 mm	< 0,3 mm	< 0,3 mm	< 0,3 mm
response time	< 7 ms	< 60 ms	< 30 ms	< 50 ms
output	0 ... 10 V / 10 ... 0 V RS 232	0 ... 10 V / 10 ... 0 V	4 ... 20 mA / 20 ... 4 mA 0 ... 10 V / 10 ... 0 V	4 ... 20 mA / 20 ... 4 mA 0 ... 10 V / 10 ... 0 V
connection types	cable 2 m flylead connector M8	connector M8 cable 2 m flylead connector M8	connector M8	connector M12 cable 2 m
housing material	PA 12	plastic (ASA)	polyester	polyester / die-cast zinc
operating temperature	0 ... +60 °C	-10 ... +60 °C	-10 ... +60 °C	-10 ... +60 °C
protection class	IP 67	IP 67	IP 67	IP 67
specific features	<ul style="list-style-type: none"> <li>■ with or w/o beam columnator</li> <li>■ cascable in 9 mm grid</li> </ul>	<ul style="list-style-type: none"> <li>■ wide range of accessories and installation options</li> </ul>	<ul style="list-style-type: none"> <li>■ optional sonic deflection bracket</li> </ul>	



**U500**  
*NextGen*

- *OneBoxDesign* – flexibility in planning
- *qTarget* – time savings during installation
- *qTeach* – Easy to operate, safe and wear-free
- Cable and connector versions

18 x 45,1 x 32,2 mm

100 ... 1000 mm

< 0,3 mm

< 80 ms

4 ... 20 mA / 20 ... 4 mA  
0 ... 10 V / 10 ... 0 V

connector M8  
cable 2 m

plastic (ASA, PMMA)

-25 ... +65 °C  
(+60 °C in current mode)

IP 67

- wide range of accessories and installation options

# Ultrasonic sensors

## Position sensors – cylindrical

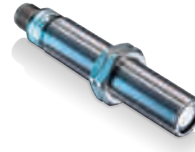
- Sensing range up to 6000 mm
- Reliable detection of high-reflective and transparent objects
- Tolerant of dust and dirt
- Versions with two separate switching outputs
- Adjustable reaction times ton/toff for through beam sensors
- Protection class IP 67
- Output PNP/NPN, Push-Pull



**UNAM 12  
with columnator**



**UxAM 12  
Highspeed**

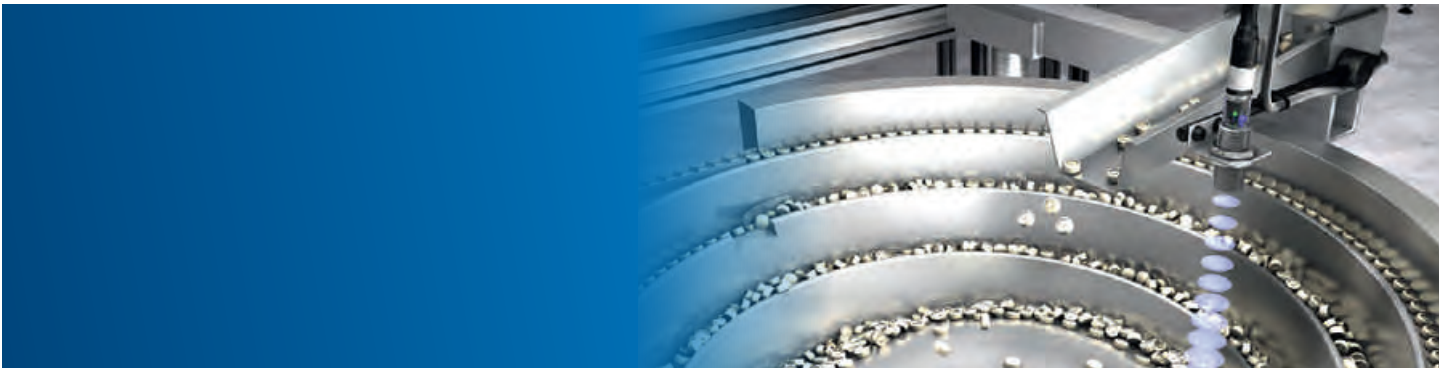


**UNAM 18, UxAR 18**



**UR18**

characteristics	<ul style="list-style-type: none"> <li>■ Beam columnator (2 II) for very narrow sonic cone profile</li> <li>■ Narrow and wide sonic beam angles</li> <li>■ External Teach-in</li> <li>■ M12 connector</li> </ul>	<ul style="list-style-type: none"> <li>■ Fastest ultrasonic sensor</li> <li>■ External Teach-in</li> </ul>	<ul style="list-style-type: none"> <li>■ Stainless steel housing V4A</li> <li>■ Chemically resistant sensor front</li> <li>■ FDA-compliant materials</li> <li>■ Internal and external Teach-in</li> <li>■ M12 connector</li> </ul>	<ul style="list-style-type: none"> <li>■ <i>qTeach</i> – easy to operate, safe and wear-free</li> <li>■ Short design</li> </ul>
dimensions	M12 x 1	M12 x 1	M18 x 1	M18 x 1
sensing range Sd				
proximity switch	5 ... 400 mm	0 ... 70 mm	60 ... 1000 mm	100 ... 1000 mm
2 point proximity switch				
retro-reflective sensors		0 ... 70 mm	0 ... 400 mm	0 ... 1000 mm
through beam sensors				
response time	< 10 ms	< 1,3 ms	< 50 ms	< 50 ms
output	NPN PNP	NPN PNP	NPN PNP	push-pull
connection types	connector M12	connector M12	connector M12	connector M12
housing material	brass nickel plated	brass nickel plated	brass nickel plated stainless steel 1.4435 (V4A)	brass nickel plated
operating temperature	-10 ... +60 °C	-10 ... +60 °C	-10 ... +60 °C	-25 ... +70 °C
protection class	IP 67	IP 67	IP 67	IP 67
specific features		<ul style="list-style-type: none"> <li>■ version with and without beam columnator</li> </ul>	<ul style="list-style-type: none"> <li>■ sensors with MUX and Sync input</li> </ul>	<ul style="list-style-type: none"> <li>■ window teach function</li> <li>■ reflector position tolerance selectable from <math>\pm 2,5\%</math> to <math>\pm 10\%</math></li> </ul>



UxAM 30



UxAM 50



UZAM 70

- Internal and external Teach-in
- Cable and connector versions
- Potentiometer versions

- Large sensing range
- Internal and external Teach-in
- Cable and connector versions
- Potentiometer version

- Large sensing range
- Internal and external Teach-in
- M12 connector

M30 x 1,5

M30 x 1,5

M30 x 1,5

200 ... 1500 mm

350 ... 2500 mm

100 ... 1000 mm

350 ... 2500 mm

600 ... 6000 mm

0 ... 3000 mm

< 100 ms

< 160 ms

< 640 ms

NPN  
PNP

NPN  
PNP

NPN  
PNP

connector M12  
cable 2 m

connector M12  
cable 2 m

connector M12

brass nickel plated

brass nickel plated

brass nickel plated

-10 ... +60 °C

-10 ... +60 °C

-25 ... +60 °C

IP 67

IP 67

IP 67

- sensors with two separate outputs

- sensors with MUX and Sync input
- sensors with two separate outputs

- sensors with two separate outputs

# Ultrasonic sensors

## Position sensors – rectangular

- Sensing range up to 2000 mm
- Reliable detection of high-reflective and transparent objects
- Tolerant of dust and dirt
- Versions with two separate switching outputs
- Adjustable reaction times ton/toff for through beam sensors
- Protection class IP 67
- Output PNP/NPN, Push-Pull



UNxK 09

IO-Link



UNDK 10  
SONUS



UNDK 20



UNDK 30

characteristics	<ul style="list-style-type: none"> <li>■ High resolution</li> <li>■ Minimal blind region</li> <li>■ RS 232</li> <li>■ Various mounting options</li> <li>■ Very flat housing</li> <li>■ Beam columnator for detection in openings of up to 3 mm</li> </ul>	<ul style="list-style-type: none"> <li>■ Smallest ultrasonic sensor</li> <li>■ Internal and external Teach-in</li> <li>■ Very low weight: 4 g</li> <li>■ Narrow sonic beam angles</li> <li>■ Cable and connector versions</li> </ul>	<ul style="list-style-type: none"> <li>■ Flat housing</li> <li>■ Internal and external Teach-in</li> <li>■ Narrow and wide sonic beam angles</li> <li>■ M8 connector</li> </ul>	<ul style="list-style-type: none"> <li>■ Compact design</li> <li>■ Large sensing range</li> <li>■ Internal Teach-in</li> <li>■ Potentiometer version</li> <li>■ Narrow and wide sonic beam angles</li> <li>■ Cable and connector versions</li> </ul>
dimensions	8,6 x 82 x 24,5 mm	10,4 x 27 x 14 mm	20 x 42 x 15 mm	30 x 65 x 31 mm
<b>sensing range Sd</b>				
proximity switch	3 ... 200 mm	10 ... 200 mm	10 ... 1000 mm	30 ... 1000 mm
2 point proximity switch				30 ... 2000 mm
retro-reflective sensors	0 ... 200 mm	0 ... 200 mm	0 ... 1000 mm	0 ... 2000 mm
through beam sensors			0 ... 1000 mm	0 ... 700 mm
response time	< 7 ms	< 15 ms	< 10 ms	< 10 ms
output	push-pull RS 232	NPN PNP	NPN PNP	NPN PNP
connection types	cable 2 m flylead connector M8	connector M8 cable 2 m flylead connector M8	connector M8	connector M12 cable 2 m
housing material	PA 12	plastic (ASA)	polyester	polyester / die-cast zinc
operating temperature	0 ... +60 °C	-10 ... +60 °C	-10 ... +60 °C	-10 ... +60 °C
protection class	IP 67	IP 67	IP 67	IP 67
specific features	<ul style="list-style-type: none"> <li>■ with or w/o beam columnator</li> <li>■ cascadable in 9 mm grid</li> </ul>	<ul style="list-style-type: none"> <li>■ wide range of accessories and installation options</li> </ul>	<ul style="list-style-type: none"> <li>■ sensor with adjustable ton/toff</li> <li>■ optional sonic deflection bracket</li> </ul>	<ul style="list-style-type: none"> <li>■ sensors with MUX and Sync input</li> <li>■ sensors with two separate outputs</li> </ul>





U500  
NextGen

- *OneBoxDesign* – flexibility in planning
- *qTarget* – time savings during installation
- *qTeach* – easy to operate, safe and wear-free
- Cable and connector versions

18 x 45,1 x 32,2 mm

100 ... 1000 mm

0 ... 1000 mm

< 50 ms

push-pull

connector M8  
cable 2 m

plastic (ASA, PMMA)

-25 ... +65 °C

IP 67

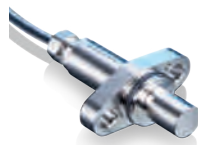
- window teach function
- reflector position tolerance selectable from  $\pm 2,5\%$  to  $\pm 10\%$

### Speed, angle and position sensors

- Non-wearing systems
- Tolerant of dust and dirt
- One-channel and two-channel version
- High resolution
- Absolute position measurement up to 360° of rotation
- Protection class IP 68
- Scanning of gears and racks starting with module 1
- Acquisition of magnet location



MHRM 12 / 18



MTRM 16



MDRM 18, MDFM 20

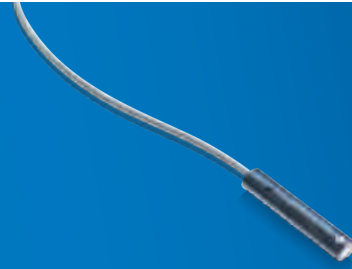


MFRM 08, MFFM 08

function	hall sensors	hall sensors	magnetic angle sensors	magnetic proximity switches
characteristics	<ul style="list-style-type: none"> <li>■ Detects gears and racks</li> <li>■ Single and dual channel versions</li> <li>■ Sealed metal housing</li> <li>■ Operating temperature range -40 ... +120 °C</li> </ul>	<ul style="list-style-type: none"> <li>■ Detection of rpm speed and rotational direction of gear wheels</li> <li>■ Completely sealed metal housing</li> <li>■ Compliant to stringent railway standards</li> <li>■ Operating temperature range -40 ... +120 °C</li> </ul>	<ul style="list-style-type: none"> <li>■ Can be used as an electronic potentiometer</li> <li>■ Absolute position feedback to 360° of rotation</li> <li>■ Cylindrical and rectangular designs</li> </ul>	<ul style="list-style-type: none"> <li>■ Acquisition of magnet location</li> <li>■ Large sensing range</li> <li>■ Object detection through container walls possible</li> </ul>
dimensions	M12 x 1 M18 x 1	ø 16 mm	M18 x 1 20 x 30 x 8 mm	M8 x 1 8 x 30 x 8 mm
working distance max.	2 mm	2,5 mm	2 mm	60 mm
switching frequency / response time	< 20 kHz	< 20 kHz	4 ms	< 5 kHz
resolution	starting from module 1	module 1 to 3	0,09°	< 0,5 mm
output	push-pull	push-pull	analog current or voltage output	PNP NPN
connection types	cable 2 m connector M12	cable 2 m (Radox)	cable 2 m connector M12 flylead connector M8	cable 2 m
housing material	brass nickel plated stainless steel	brass nickel plated	brass nickel plated	brass nickel plated stainless steel
operating temperature	-40 ... +120 °C	-40 ... +120 °C	-40 ... +85 °C	-25 ... +75 °C
protection class	IP 67 (sensor) IP 68 (sensing face)	IP 67 (sensor) IP 68 (sensing face)	IP 67	IP 67
specific features		<ul style="list-style-type: none"> <li>■ Standard compliance: EN 50155-2007 (class S1) EN 50121-3-2-2006 tables 7,8,9 EN 61373:1999 (cat. 3) Fire protection (cable): CEN/TS 45545</li> </ul>	<ul style="list-style-type: none"> <li>■ suitable magnets available as an accessory</li> </ul>	<ul style="list-style-type: none"> <li>■ suitable magnets available as an accessory</li> </ul>

## Cylinder position sensors

- For detecting piston positions of pneumatic cylinders
- Exactly defined switching points
- Distinctly higher life expectancy than sensors with reed contacts
- Accessories for mounting on all available cylinders
- Sensors for T and C slot cylinders
- Angled version for short stroke cylinder
- Version for insertion in T slot



MZCK 03x1011  
MZCK 03x1012



MZTK 06x1011  
MZTK 06x1012



MZTK 06x1013

function	magnetic proximity switches	magnetic proximity switches	magnetic proximity switches
characteristics	<ul style="list-style-type: none"> <li>■ For C slot cylinders</li> <li>■ Detecting piston positions</li> <li>■ Acquisition of magnet location</li> </ul>	<ul style="list-style-type: none"> <li>■ For T slot cylinders</li> <li>■ Detecting piston positions</li> <li>■ Acquisition of magnet location</li> </ul>	<ul style="list-style-type: none"> <li>■ For T slot cylinders</li> <li>■ Detecting piston positions</li> <li>■ Acquisition of magnet location</li> </ul>
dimensions	3,7 x 23 x 4,6 mm 3,7 x 19,5 x 9 mm	6,2 x 31 x 4,3 mm 6,5 x 21 x 9,4 mm	6,2 x 31,5 x 4,5 mm
nominal operation point	4 mT	4 mT 2 mT	4 mT
switching frequency	200 kHz	200 kHz	200 kHz
voltage supply range +Vs	6 ... 30 VDC	6 ... 30 VDC	6 ... 30 VDC
output	PNP NPN	PNP NPN	PNP NPN
connection types	cable 2,5 m flylead connector M8	cable 2,5 m flylead connector M8	cable 2,5 m flylead connector M8
housing material	PA 66	PA 66	PA 66
operating temperature	-10 ... +70 °C	-10 ... +70 °C	-10 ... +70 °C
protection class	IP 67	IP 67	IP 67
specific features	<ul style="list-style-type: none"> <li>■ short housing version</li> <li>■ accessories for mounting on all available cylinders</li> <li>■ Oil and marine environment resistant</li> </ul>	<ul style="list-style-type: none"> <li>■ short housing version</li> <li>■ accessories for mounting on all available cylinders</li> <li>■ Oil and marine environment resistant</li> </ul>	<ul style="list-style-type: none"> <li>■ can be installed from above in the slot</li> <li>■ accessories for mounting on all available cylinders</li> <li>■ Oil and marine environment resistant</li> </ul>

# Precision mechanical switches

## My-Com precision switches

- $\pm 1 \mu\text{m}$  repeat accuracy
- Activating pin made of unbreakable zirconium oxide
- 30 cN minimum activating force
- Pointed activating pins
- 2-wire normally closed contact (NC) and 3-wire normally open contact (NO)
- Lateral approach also possible to  $30^\circ$  (spherical activating pins)
- Also in protection class IP 67



MY-COM A



MY-COM B



MY-COM C



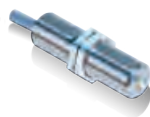
MY-COM D

characteristics	<ul style="list-style-type: none"> <li>■ Conical brass housing front</li> <li>■ M8 fine pitch thread</li> </ul>	<ul style="list-style-type: none"> <li>■ Brass housing</li> <li>■ Flat housing front</li> <li>■ M8 fine pitch thread</li> </ul>	<ul style="list-style-type: none"> <li>■ Flat brass housing</li> <li>■ 2-hole mounting</li> </ul>	<ul style="list-style-type: none"> <li>■ Robust burnished brass housing</li> <li>■ Spherical metal tip</li> <li>■ Protection class IP 67</li> <li>■ Lateral approach possible to <math>30^\circ</math></li> </ul>
dimensions	M8 x 0,5	M8 x 0,5	8 x 12 x 30 mm	M16 x 0,5
repeat accuracy	< 1 $\mu\text{m}$	< 1 $\mu\text{m}$	< 1 $\mu\text{m}$	< 1 $\mu\text{m}$
output	NC (mechanical)	NC (mechanical)	NC (mechanical)	NC (mechanical) NO (PNP/NPN)
connection types	cable 0,8 m connector M8	cable 0,8 m connector S30	cable 0,8 m connector M8	cable 0,8 m connector M8
activating pin	zirconium oxide ZrO <sub>2</sub>	zirconium oxide ZrO <sub>2</sub>	zirconium oxide ZrO <sub>2</sub>	hardened steel
housing material	brass nickel plated	brass nickel plated	brass nickel plated	browned brass
operating temperature	-20 ... +75 °C	-20 ... +75 °C	-20 ... +75 °C	-20 ... +75 °C
protection class	IP 50	IP 50	IP 50	IP 67



**MY-COM E**

- Brass housing
- M6 fine pitch thread
- Spherical hard metal tip
- Lateral approach possible to 30°



**MY-COM F  
MY-COM G**

- Brass housing
- Long M8 fine pitch thread



**MY-COM H  
MY-COM L**

- Brass housing
- M8 fine pitch thread
- Spherical ruby tip
- Protection class IP 67



**MY-COM M**

- Brass housing
- M8 fine pitch thread
- Protection class IP 67

M6 x 0,5	M8 x 0,5	M8 x 0,5	M8 x 0,5
< 1 µm	< 1 µm	< 1 µm	< 1 µm
NC (mechanical) NO (PNP/NPN)	NC (mechanical) NO (PNP/NPN)	NC (mechanical) NO (PNP/NPN)	NC (mechanical) NO (PNP/NPN)
cable 0,8 m	cable 0,8 m connector M8	cable 0,8 m connector M8	cable 0,8 m connector M8
hardened steel	zirconium oxide ZrO2	ruby	zirconium oxide ZrO2
brass nickel plated	brass nickel plated	brass nickel plated	brass nickel plated
-20 ... +75 °C	-20 ... +75 °C	-20 ... +75 °C	-20 ... +75 °C
IP 50	IP 50	IP 67	IP 67



Complete accessories under: [www.baumer.com](http://www.baumer.com)

### Cables & adapters



Cable socket unassembled

- M8 and M12
- Straight or angled
- 3-, 4- and 5-pole versions



Cable socket

- M5, M8, M9, M12 or 8 mm snap-in
- 3- or 12-pole versions
- Straight or angled
- Screened or unshielded
- Various sheath materials
- Various lengths available up to 25 m



Connector

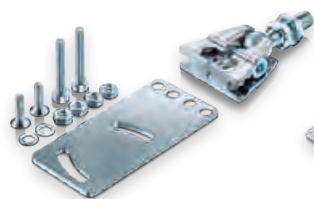
- M8
- 3-pole versions
- Straight
- PUR sheath
- Various lengths available up to 10 m



Straight connector and adapter

- M8 or M12
- 3- or 4-pole versions
- Straight or angled
- PUR sheath
- Various lengths available up to 10 m

characteristics



Mounting sets

- Sensofix Mounting sets
- Robust metal version
- Mounting sets for various sensor types
- Easy, flexible alignment



Mounting bracket

- Matching mounting brackets available for various sensor types
- High quality metal
- Compatible with flexible Sensofix



Mounting bracket

- Easy, fast mounting of smooth and cylindrical sensors
- Available from  $\varnothing$  6,5 mm to  $\varnothing$  20 mm



Bracket for profiles

- Mounting adapter for diverse sensor types
- e.g. for mounting in profiles, slots, cylinders, etc.

### Mounting accessories

characteristics



Complete accessories under: [www.baumer.com](http://www.baumer.com)



Sensor test equipment



Teach-in Adapter



USB-IO-Link Master  
IO-Link

## Testing and parameterization

characteristics

- Display (V or mA) or. LED (PNP/NPN) reading
- Sensor programming using integrated teach key
- Connection option for plug-in power supply (available as accessory)

- Sensor programming with teach-in pin
- Teach-in using key
- For sensors with M12 connection

- Teach-in, parameterization and operation of IO-Link capable sensors



AS-i



Converter/  
Signal converter

## Network components

characteristics

- Input/output modules
- Models for control cabinet installation
- Extra-compact miniature modules
- Various numbers of inputs and outputs
- S-slave or A/B slave types
- Various AS interface accessories such as cables, masters or branches

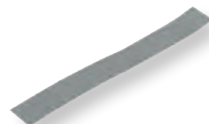
- Analog-digital converter with 3 teachable digital outputs
- PNP/NPN signal converter



Reflectors  
Lenses  
Apertures  
Glass



Reflectors



Reflective tapes



Apertures



Glass covers  
Filter  
Lens

characteristics

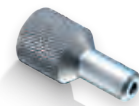
- Self-adhesive or screw-mount reflectors
- Circular or rectangular
- All-metal reflectors
- Ecolab certified types, resistant to cleaning agents

- Self-adhesive tapes
- Various widths and lengths

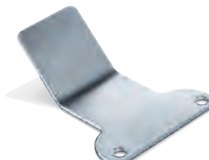
- Apertures for various sensor types

- For various sensor types

Beam columnators  
and deflector  
(Ultrasonic)



Beam columnators



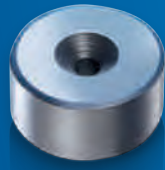
Beam deflectors

characteristics

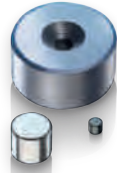
- Replacement nozzles for sensors with sonic nozzles

- Ideal for cramped spaces
- Bends the sound 90°





Complete accessories under: [www.baumer.com](http://www.baumer.com)



**Cylindrical magnets**



**Rectangular magnets and rotors**

## Magnets

characteristics

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>■ For all magnetic proximity switches</li> <li>■ Magnets in various sizes and strengths</li> <li>■ Magnetization along the cylinder axis</li> <li>■ For ambient temperatures up to +180 °C</li> </ul> | <ul style="list-style-type: none"> <li>■ For magnetic rotary encoders</li> <li>■ Magnets available individually or integrated in the rotor</li> <li>■ Magnetization throughout the depth</li> <li>■ For ambient temperatures up to +180 °C</li> </ul> |
|--|---|

Worldwide presence  
and supreme competence  
in consulting, sales  
and service.

# Baumer – the strong partner.

We at Baumer are close to our customers, understand their needs and provide the best solution. Worldwide customer service for Baumer starts with on-the-spot personal discussions and qualified consultation. Our application engineers speak your language and strive from the start, through an interactive problem analysis, to offer comprehensive and user-compatible solutions.

## We are close to you across the globe.

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Closeness to the customer for Baumer means being available for your needs anywhere and at any time.



# Worldwide presence.



Africa  
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Reunion  
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Colombia  
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Venezuela

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India  
Indonesia  
Israel  
Japan  
Kuwait  
Malaysia  
Oman  
Philippines  
Qatar  
Saudi Arabia  
Singapore  
South Korea  
Taiwan  
Thailand  
UAE

Europe  
Austria  
Belgium  
Bulgaria  
Croatia  
Czech Republic  
Denmark  
Finland  
France  
Germany  
Greece  
Hungary  
Italy  
Malta  
Martinique  
Netherlands  
Norway  
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