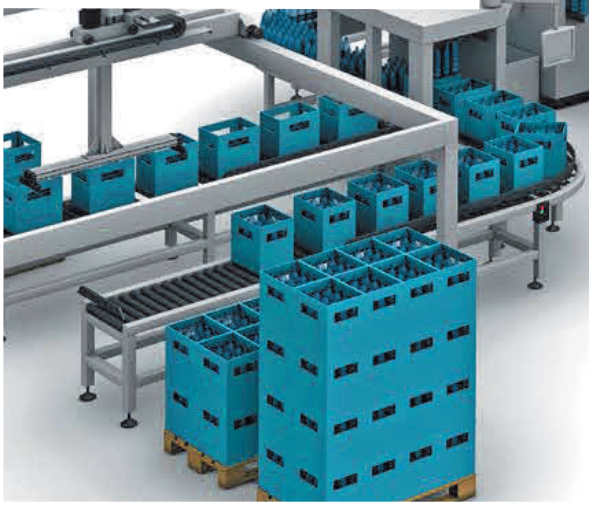
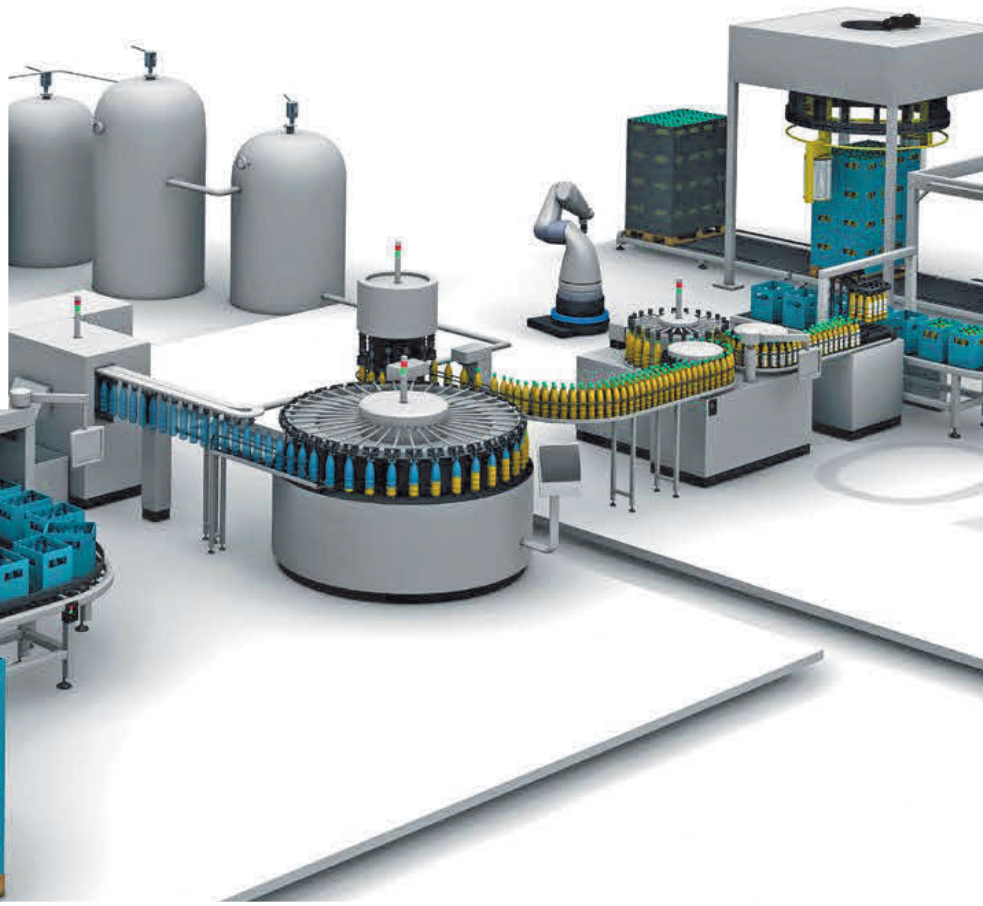
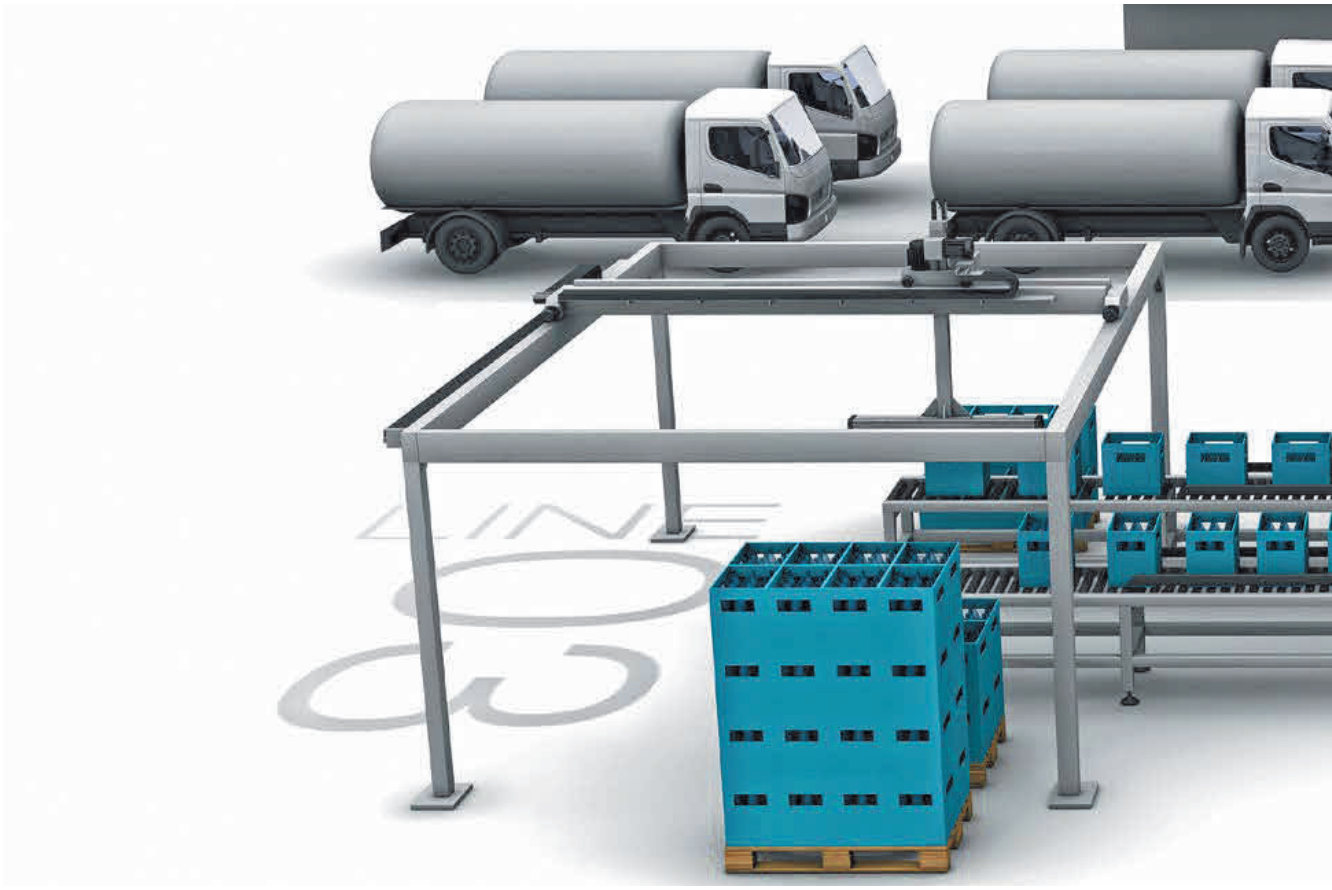
BALLUFF

Washdown Select Series

Sensors, connectivity & traceability solutions for food & beverage







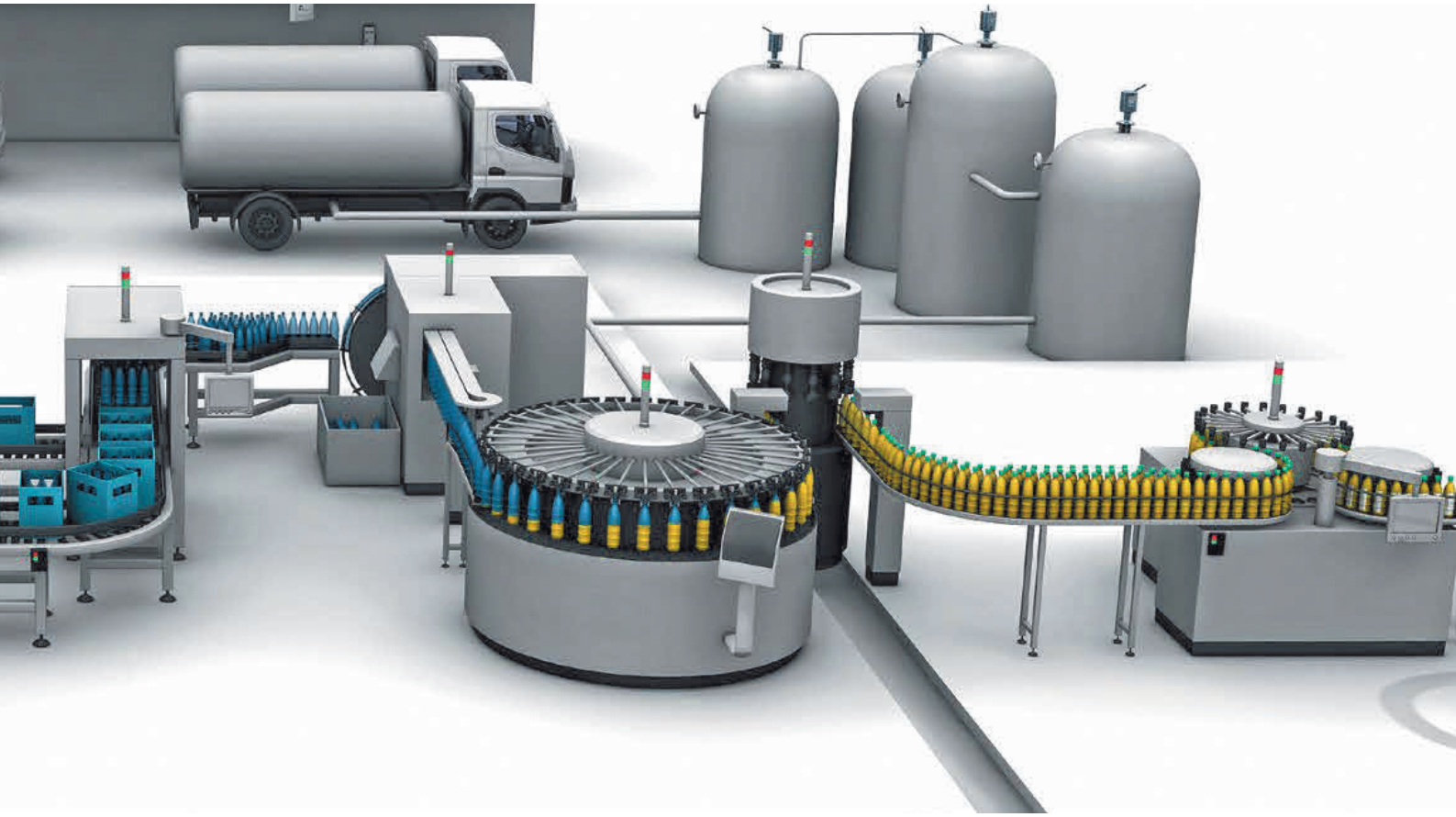
Washdown Select Series

Stainless & IP69K rated products for the Food & Beverage Industry

When working in automated food and beverage manufacturing segments like dairy, meat, filling and bottling, components that can survive in sanitary, hygienic and aseptic environments become necessary. Specifications for equipment look to reduce and remove areas for harboring bacteria. Poor survivability for automation components during washdown can become a major cause of downtime and lost production during changeovers and cleaning processes.

Balluff is utilized to improve manufacturing automation in four distinct applications inside a food and beverage facility: process automation, factory automation, flexible manufacturing and traceability.

- Sensing technologies like photoelectric, inductive, capacitive, and linear position
- Industrial RFID technologies and connectivity technologies
- Individual products with testing and ratings: FDA, 3A, EHEDG, ECOLAB
- RFID technologies can be used to support FSAM hazard analysis and risk-based preventive controls implementations



Process Automation
Detecting level and flow of media in a tank or pipe can be done with multiple technologies. Typically hard to detect media like ketchup, peanut butter, and powders are easy for advanced SmartLevel sensors.

Factory Automation
The washdown environment can cause havoc for general automation components like sensors. Having the right housing materials and higher ingress protection can help sensors survive harsh washdown processes.

Flexible Manufacturing
Variable lot sizes, multiple package formats, infinite recipes. There is an increasing demand to individualize and customize delivery of food & beverage products. Automation components like sensors and industrial RFID help enable the implementation of these go-to market strategies.

Traceability
Traceability inside the plant is a key component of modern manufacturing. Industrial RFID systems are used to track information like: access to equipment, how often the equipment is cleaned, where product is located, where product came from, which change tooling is installed, and what recipe is being run.

⚠ WARNING

- Read, understand, and follow warnings and manual. Failure to do so could result in serious injury or death.
- NEVER USE AS A SENSING DEVICE FOR PERSONNEL PROTECTION
- Does NOT include self-checking redundancy circuitry required for use in personnel safety applications
- Does NOT meet OSHA and ANSI standards for point-of-operation devices

Balluff, Inc. · www.balluff.com · 1-800-543-8390

Contents

Ø 18 Stainless Steel Smooth Body

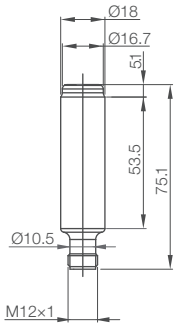
Rugged with maximum performance
The BOS 18E photoelectric sensors are made of corrosion-resistant stainless steel. This makes them especially rugged and resistant to many cleaning agents and other chemicals. A special housing nose and optics construction provides optimum sealing and rigidity.

The optical element is available in plastic.
The new BOS 18E series can thus be used for applications wherever other sensors reach their limits. Preferred areas of application are the foods and pharmaceutical industries.

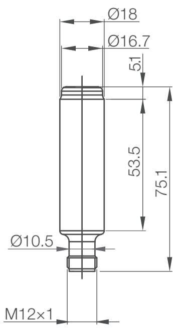
Benefits
- Housing made of 1.4404 stainless steel (316L equivalent)
- Outstanding sealing quality: IP69K, IP68
- Available threaded or with smooth sleeve
- Hygiene-compliant – washdown design
- Available in all function principles

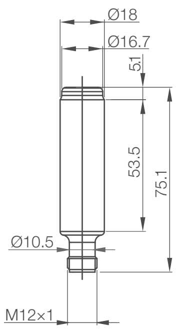
Type		**Diffuse sensor**
Detection range		**1…250 mm**
PNP, NO/NC		**BOS0241**
Emitter		
Supply voltage U_S		10...30 V DC
Output current		100 mA
No-load supply current I_0 max.		≤ 24 mA
Switching type		Light/dark switching
Polarity reversal protected/short-circuit protected		Yes/yes
Emitter, light type		LED, red light
Wavelength		640 nm
Switching frequency f		400 Hz
Degree of protection per IEC 60529		IP68/IP69K
Ambient temperature T_a		–25…+70 °C
Permissible ambient light		10000 Lux
Material	Housing	1.4404 stainless steel
	Optical surface	PMMA
Connection		M12 connector, 4-pin

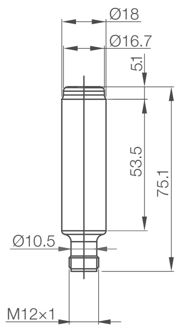
Other variants on our website or on request

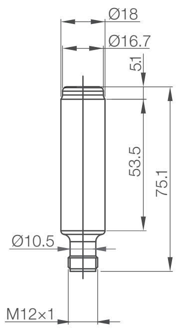


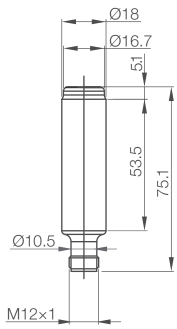
Diffuse sensor	**Diffuse sensor**	**Retroreflective sensor with polarization**	**Through-beam sensor**	**Through-beam sensor**
1…500 mm	**1…700 mm**	**0…5 m**	**0…20 m**	**0…20 m**
BOS0240	**BOS0244**	**BOS0245**		**BOS0243**
			BOS0242	
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
100 mA	100 mA	100 mA	100 mA	100 mA
≤ 24 mA	≤ 24 mA	≤ 24 mA	≤ 24 mA	≤ 24 mA
Light/dark switching	Light/dark switching	Light/dark switching		Light/dark switching
Yes/yes	Yes/yes	Yes/yes	Yes/yes	Yes/yes
LED, red light	LED, infrared	LED, red light	LED, red light	LED, red light
640 nm	850 nm	640 nm	640 nm	640 nm
400 Hz	400 Hz	400 Hz		400 Hz
IP68/IP69K	IP68/IP69K	IP68/IP69K	IP68/IP69K	IP68/IP69K
–25…+70 °C	–25…+70 °C	–25…+70 °C	–25…+70 °C	–25…+70 °C
10000 Lux	10000 Lux	10000 Lux		10000 Lux
1.4404 stainless steel	1.4404 stainless steel	1.4404 stainless steel	1.4404 stainless steel	1.4404 stainless steel
PMMA	PMMA	PMMA	PMMA	PMMA
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin







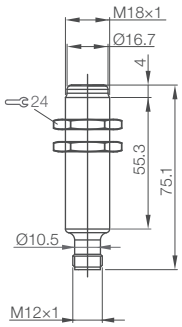


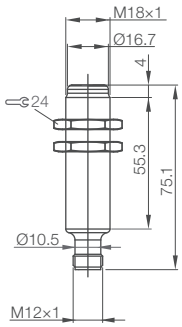


M18 Stainless Steel Thread

Type		**Diffuse sensor**	**Diffuse sensor**
Detection range		**1...250 mm**	**1…500 mm**
PNP, NO/NC		**BOS023T**	**BOS023R**
Emitter			
Supply voltage U_S		10...30 V DC	10...30 V DC
Output current		100 mA	100 mA
No-load supply current I_0 max.		≤ 24 mA	≤ 24 mA
Switching type		Light/dark switching	Light/dark switching
Polarity reversal protected/short-circuit protected		Yes/yes	Yes/yes
Emitter, light type		LED, red light	LED, red light
Wavelength		640 nm	640 nm
Switching frequency f		400 Hz	400 Hz
Degree of protection per IEC 60529		IP68/IP69K	IP68/IP69K
Ambient temperature T_a		–25…+70 °C	–25…+70 °C
Permissible ambient light		10000 Lux	10000 Lux
Material	Housing	1.4404 stainless steel	1.4404 stainless steel
	Optical surface	PMMA	PMMA
Connection		M12 connector, 4-pin	M12 connector, 4-pin

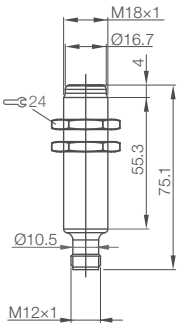
Other variants on our website or on request

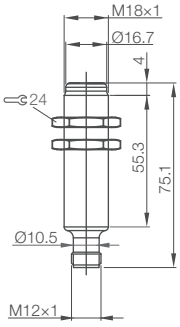


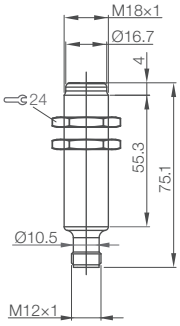


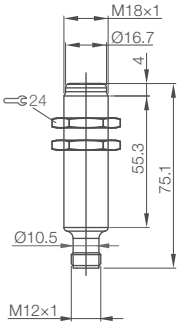
Photoelectric Standard Sensors
BOS 18E stainless steel, plastic optics

Diffuse sensor	Retroreflective sensor with polarization	Through-beam sensor	Through-beam sensor
1…700 mm	**0…5 m**	**0…20 m**	**0…20 m**
BOS023Z	**BOS023Y**		**BOS023W**
		BOS023U	
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
100 mA	100 mA	100 mA	100 mA
≤ 24 mA	≤ 24 mA	≤ 24 mA	≤ 24 mA
Light/dark switching	Light/dark switching		Light/dark switching
Yes/yes	Yes/yes	Yes/yes	Yes/yes
Infrared	LED, red light	LED, red light	LED, red light
850 nm	640 nm	640 nm	640 nm
400 Hz	400 Hz		400 Hz
IP68/IP69K	IP68/IP69K	IP68/IP69K	IP68/IP69K
–25…+70 °C	–25…+70 °C	–25…+70 °C	–25…+70 °C
10000 Lux	10000 Lux		10000 Lux
1.4404 stainless steel	1.4404 stainless steel	1.4404 stainless steel	1.4404 stainless steel
PMMA	PMMA	PMMA	PMMA
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin









For harsh environments
The new BOS R01E series sensors are ideal for harsh environments. With a full stainless steel housing they resist aggressive media such as all common cleaning agents. This makes these sensors ideal for many applications and industries – especially the food & beverage industry.

Their compact size means the BOS R01E series sensors also fit in tight spaces. Their installation is quick and easy.

Benefits
- Full stainless steel – ideal in harsh environments
- Bright, homogeneous light spot – quick and easy alignment
- Strong red light – precision for long ranges
- Complete family – all optical sensor types available

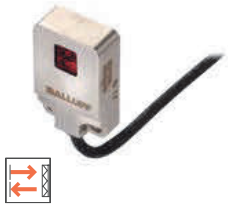
Type		
Detection range		
PNP, NO		
PNP, NC		
Emitter		
Supply voltage U_S		
Output current max.		
No-load supply current I_0 max.		
Polarity reversal protected/short-circuit protected		
Settings		
Emitter, light type		
Switching frequency f		
Degree of protection per IEC 60529/DIN 40050		
Ambient temperature T_a		
Material	Housing	
	Optical surface	
Connection		

Reference object: white, 90 % reflection, 200 × 200 mm
Reference reflector: BOS R-9

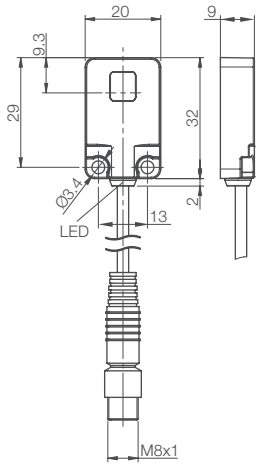
Other variants on our website or on request

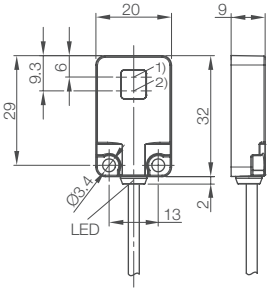
The stainless steel housing enables presence verification in the foods industry.

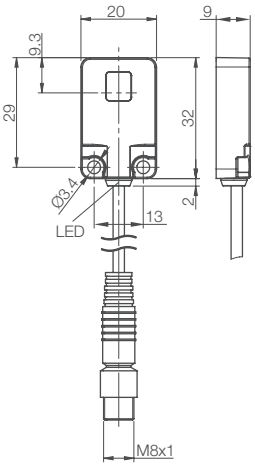


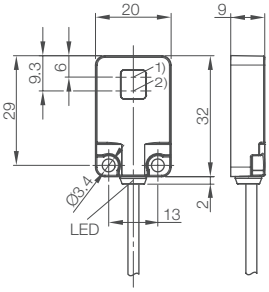



Diffuse sensor	**Diffuse sensor**	**Retroreflective sensor with polarization**	**Retroreflective sensor with polarization**
1...100 mm	**1...100 mm**	**25...1000 mm**	**25...1000 mm**
BOS021J	**BOS021K**	**BOS021L**	**BOS021M**
BOS021Y	**BOS021Z**	**BOS0222**	**BOS0223**
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
100 mA	100 mA	100 mA	100 mA
10 mA	10 mA	10 mA	10 mA
Yes/yes	Yes/yes	Yes/yes	Yes/yes
fixed	fixed	fixed	fixed
LED, red light	LED, red light	LED, red light	LED, red light
500 Hz	500 Hz	500 Hz	500 Hz
IP67/IP69K	IP67/IP69K	IP67/IP69K	IP67/IP69K
–5…+55 °C	–5…+55 °C	–5…+55 °C	–5…+55 °C
1.4404 stainless steel	1.4404 stainless steel	1.4404 stainless steel	1.4404 stainless steel
PA	PA	PA	PA
0.2 m PUR cable with M8 connector, 3-pin	2 m PUR cable, 3 × 0.14 mm²	0.2 m PUR cable with M8 connector, 3-pin	2 m PUR cable, 3 × 0.14 mm²









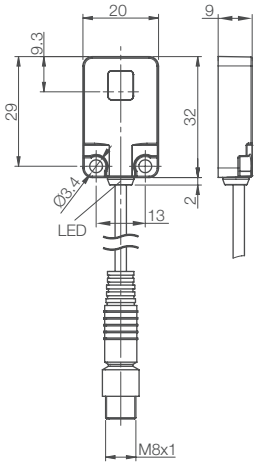
Emitter

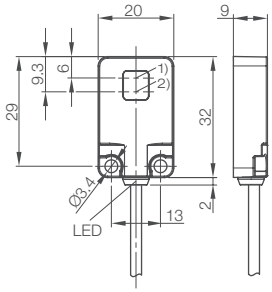
Emitter

Type		**Through-beam sensor**	**Through-beam sensor**
Detection range		**0...2200 mm**	**0...2200 mm**
PNP, NO			
PNP, NC			
Emitter		**BOS021R**	**BOS021T**
Supply voltage U_S		10...30 V DC	10...30 V DC
Output current max.			
No-load supply current I_0 max.		10 mA	10 mA
Polarity reversal protected/short-circuit protected		Yes/yes	Yes/yes
Settings		fixed	fixed
Emitter, light type		LED, red light	LED, red light
Switching frequency f			
Degree of protection per IEC 60529/DIN 40050		IP67/IP69K	IP67/IP69K
Ambient temperature T_a		–5…+55 °C	–5…+55 °C
Material	Housing	1.4404 stainless steel	1.4404 stainless steel
	Optical surface	PA	PA
Connection		0.2 m PUR cable with M8 connector, 3-pin	2 m PUR cable, 3 × 0.14 mm²

Reference object: white, 90 % reflection, 200 × 200 mm
Reference reflector: BOS R-9

Other variants on our website or on request

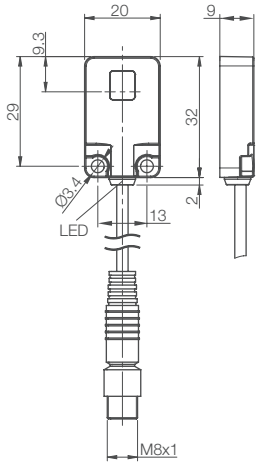


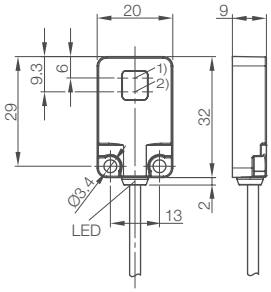


Receiver

Receiver

Through-beam sensor	**Through-beam sensor**
0...2200 mm	**0...2200 mm**
BOS021N	**BOS021P**
BOS0226	**BOS0227**
10...30 V DC	10...30 V DC
100 mA	100 mA
10 mA	10 mA
Yes/yes	Yes/yes
fixed	fixed
500 Hz	500 Hz
IP67/IP69K	IP67/IP69K
–5…+55 °C	–5…+55 °C
1.4404 stainless steel	1.4404 stainless steel
PA	PA
0.2 m PUR cable with M8 connector, 3-pin	2 m PUR cable, 3 × 0.14 mm²



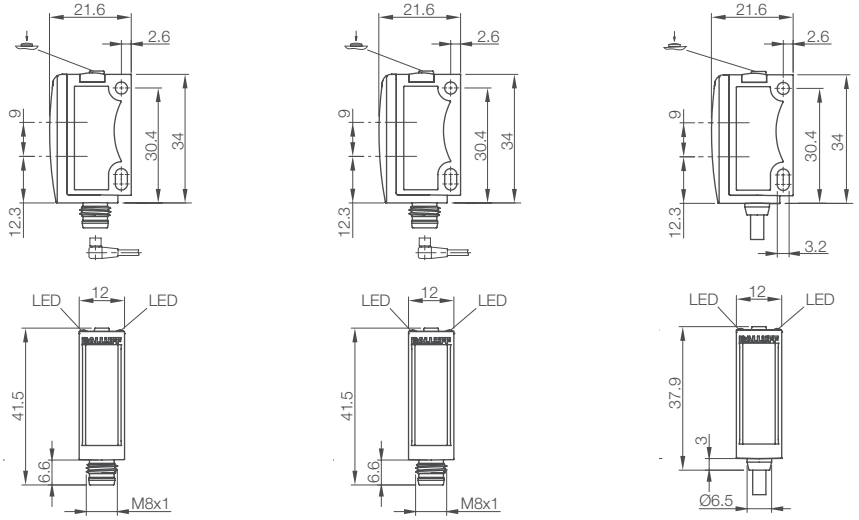




Type		**Diffuse sensor with background suppression**	**Diffuse sensor with background suppression**	**Diffuse sensor with background suppression**
Detection range		**1...200 mm**	**1...200 mm**	**1...200 mm**
PNP, NO/NC		**BOS01KY**	**BOS01KW**	**BOS01L0**
Supply voltage U_S		10...30 V DC	10...30 V DC	10...30 V DC
Output current		100 mA	100 mA	100 mA
No-load supply current I_0 max.		≤ 30 mA	≤ 30 mA	≤ 30 mA
Switching type		Light/dark	Light/dark	Light/dark
Polarity reversal protected/ short-circuit protected		Yes/yes	Yes/yes	Yes/yes
Settings		Teach-in	Teach-in	Teach-in
Emitter, light type		LED, red light	LED, red light	LED, red light
Light spot diameter		Approx. 5 × 5 mm at 50 mm	Approx. 5 × 5 mm at 50 mm	Approx. 5 × 5 mm at 50 mm
Power-on indicator		Green LED	Green LED	Green LED
Output function indicator		Yellow LED	Yellow LED	Yellow LED
Response time		0.5 ms	0.5 ms	0.5 ms
Switching frequency f		1 kHz	1 kHz	1 kHz
Degree of protection per IEC 60529/DIN 40050		IP67/IP69K	IP67/IP69K	IP67/IP69K
Ambient temperature T_a		–20...+60 °C	–20...+60 °C	–20...+60 °C
Permissible ambient light		5000 Lux	5000 Lux	5000 Lux
Material	Housing	ABS	ABS	ABS
	Optical surface	PMMA	PMMA	PMMA
Connection		M8 connector, 4-pin	M8 connector, 4-pin	2 m PVC cable, 4 × 0.14 mm²

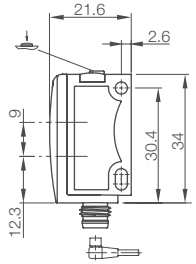
Reference object:
white, 90 % reflection,
200 × 200 mm.

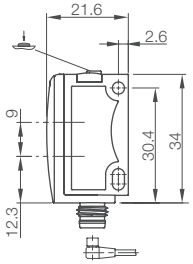
Other variants on our website or on request

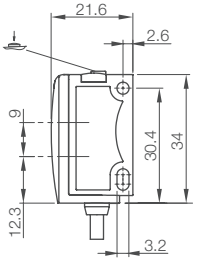


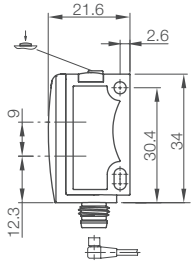
Photoelectric Standard Sensors
BOS 6K

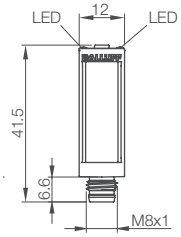
Diffuse sensor with background suppression	**Diffuse sensor with background suppression**	**Diffuse sensor with background suppression**	**Diffuse sensor (energetic)**
3...400 mm	**3...400 mm**	**3...400 mm**	**0...800 mm**
BOS01L3	**BOS01L2**	**BOS01L5**	**BOS01LK**
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
100 mA	100 mA	100 mA	100 mA
≤ 30 mA	≤ 30 mA	≤ 30 mA	≤ 30 mA
Light/dark	Light/dark	Light/dark	Light/dark
Yes/yes	Yes/yes	Yes/yes	Yes/yes
Teach-in	Teach-in	Teach-in	Teach-in
LED, red light	LED, red light	LED, red light	LED, red light
Approx. 8 × 8 mm at 60 mm	Approx. 8 × 8 mm at 60 mm	Approx. 8 × 8 mm at 60 mm	20 × 20 mm at 180 mm
Green LED	Green LED	Green LED	Green LED
Yellow LED	Yellow LED	Yellow LED	Yellow LED
0.5 ms	0.5 ms	0.5 ms	0.5 ms
1 kHz	1 kHz	1 kHz	1 kHz
IP67/IP69K	IP67/IP69K	IP67/IP69K	IP67/IP69K
–20...+60 °C	–20...+60 °C	–20...+60 °C	–20...+60 °C
5000 Lux	5000 Lux	5000 Lux	5000 Lux
ABS	ABS	ABS	ABS
PMMA	PMMA	PMMA	PMMA
M8 connector, 4-pin	M8 connector, 4-pin	2 m PVC cable, 4 × 0.14 mm²	M8 connector, 3-pin

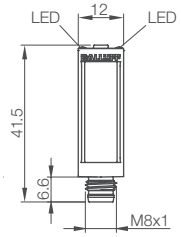


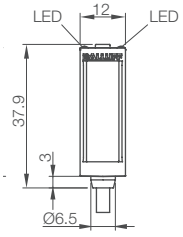


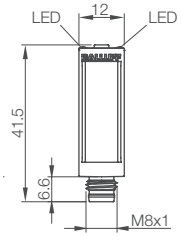










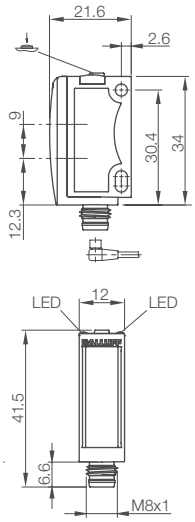


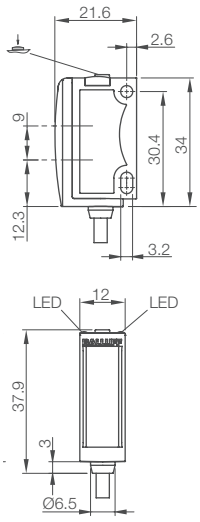
For transparency detection

Type		**Diffuse sensor (energetic)**	**Diffuse sensor (energetic)**	**Retroreflective sensor**
Detection range		**0...800 mm**	**0...800 mm**	**0...2 m**
PNP, NO/NC		**BOS01LL**	**BOS01LN**	**BOS01L7**
Supply voltage U_S		10...30 V DC	10...30 V DC	10...30 V DC
Output current		100 mA	100 mA	100 mA
No-load supply current I_0 max.		≤ 30 mA	≤ 30 mA	≤ 30 mA
Switching type		Light/dark	Light/dark	Light/dark
Polarity reversal protected/ short-circuit protected		Yes/yes	Yes/yes	Yes/yes
Settings		Teach-in	Teach-in	Teach-in
Emitter, light type		LED, red light	LED, red light	LED, red light, autocollimation
Light spot diameter		20 × 20 mm at 180 mm	20 × 20 mm at 180 mm	Approx. 50 × 50 mm at 2 m
Power-on indicator		Green LED	Green LED	Green LED
Output function indicator		Yellow LED	Yellow LED	Yellow LED
Response time		0.5 ms	0.5 ms	0.5 ms
Switching frequency f		1 kHz	1 kHz	1 kHz
Degree of protection per IEC 60529/DIN 40050		IP67/IP69K	IP67/IP69K	IP67/IP69K
Ambient temperature T_a		–20...+60 °C	–20...+60 °C	–20...+60 °C
Permissible ambient light		5000 Lux	5000 Lux	5000 Lux
Material	Housing	ABS	ABS	ABS
	Optical surface	PMMA	PMMA	PMMA
Connection		M8 connector, 4-pin	2 m PVC cable, 4 × 0.14 mm²	M8 connector, 3-pin

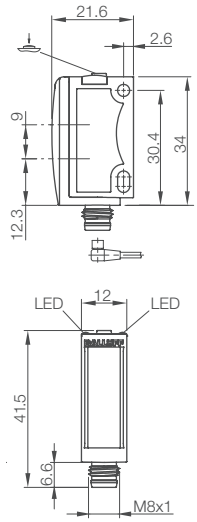
Reference object:
white, 90 % reflection,
200 × 200 mm.

Other variants on our website or on request



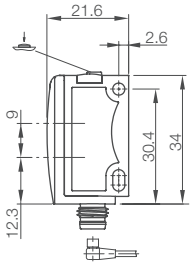


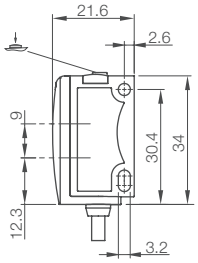
Reference reflector:
BOS R-22

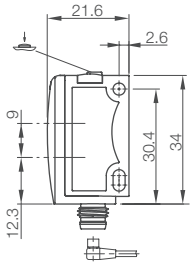


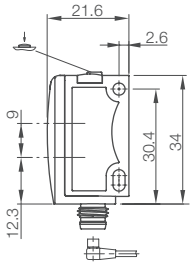
Photoelectric Standard Sensors
BOS 6K

For transparency detection	For transparency detection		
			
Retroreflective sensor	**Retroreflective sensor**	**Retroreflective sensor**	**Retroreflective sensor**
0...2 m	**0...2 m**	**0...6 m**	**0...6 m**
BOS01L8	**BOS01LA**	**BOS01MH**	**BOS01MJ**
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
100 mA	100 mA	100 mA	100 mA
≤ 30 mA	≤ 30 mA	≤ 30 mA	≤ 30 mA
Light/dark	Light/dark	Light/dark	Light/dark
Yes/yes	Yes/yes	Yes/yes	Yes/yes
Teach-in	Teach-in	Teach-in	Teach-in
LED, red light, autocollimation	LED, red light	LED, red light	LED, red light
Approx. 5 × 5 mm at 50 mm	Approx. 50 × 50 mm at 2 m	600 × 600 mm at 7 m	500 × 500 mm at 6 m
Green LED	Green LED	Green LED	Green LED
Yellow LED	Yellow LED	Yellow LED	Yellow LED
0.5 ms	0.5 ms	0.5 ms	0.5 ms
1 kHz	1 kHz	1 kHz	1 kHz
IP67/IP69K	IP67/IP69K	IP67/IP69K	IP67/IP69K
–20...+60 °C	–20...+60 °C	–20...+60 °C	–20...+60 °C
5000 Lux	5000 Lux	5000 Lux	5000 Lux
ABS	ABS	ABS	ABS
PMMA	PMMA	PMMA	PMMA
M8 connector, 4-pin	2 m PVC cable, 4 × 0.14 mm²	M8 connector, 3-pin	M8 connector, 4-pin
Reference reflector: BOS R-22	Reference reflector: BOS R-22	Reference reflector: BOS R-1	Reference reflector: BOS R-1









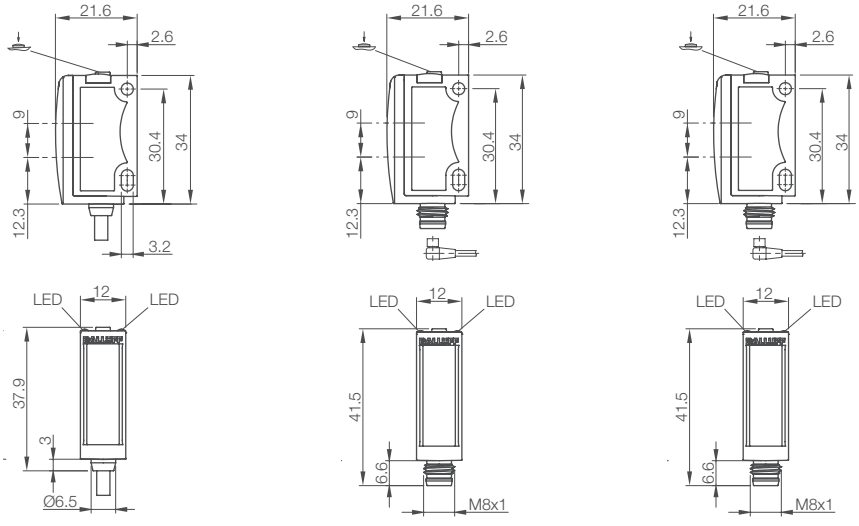


Type		Retroreflective sensor	Through-beam sensor	Through-beam sensor
Detection range		**0...6 m**	**0...13 m**	**0...13 m**
PNP, NO/NC		**BOS01ML**		
PNP	Receiver		**BOS01M8**	**BOS01M9**
	Emitter		**BOS01MF**	**BOS01LR**
Supply voltage U_S		10...30 V DC	10...30 V DC	10...30 V DC
Output current		100 mA	100 mA	100 mA
No-load supply current I_0 max.		≤ 30 mA	≤ 30 mA	≤ 30 mA
Switching type		Light/dark	Light/dark	Light/dark
Polarity reversal protected/ short-circuit protected		Yes/yes	Yes/yes	Yes/yes
Settings		Teach-in	Teach-in	Teach-in
Emitter, light type		LED, red light	LED, red light	LED, red light
Laser class				
Light spot diameter		600 × 600 mm at 7 m	1.2 × 1.2 mm at 15 m	1 × 1 mm at 13 m
Power-on indicator		Green LED	Green LED	Green LED
Output function indicator		Yellow LED	Yellow LED	Yellow LED
Response time		0.5 ms	0.5 ms	0.5 ms
Switching frequency f		1 kHz	1 kHz	1 kHz
Degree of protection per IEC 60529/DIN 40050		IP67/IP69K	IP67/IP69K	IP67/IP69K
Ambient temperature T_a		–20...+60 °C	–20...+60 °C	–20...+60 °C
Permissible ambient light		5000 Lux	5000 Lux	5000 Lux
Material	Housing	ABS	ABS	ABS
	Optical surface	PMMA	PMMA	PMMA
Connection		2 m PVC cable, 4 × 0.14 mm²	M8 connector, 3-pin	M8 connector, 4-pin

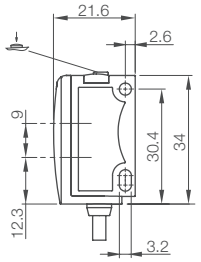
Reference object: white, 90 % reflection, 200 × 200 mm.

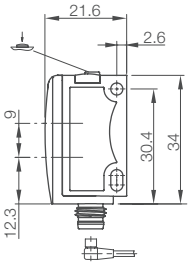
Reference reflector: BOS R-1

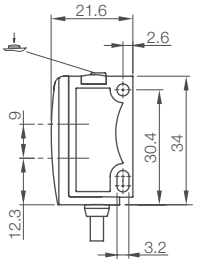
Other variants on our website or on request

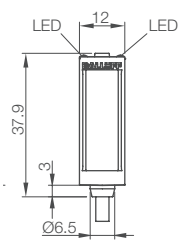


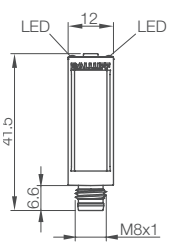
Through-beam sensor	Diffuse sensor with background suppression	Diffuse sensor with background suppression
0...13 m	**4...120 mm**	**4...120 mm**
	BOS01LE	**BOS01LH**
BOS01MC		
BOS01LT		
10...30 V DC	10...30 V DC	10...30 V DC
100 mA	100 mA	100 mA
≤ 30 mA	≤ 30 mA	≤ 30 mA
Light/dark	Light/dark	Light/dark
Yes/yes	Yes/yes	Yes/yes
Teach-in	Teach-in	Teach-in
LED, red light	Laser, red light	Laser, red light
	1	1
1.2 × 1.2 mm at 15 m	1.2 × 1.2 mm at 120 mm	1.2 × 1.2 mm at 120 mm
Green LED	Green LED	Green LED
Yellow LED	Yellow LED	Yellow LED
0.5 ms	0.5 ms	0.5 ms
1 kHz	1 kHz	1 kHz
IP67/IP69K	IP67/IP69K	IP67/IP69K
–20...+60 °C	–20...+60 °C	–20...+60 °C
5000 Lux	5000 Lux	5000 Lux
ABS	ABS	ABS
PMMA	PMMA	PMMA
2 m PVC cable, 4 × 0.14 mm²	M8 connector, 4-pin	2 m PVC cable, 4 × 0.14 mm²

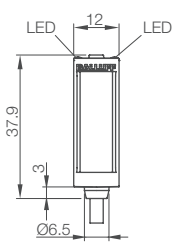












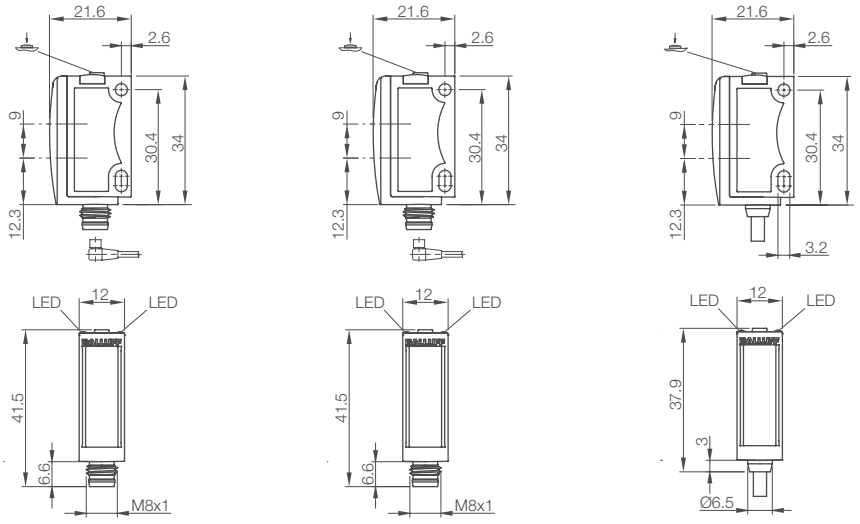
Laserklasse 1

Type		Retroreflective sensor	Retroreflective sensor	Retroreflective sensor
Detection range		**0...4 m**	**0...4 m**	**0...4 m**
PNP, NO/NC		**BOS01MN**	**BOS01M4**	**BOS01M6**
PNP	Receiver			
	Emitter			
Supply voltage U_S		10...30 V DC	10...30 V DC	10...30 V DC
Output current		100 mA	100 mA	100 mA
No-load supply current I_0 max.		≤ 30 mA	≤ 30 mA	≤ 30 mA
Switching type		Light/dark	Light/dark	Light/dark
Polarity reversal protected/ short-circuit protected		Yes/yes	Yes/yes	Yes/yes
Settings		Teach-in	Teach-in	Teach-in
Emitter, light type		Laser, red light, autocollimation	Laser, red light, autocollimation	Laser, red light, autocollimation
Laser class		1	1	1
Light spot diameter		Ø 2 mm at 2.5 m	2 × 4 mm at 2 m	Ø 1 mm at focal point
Power-on indicator		Green LED	Green LED	Green LED
Output function indicator		Yellow LED	Yellow LED	Yellow LED
Response time		0.5 ms	0.5 ms	0.5 ms
Switching frequency f		1 kHz	1 kHz	1 kHz
Degree of protection per IEC 60529/DIN 40050		IP67/IP69K	IP67/IP69K	IP67/IP69K
Ambient temperature T_a		–20...+60 °C	–20...+60 °C	–20...+60 °C
Permissible ambient light		5000 Lux	5000 Lux	5000 Lux
Material	Housing	ABS	ABS	ABS
	Optical surface	PMMA	PMMA	PMMA
Connection		M8 connector, 3-pin	M8 connector, 4-pin	2 m PVC cable, 4 × 0.14 mm²

Reference object: white, 90 % reflection, 200 × 200 mm.

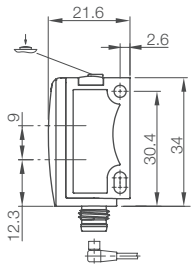
Reference reflector: BOS R-22

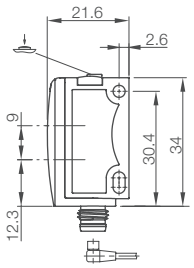
Other variants on our website or on request

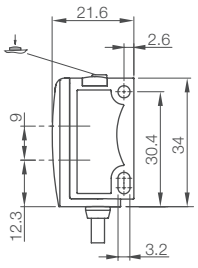


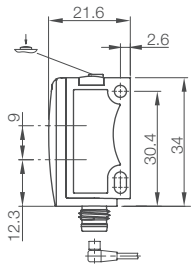
Photoelectric Standard Sensors
BOS 6K and BKT 6K
Laser and contrast

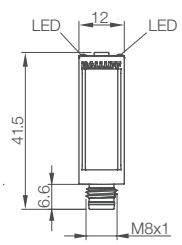
Through-beam sensor	Through-beam sensor	Through-beam sensor	Contrast sensor
0...18 m	**0...18 m**	**0...18 m**	**1...250 mm**
			BKT0010
BOS01LU	**BOS01LW**	**BOS01LZ**	
BOS01M1	**BOS01M2**	**BOS01M3**	
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
100 mA	100 mA	100 mA	100 mA
≤ 30 mA	≤ 30 mA	≤ 30 mA	≤ 25 mA
Light/dark	Light/dark	Light/dark	Light/dark switching (selectable)
Yes/yes	Yes/yes	Yes/yes	Yes/yes
Teach-in	Teach-in	Teach-in	Teach-in
Laser, red light	Laser, red light	LED, red light	Laser, red light
1	1	1	1
14 × 14 mm at 20 m	13 × 13 mm at 18 m	14 × 14 mm at 20 m	0.7 × 0.7 mm at 250 mm
Green LED	Green LED	Green LED	Green LED
Yellow LED	Yellow LED	Yellow LED	Yellow LED
0.5 ms	0.5 ms	0.5 ms	0.5 ms
1 kHz	1 kHz	1 kHz	1 kHz
IP67/IP69K	IP67/IP69K	IP67/IP69K	IP67/IP69K
–20...+60 °C	–20...+60 °C	–20...+60 °C	–20...+60 °C
5000 Lux	5000 Lux	5000 Lux	5000 Lux
ABS	ABS	ABS	Impact-resistant ABS
PMMA	PMMA	PMMA	PMMA
M8 connector, 3-pin	M8 connector, 4-pin	2 m PVC cable, 4 × 0.14 mm²	M8 connector, 4-pin

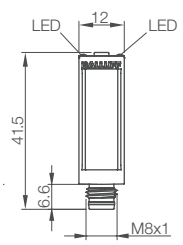


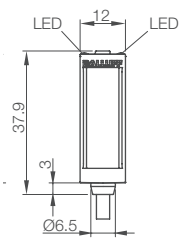


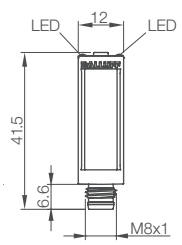












BOS 23K

IO-Link

Designed for industry

The product characteristics of our BOS 23K photoelectric sensors have proven themselves many times over. They feature long range, high switching accuracy and a sensor design tailored to industry. With IO-Link, these sensors can be configured even easier. The sensor process data includes switching signals and the actual remission values. After a sensor is replaced, all the settings can be easily sent from the master to the new sensor. This saves time and increases equipment availability.

Benefits

- Simple parameterizing via IO-Link
- Decentralized data storage in the master
- Unambiguous sensor identification
- Simplified installation

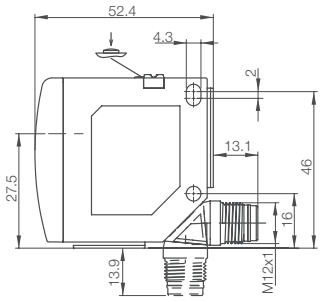
Type		
Detection range		
PNP, NO/NC selectable		
PNP, receiver		
PNP, emitter		
Supply voltage U_S		
Output current		
No-load supply current I_0 max.		
Polarity reversal protected/short-circuit protected		
Settings		
Emitter, light type		
Wavelength		
Power-on indicator		
Output function indicator		
Stability indicator		
Switching frequency f		
Degree of protection per IEC 60529/DIN 40050		
Ambient temperature T_a		
Material	Housing	
	Optical surface	
Connection		

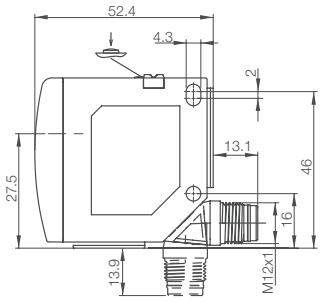
Reference object: white, 90 % reflection, 200 × 200 mm
Recommended reflector: BAM00UK

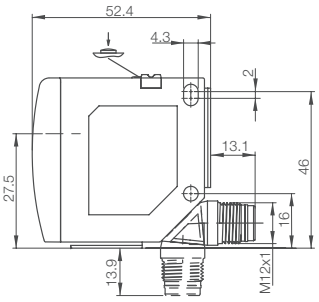
Other variants on our website or on request

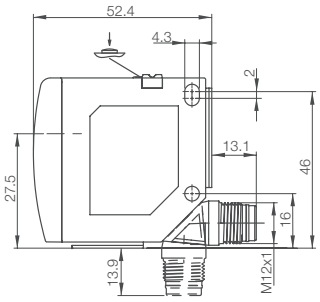
IO-Link options available on our website

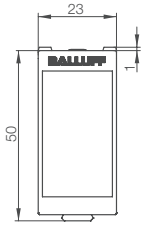
Diffuse sensor with background suppression	Diffuse sensor (energetic)	Retroreflective sensor	Through-beam sensor
3...1200 mm	**5...2000 mm**	**0.3...12 m**	**0...20 m**
BOS017A	**BOS0171**	**BOS016T**	
			BOS016J
			BOS01UT
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
100 mA	100 mA	100 mA	100 mA
≤ 30 mA	≤ 30 mA	≤ 30 mA	≤ 30 mA
Yes/yes	Yes/yes	Yes/yes	Yes/yes
Potentiometer/IO-Link	Teach-in button/IO-Link	Teach-in button/IO-Link	Teach-in button/IO-Link
LED, red light	LED, red light	LED, red light	LED, red light
640 nm	640 nm	640 nm	640 nm
Green LED	Green LED	Green LED	Green LED
Yellow LED	Yellow LED	Yellow LED	Yellow LED
Flashing yellow LED	Flashing yellow LED	Flashing yellow LED	Flashing yellow LED
600 Hz	600 Hz	600 Hz	500 Hz
IP67/IP69K	IP67/IP69K	IP67/IP69K	IP67/IP69K
–20...+60 °C	–20...+60 °C	–20...+60 °C	–20...+60 °C
PC-ABS	PC-ABS	PC-ABS	PC-ABS
PMMA	PMMA	PMMA	PMMA
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin

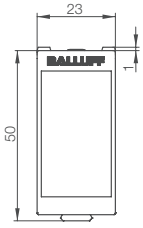


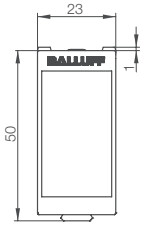


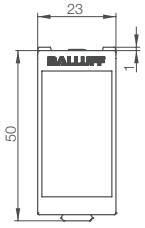










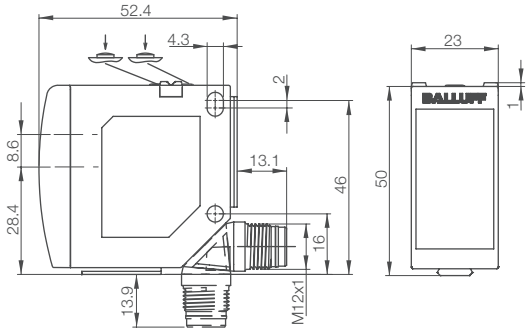


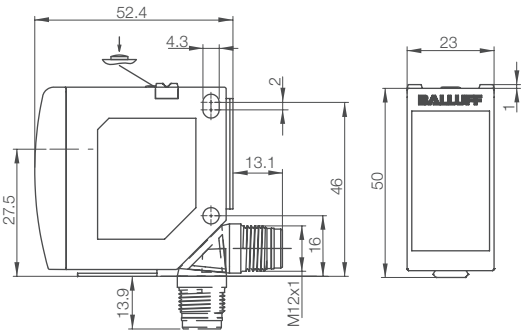
Simple, reliable detection of transparent objects

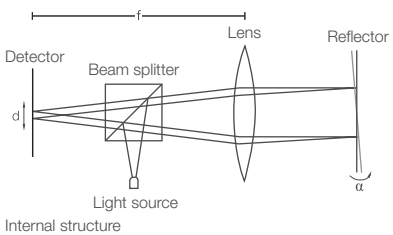
Type		
Detection range		
2 × PNP, complementary		
Supply voltage U_S		
Output current		
No-load supply current I_0 max.		
Switching type		
Polarity reversal protected/short-circuit protected		
Settings		
Emitter, light type		
Wavelength		
Laser class		
Power-on indicator		
Output function indicator		
Stability indicator		
Response time		
Switching frequency f		
Degree of protection per IEC 60529/DIN 40050		
Ambient temperature T_a		
Permissible ambient light		
Material	Housing	
	Optical surface	
Connection		

Reference reflector: BOS R-22

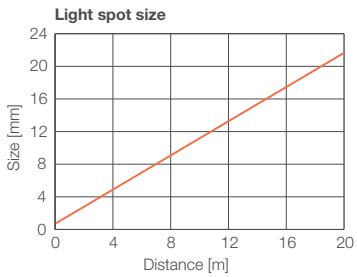
Diffuse sensor with background suppression	Retroreflective sensor
0...5 m	**0.1...20 m**
BOS01UW	**BOS01NC**
18...30 V DC	10...30 V DC
100 mA	100 mA
≤ 30 mA	≤ 30 mA
Light/dark	Light/dark
Yes/yes	Yes/yes
Teach-in button/control input	Teach-in button/control input
Laser, red light	Laser, red light, autocollimation
655 nm	655 nm
1	1
Green LED	Green LED
Yellow LED	Yellow LED
	Flashing yellow LED
1 ms	0.2 ms
500 Hz	2.5 kHz
IP67/IP69K	IP67/IP69K
–40...+60 °C	–20...+60 °C
EN 60947-5-2	EN 60947-5-2
PC-ABS	PC-ABS
PMMA	PMMA
M12 connector, 4-pin	M12 connector, 4-pin







Internal structure



Precise and reliable measurement
Factory automation requires reliable and precise measurements of objects in many various applications. Robots often use distance sensors as a check to ensure they are in position when gripping a part for welding or other processes. Paper, roofing, or other continuous processes use distance sensors for loop control so that process can continue running at the proper tension or provide run time during core changes.

Balluff's newest distance sensor utilizes time of flight technology that allows for detecting objects at longer distances with various surface characteristics. The BOD 23 sensor incorporates flexible outputs and pushbutton setup for easy integration and configuration. In addition, the IP69K rating tolerates wash-down applications in the food and beverage industry.

Type	
Detection range	
Switching output	
Resolution	
Ambient Temperature	
Protection	

Visit www.balluff.com for technical information.

Features
- Time-of-Flight technology
- Analog output with two teach points
- Laser
- 5m range
- Pushbutton teach

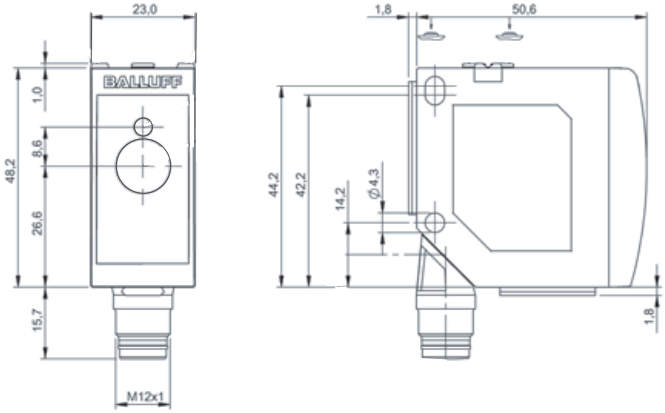
Benefits
- Class 1 laser, no danger to operators
- Reliable position detection independent of material or surface characteristics
- Flexible integration with configurable outputs and easy configuration with pushbuttons
- Precise and dependable measurement with high repeatability and good resolution

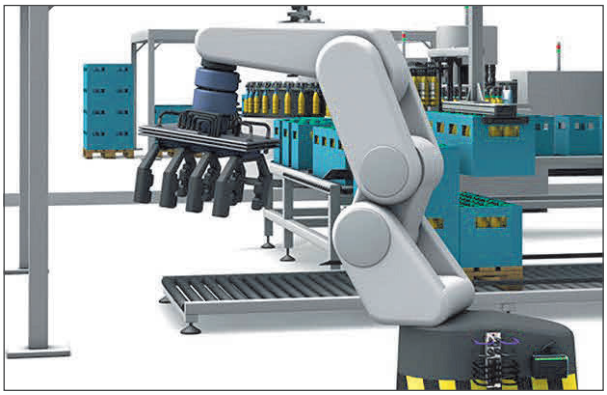
Advantages
- < 5mm resolution
- Class 1 Laser
- Scalable voltage/ current analog output
- PNP/NPN, NO/NC discrete output with window function
- IP69K / ECOLAB certified

Photoelectric Distance Sensors
BOD 23K Laser

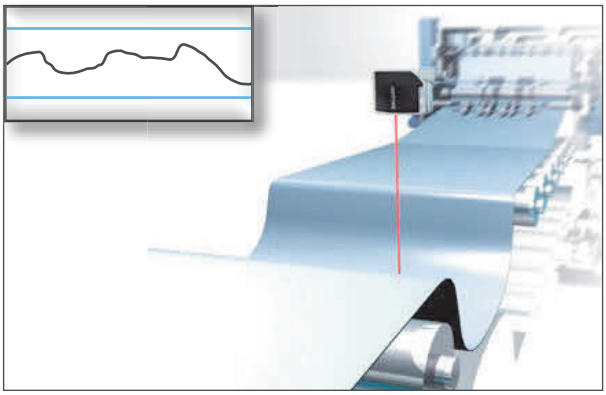
IO-Link

Distance sensor	Distance sensor	Distance sensor
0...5 m	**0...5 m**	**0...5 m**
BOD001N	**BOD001P**	**BOD0020**
Yes	Yes	Yes
< 5mm	< 5mm	< 5mm
-40...+60°C	-40...+60°C	-40...+60°C
IP67/IP69K	IP67/IP69K	IP67/IP69K





Applications
Robot positioning, Stack height measurement, Loop control, Contour verification, Product height confirmation, Positioning, Error proofing



Industries
Automotive, Packaging, Manufacturing, Food & Beverage, Pharmaceutical, Plastics & Rubber, Wood & Timber

Stainless Steel Through-beam Fork Sensors

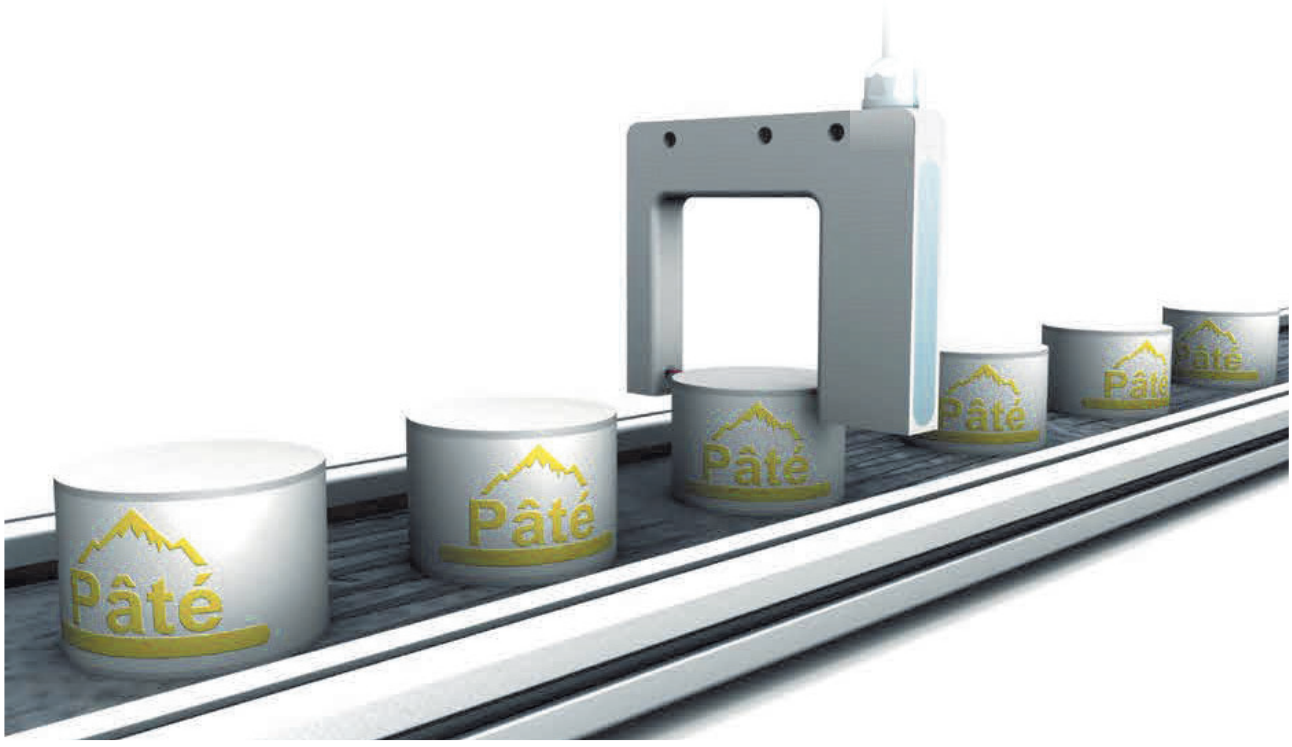
Tough performers
The new BGL series fork sensors are ideal for challenging environments. Aggressive media such as cleaning agents or coolant/lubricants typically have no effect on them. Their stainless steel housing provides full protection. That makes these sensors ideal for many applications in various sectors – especially the foods industry and for metalworking processes.

Benefits
- Fully enclosed stainless steel housing with high protection rating
- With visible red light or strong infrared light
- Compact housing – easy to install
- Washdown design for ease of cleaning

CE ECOLAB

Type		
Fork opening		
Fork depth		
2 × PNP, NO/NC		
Supply voltage U_S		
Output current		
No-load supply current I_0 max.		
Switching type		
Polarity reversal protected/short-circuit protected		
Emitter, light type		
Wavelength		
Power-on indicator		
Switching state indicator		
Switching frequency f		
Degree of protection per IEC 60529		
Ambient temperature T_a		
Permissible ambient light		
Material	Housing	
	Optical surface	
Connection		

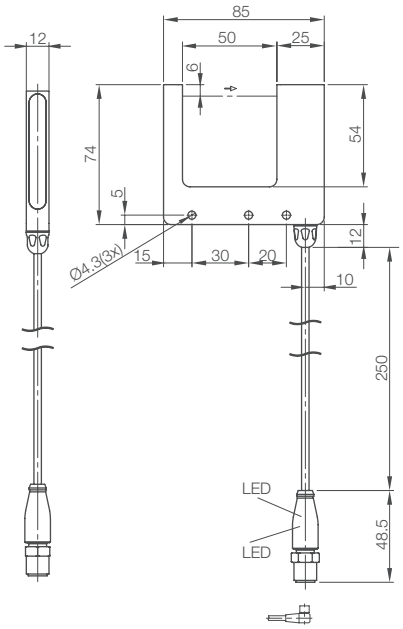
Other variants on our website or on request

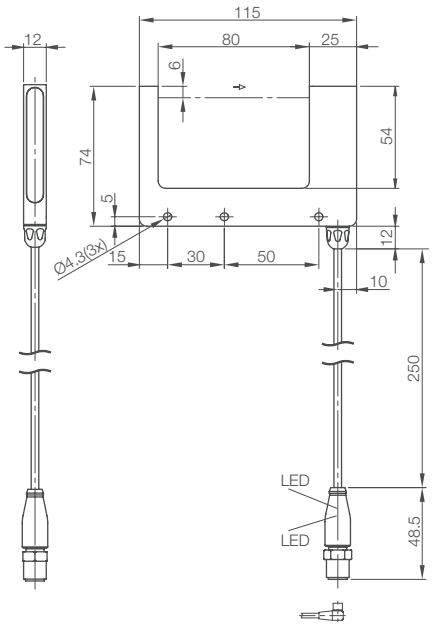


Filling jam containers




Stainless steel fork sensor	Stainless steel fork sensor	Stainless steel fork sensor	Stainless steel fork sensor
50 mm	**50 mm**	**80 mm**	**80 mm**
54 mm	**54 mm**	**54 mm**	**54 mm**
BGL004L	**BGL004M**	**BGL004N**	**BGL004P**
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
200 mA	200 mA	200 mA	200 mA
35 mA	35 mA	35 mA	35 mA
Light/dark switching	Light/dark switching	Light/dark switching	Light/dark switching
Yes/yes	Yes/yes	Yes/yes	Yes/yes
LED, red light	LED, infrared	LED, red light	LED, infrared
660 nm	850 nm	660 nm	850 nm
Green LED in connector	Green LED in connector	Green LED in connector	Green LED in connector
Yellow LED in connector	Yellow LED in connector	Yellow LED in connector	Yellow LED in connector
3 kHz	2 kHz	3 kHz	2 kHz
IP67/IP69K	IP67/IP69K	IP67/IP69K	IP67/IP69K
–10...+60 °C	–10...+60 °C	–10...+60 °C	–10...+60 °C
5000 Lux	5000 Lux	5000 Lux	5000 Lux
1.4404 stainless steel	1.4404 stainless steel	1.4404 stainless steel	1.4404 stainless steel
PMMA	PMMA	PMMA	PMMA
0.25 m PUR cable with M12 connector, 4-pin	0.25 m PUR cable with M12 connector, 4-pin	0.25 m PUR cable with M12 connector, 4-pin	0.25 m PUR cable with M12 connector, 4-pin





Special Accessories for Photoelectric Sensors
Reflectors for washdown applications

ECOLAB

Laser

Size	**Reflector 60×40 mm**	**Reflector 20×32 mm**
Fasteners	Two M3 screws	Two M3 screws
	BAM01HE	**BAM023T**
Material	Solidchem	Solidchem
Cube size	4 mm	1.1 mm
Special features	Chemical-resistant	Chemical-resistant
Temperature range	–20...+140°C	–20...+140°C