Capacitive Sensors

Capacitive sensors for object detection

Balluff capacitive sensors are used for object and level detection. They measure all materials – even non-conductive ones such as liquids, granules and powders – in direct contact or through a container wall. Difficult environments such as high temperature and pressure, stainless steel and Teflon housing or a wide supply voltage are not a problem for the capacitive sensors. These sensors are available in different designs, including particularly small versions and adhesive sensors.

The SmartLevel is the ideal level sensor for water based conductive media. This is because it compensates for humidity, foam and deposits of any kind, even through thick glass and plastic walls.

Capacitive Sensors
Contents

Basic information and definitions can be found on **page 952.**

Capacitive Sensors
Performance spectrum

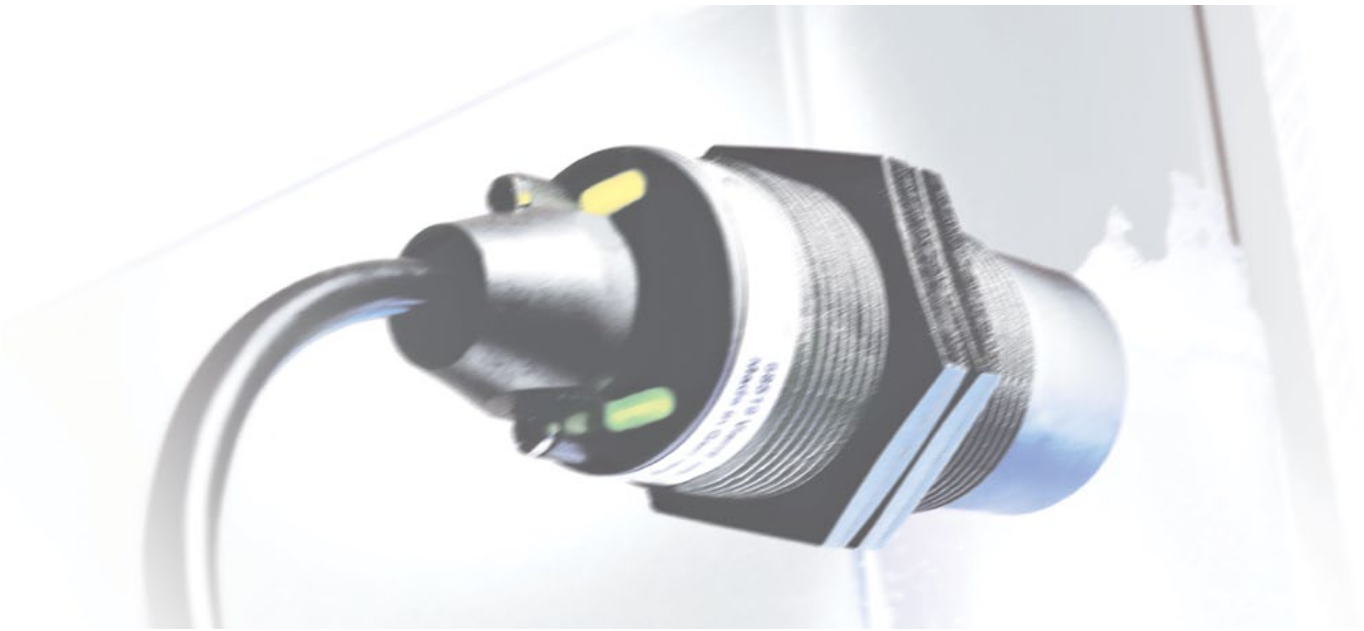
It would be hard to imagine not having capacitive sensors in industrial automation, because they bring reliability to object and level detection. Balluff capacitive sensors show what they can do in situations where other capacitive sensors reach their limit.

With extreme precision, BCS sensors check:
- Stack height
- Level
- Presence
- Volume

In doing so, they are not affected by dust, reflection or object properties and color. And they also measure objects with absolute reliability through glass and plastic walls, without being impeded by external factors.

Balluff capacitive sensors provide more solutions to solve challenging applications.

The ideal level sensor, SmartLevel not only sees through thicker glass and plastic walls, it also compensates for moisture, foam and deposits. SmartLevel is able to provide solutions in applications that would have been impossible before.

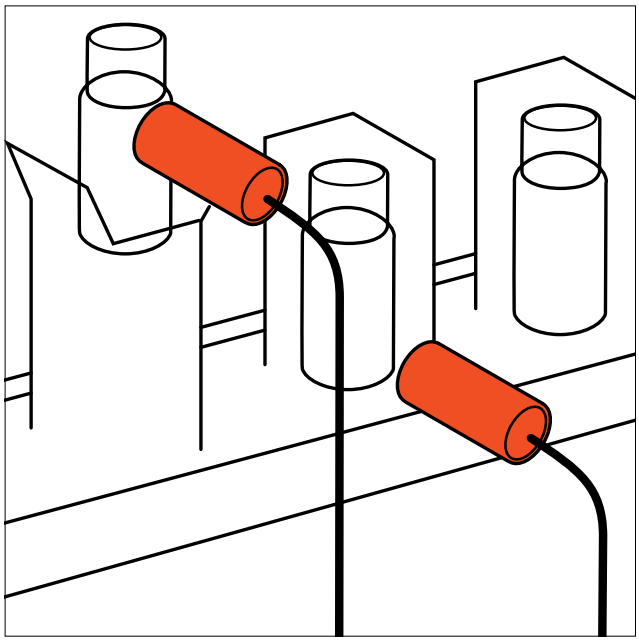


SmartLevel sensors take off in the Airbus A380
Airbus is equipping the rest rooms in its 4-engine large-body A380 with a mixer tap. The heart of this exclusive system in the elegant Airbus design are compact SmartLevel capacitive sensors from Balluff. These enable passengers to conveniently select the desired water temperatures with the assistance of an LED indicator. The show-stopper: sensing errors are impossible, since SmartLevel sensors ignore clinging dirt, liquid films and soap foam. Touching the faucet triggers a switching operation, even if a wet paper towel covers it.

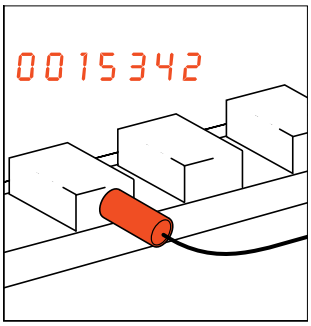
SMART*LEVEL*

Capacitive sensors measure metallic or non-metallic objects, levels of granular materials, powder, viscous or liquid media. The sensor can be used in direct contact with the object to be measured, or as a contactless sensors. This is because they work extremely reliable, even through container walls.
Whether contacting or contactless, the capacitive sensors from Balluff are suited for difficult applications.

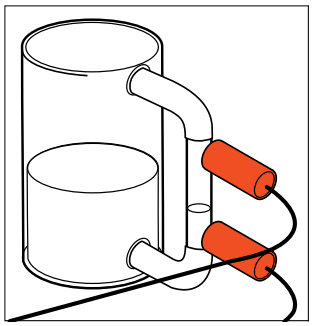
Packaging lines: Checking packaging and volume

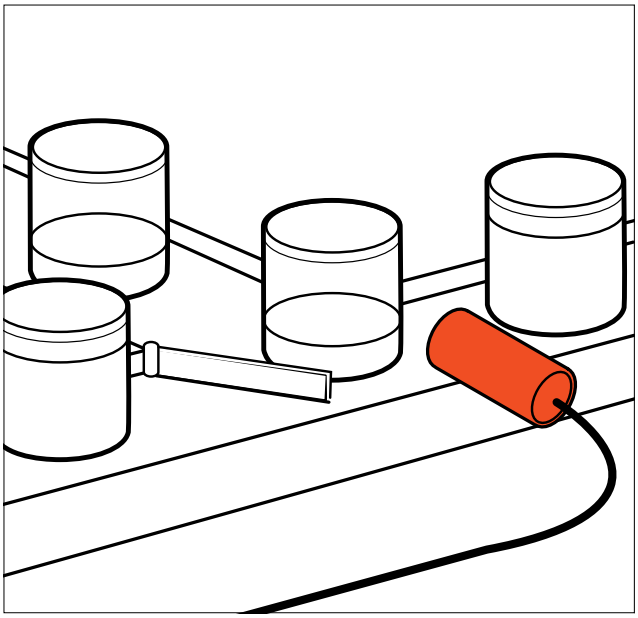


Transfer lines: Determining number of pieces



Water tanks: Regulating inflow and controlling pumps



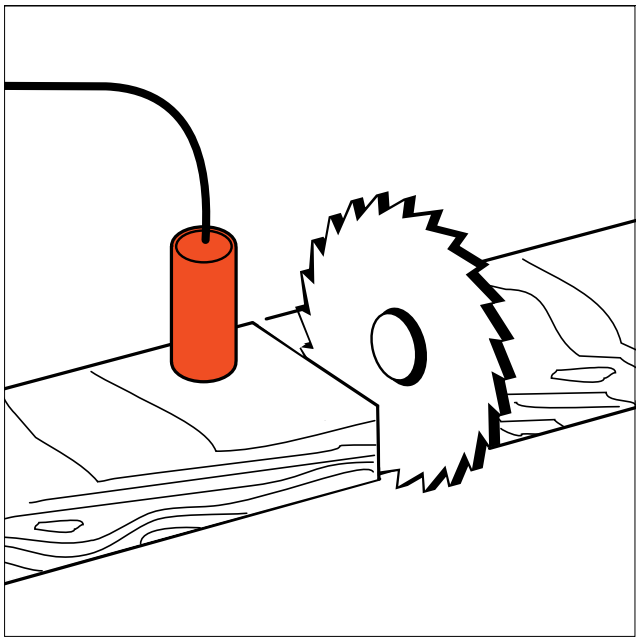


Bottling plants: Checking fill level and controlling the ejector station

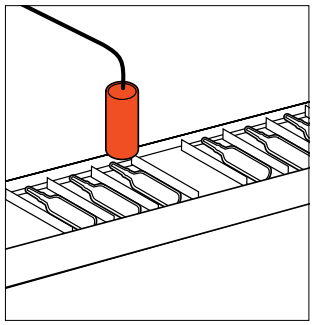
Industries

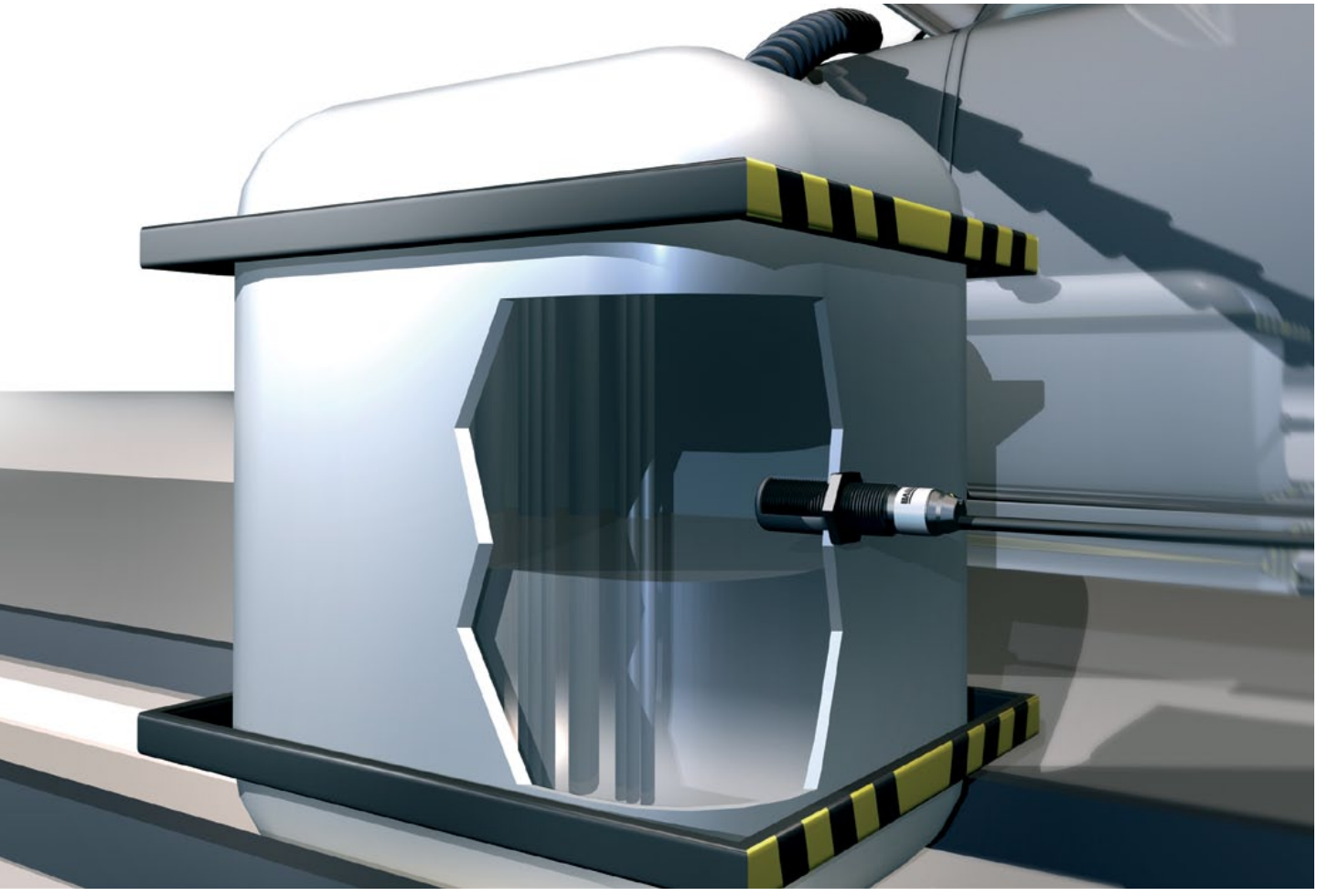
- Handling and automation
- Specialty machine construction
- Automotive industry
- Semiconductor industry
- Electronics industry (circuit boards, CD and DVD manufacturing, etc.)
- Food industry
- Bottling and packaging
- Chemical industry
- Industrial cleaning technology
- Pharmaceuticals and medical technology
- Plastic and rubber industry
- Timber and furniture industry
- Paper and printing industry
- Energy generation

Wood processing: Measuring wood and thickness



Packaging systems: Checking completeness





Product overview






	Ø 4 mm flush	M5×0.5 flush	Ø 6.5 mm flush	Ø 6.5 mm non-flush	M8×1 flush	M8×1 non-flush	
Power supply							
DC	■	■	■	■	■	■	
AC/DC							
Housing materials							
Stainless steel	■	■	■	■	■	■	
Plastic							
PTFE (Teflon®)							
Connection							
Connector			■	■	■	■	
Cable with connector	■	■	■	■	■	■	
Cable			■	■	■	■	
Special properties							
Global series							
High temperature rated							
Function diagnostics							
SmartLevel							
Compensate for moisture, foam and deposits							
Penetrate glass or plastic walls over 10 mm thick							
Detection of aqueous to highly conductive media							
Virtually no adjustment or cleaning required							
Areas of application							
Object detection	Page 781	Page 781	Page 781	Page 782	Page 782	Page 782	
Direct sensing of bulk product and powdery media							
Sensing bulk product and powdered media through a container wall up to approx. 4mm							
Direct sensing of non-conductive liquid and paste-like media							
Sensing non-conductive liquids and paste-like media through a container wall up to approx. 4mm							
Direct sensing of conductive liquids (SmartLevel technology)							

Capacitive Sensors
Product overview








Ø 10 mm flush	Ø 10 mm non-flush	M12×1 flush	M12×1 non-flush	M18×1 flush	M18×1 non-flush	Ø 22 mm flush	Ø 30 mm flush
■	■	■	■	■	■	■	■
					■		
■	■	■	■	■	■	■	■
		■	■	■	■		
			■		■		
		■	■	■	■		
■	■	■	■				
■	■	■	■	■	■	■	■
Page 783	Page 783	Page 783 + 789...791		Page 791		Page 792	Page 792
			Page 803...805		Page 805...807		
				Page 791		Page 792	Page 792
			Page 803...805		Page 805...807		
				Page 791		Page 792	Page 792
					Page 815		

Page 790...791	Page 803...805	Page 791	Page 805...807 Page 829		
			Page 815		
			Page 815		
			Page 815		

Product overview






	M30×1.5 flush	M30×1.5 non-flush	Ø 34 mm flush	Disk designs Ø 18...30 mm	Disc shapes Ø 50 mm	Micro-Box 16×34×8 mm	
Power supply							
DC	■	■	■	■	■	■	
AC/DC		■					
Housing materials							
Stainless steel	■	■		■			
Plastic	■	■	■		■	■	
PTFE (Teflon®)		■			■		
Connection							
Connectors	■	■	■		■		
Cable with connector				■		■	
Cable	■	■	■	■	■	■	
Terminal housing							
Special properties							
Global series	Page 792...793	Page 807...808	Page 793				
High temperature rated		Page 829					
Pressure rated							
Stick-on, flexible							
Degree of protection IP 68							
SmartLevel							
Compensate for moisture, foam and deposits		Page 816			Page 823	Page 824	
Penetrate glass or plastic walls over 10 mm thick		Page 816			Page 823	Page 824 (up to 8 mm)	
Detection of aqueous to highly conductive media		Page 816			Page 823	Page 824	
Virtually no adjustment or cleaning required		Page 816			Page 823	Page 824	
Areas of application							
Object detection	Page 792...793		Page 793	Page 785+795	Page 796	Page 797	
Direct sensing of bulk product and powder media	Page 792...793 (flush installation)	Page 807...808	Page 793 (flush installation)	Page 785+795 (flush installation)	Page 796 (flush installation)		
Sensing bulk product and powdered media through a container wall up to approx. 4 mm	Page 792...793		Page 793	Page 785+795	Page 796	Page 797	
Direct sensing of non-conductive liquid and paste-like media		Page 807...808					
Sensing non-conductive liquids and paste-like media through a container wall up to approx. 4mm	Page 792...793		Page 793	Page 785+795	Page 796	Page 797	
Direct sensing of conductive liquids (SmartLevel technology)		Page 816					
Detecting conductive liquids through a container wall even over 10 mm thick (SmartLevel technology)		Page 816				Page 824 (up to 8 mm)	

Capacitive Sensors
Product overview





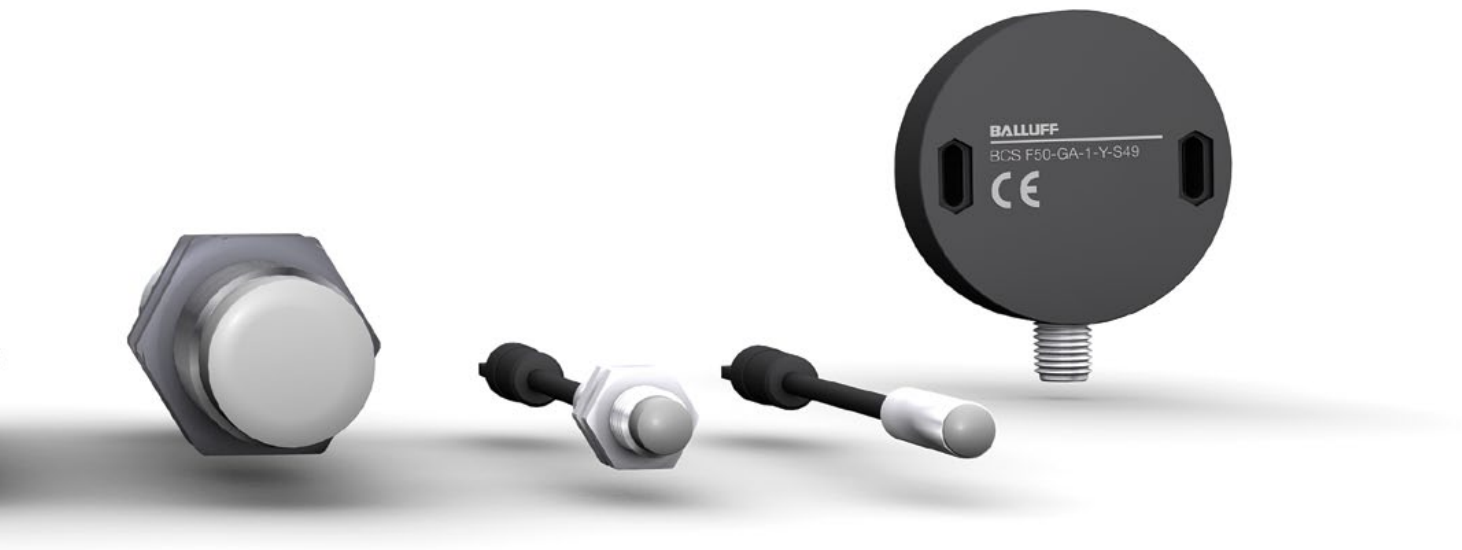

40×40×10 mm	90×16×4 mm	Ø 7×52 mm	Micro-Level M12×1, G 1/4", NPT 1/4"	M18×1, R 3/8", NPTF 3/8"	M18×1, R 3/8", NPTF 3/8"
■	■	■	■	■	■
■	■		■		
		■		■	■
			■		■
■	■				
■		■	■		
				■	
Page 799					
		Page 815	Page 818...821 Page 810...812 Page 818...821	Page 813 Page 813 (10 bar)	Page 829 Page 829 (6 bar)
	Page 831				
				Page 813	
Page 825		Page 815	Page 818...821		
Page 825		Page 815			
Page 825		Page 815	Page 818...821		
Page 825		Page 815	Page 818...821		
Page 799	Page 831				
			Page 810...812	Page 813	Page 829
Page 799	Page 831				
			Page 810...812	Page 813	Page 829
Page 799	Page 831				
		Page 815	Page 810...812		
Page 825					

Capacitive Sensors

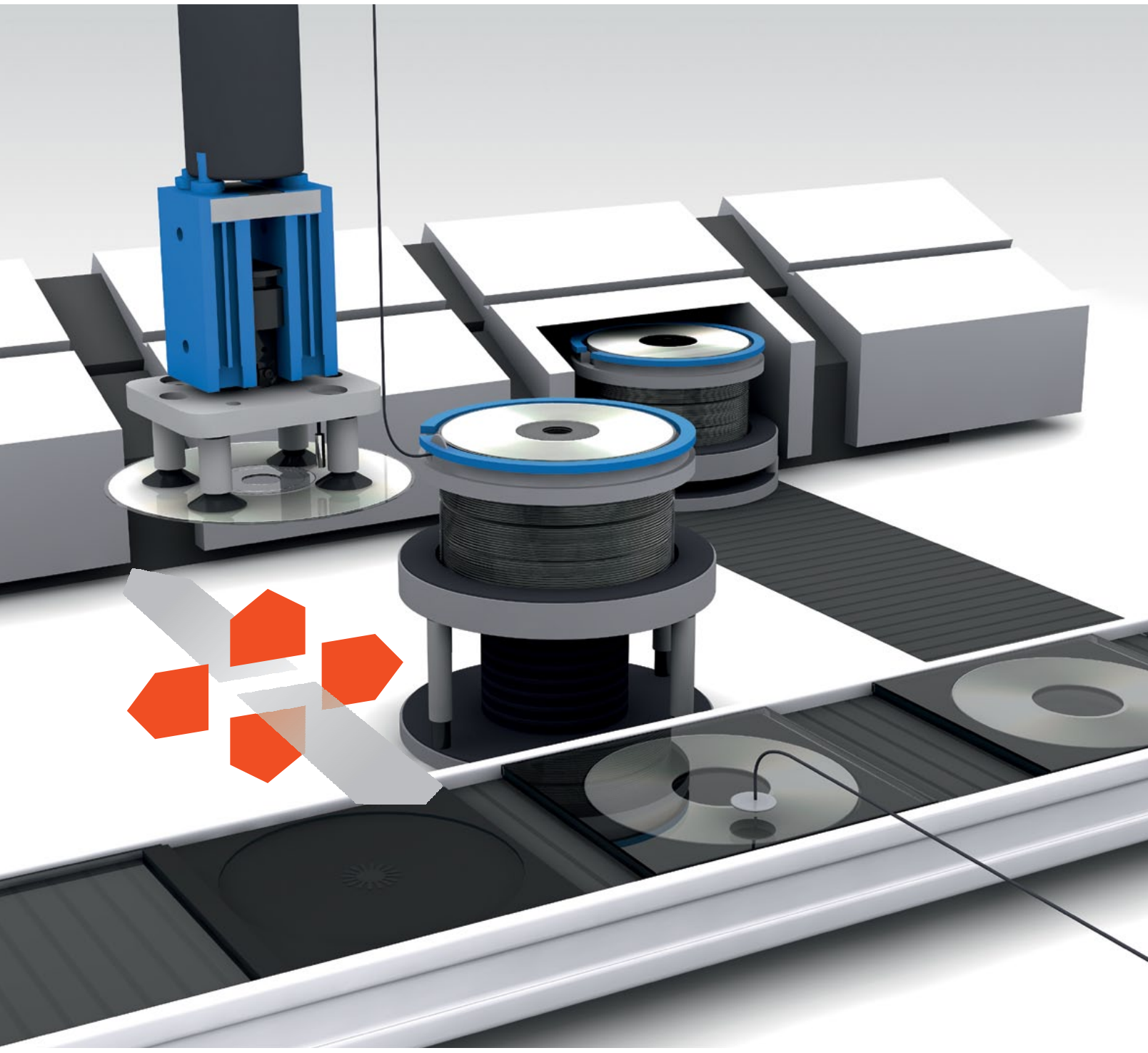
Capacitive sensors for object detection

Industry standard capacitive sensors are M12 to M30 models. For small parts detection or installation in tight mounting spaces, however, smaller form factors are needed. The Balluff product line therefore offers a large selection of sizes and form factors. The small capacitive sensors can be calibrated remotely, simply using a separate sensor amplifier. And their rugged stainless steel housing ensures reliability even under challenging conditions.
Capacitive sensors for object detection from Balluff employ a straight-line electrical field. These sensors detect solid bodies (e.g. wafers, PCBs, cartons, paper stacks, bottles, plastic blocks and plates) and sense liquids through walls made of glass and plastic (thickness max. 4 mm). Advantage: The straight-line electrical field also enables media having a low dielectric constant to be detected.

Capacitive Sensors for Object Detection
Contents



CD/DVD production: Checking stack height
During CD/DVD production, Capacitive sensors monitor the stacks of CDs and DVDs on a spindle. As soon as the maximum stack height is reached, the sensor sends a message that allows the finished stack to be transported further to end packaging and the next empty spindle to be prepared. And it does this with absolute reliability, without allowing itself to be influenced by the reflective surface.

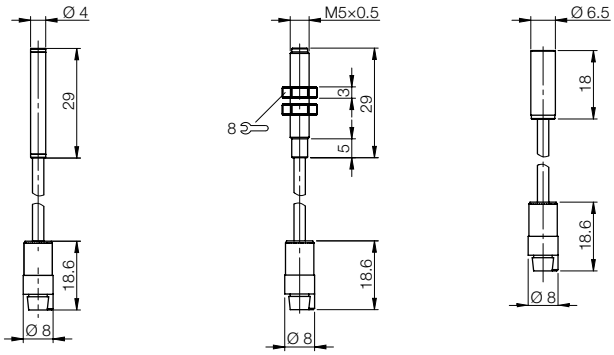


Capacitive Sensors for Object Detection

Mini-sensors, cylinder designs, Ø 4 mm, M5×0.5, Ø 6.5 mm

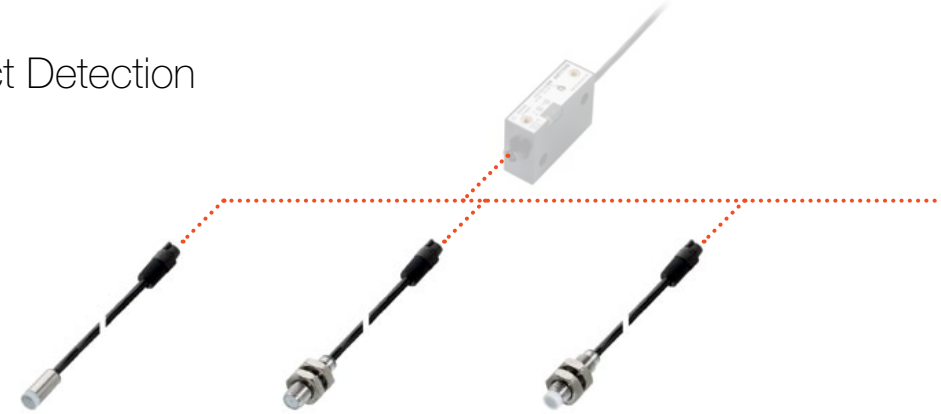
Size		**Ø 4 mm**	**M5×0.5**	**Ø 6.5 mm**
Installation type		Flush	Flush	Flush
Rated switching distance s_n		**0.1…1 mm**	**0.1…1 mm**	**0.1…1.5 mm**
With sensor amplifier	**Ordering code**	**BCS0010**	**BCS0011**	**BCS0012**
	Part number	BCS G04T4D-XXS10C-EP02-GZ01-002	BCS M05T4C-XXS10C-EP02-GZ01-002	BCS G06T4B-XXS15C-EP02-GZ01-002
Supply voltage U_B		4…8 V DC	4…8 V DC	4…8 V DC
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC
Ambient temperature T_a		–30…+80 °C	–30…+80 °C	–30…+80 °C
Switching frequency f		100 Hz	100 Hz	100 Hz
Degree of protection as per IEC 60529		IP 67	IP 67	IP 67
Material	Housing	Stainless steel	Stainless steel	Stainless steel
	Sensing surface	PTFE	PTFE	PTFE
	Cover	POM	POM	POM
Connection		2 m PUR cable, 3×0.14 mm²	2 m PUR cable, 3×0.14 mm²	2 m PUR cable, 3×0.14 mm²

Sensor amplifiers for capacitive mini-sensors can be found on page 841.



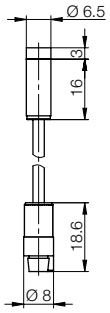
Capacitive Sensors for Object Detection

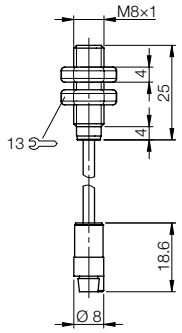
Mini-sensors, cylinder designs, Ø 6.5 mm, M8×1

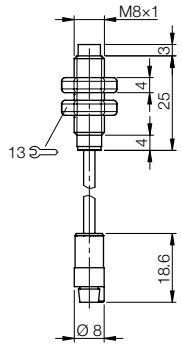


Size		**Ø 6.5 mm**	**M8 × 1**	**M8 × 1**
Installation type		Not flush	Flush	Not flush
Rated switching distance s_n		**0.1…3 mm**	**0.1…1.5 mm**	**0.1…3 mm**
With sensor amplifier	**Ordering code**	**BCS0013**	**BCS0014**	**BCS0015**
	Part number	BCS G06T4B-XXS30G-EP02-GZ01-002	BCS M08T4C-XXS15C-EP02-GZ01-002	BCS M08T4C1-XXS30G-EP02-GZ01-002
Supply voltage U_B		4…8 V DC	4…8 V DC	4…8 V DC
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC
Ambient temperature T_a		–30…+80 °C	–30…+80 °C	–30…+80 °C
Switching frequency f		100 Hz	100 Hz	100 Hz
Degree of protection as per IEC 60529		IP 67	IP 67	IP 67
Material	Housing	Stainless steel	Stainless steel	Stainless steel
	Sensing surface	PTFE	PTFE	PTFE
	Cover	POM	POM	POM
Connection		2 m PUR cable, 3×0.14 mm²	2 m PUR cable, 3×0.14 mm²	2 m PUR cable, 3×0.14 mm²

Sensor amplifiers for capacitive mini-sensors can be found on page 841.



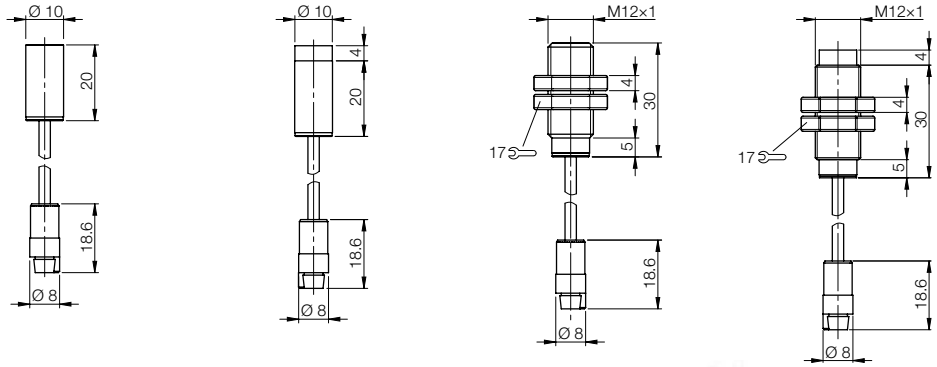




Capacitive Sensors for Object Detection

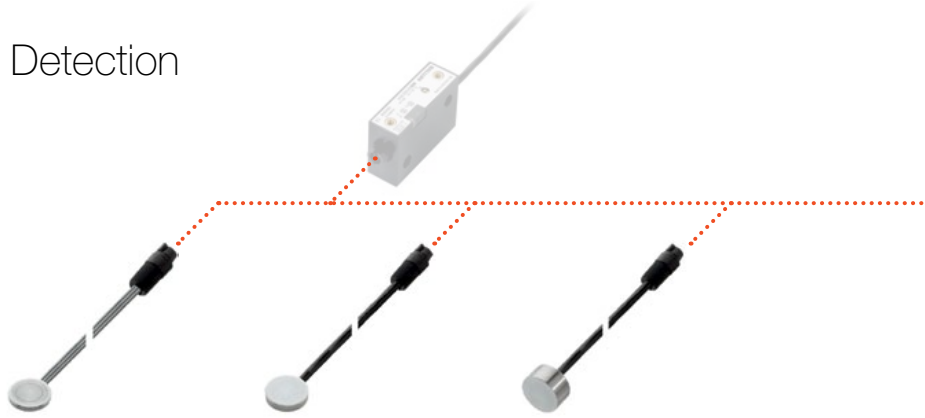
Mini-sensors, cylinder designs, Ø 10 mm, M12×1

	Ø 10 mm	**Ø 10 mm**	**M12×1**	**M12×1**
	Flush	Not flush	Flush	Not flush
	0.1…4 mm	**1…8 mm**	**0.1…4 mm**	**1…8 mm**
	BCS0016	**BCS0017**	**BCS0018**	**BCS0019**
	BCS G10T4B-XXS40C-EP02-GZ01-002	BCS G10T4C-XXS80G-EP02-GZ01-002	BCS M12T4D-XXS40C-EP02-GZ01-002	BCS M12T4D1-XXS80G-EP02-GZ01-002
	4…8 V DC	4…8 V DC	4…8 V DC	4…8 V DC
	75 V DC	75 V DC	75 V DC	75 V DC
	–30…+80 °C	–30…+80 °C	–30…+80 °C	–30…+80 °C
	100 Hz	100 Hz	100 Hz	100 Hz
	IP 67	IP 67	IP 67	IP 67
	Stainless steel	Stainless steel	Stainless steel	Stainless steel
	PTFE	PTFE	PTFE	PTFE
	POM	POM	POM	POM
	2 m PUR cable, 3×0.14 mm²	2 m PUR cable, 3×0.14 mm²	2 m PUR cable, 3×0.14 mm²	2 m PUR cable, 3×0.14 mm²



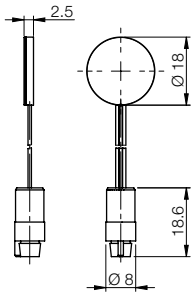
Capacitive Sensors for Object Detection

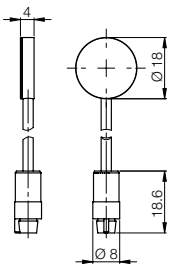
Mini-sensors, disk designs, Ø 18 mm

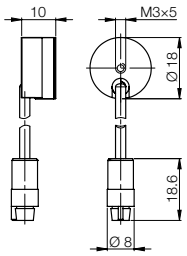


Size		**Ø 18×2.5 mm**	**Ø 18×4 mm**	**Ø 18×10 mm**
Installation type		Flush	Flush	Flush
Rated switching distance s_n		**0.1…3 mm**	**1…5 mm**	**1…5 mm**
With sensor amplifier	**Ordering code**	**BCS001A**	**BCS001C**	**BCS001E**
	Part number	BCS D18T403-XXS30C-EP02-GZ01-002	BCS D18T404-XXS50C-EP02-GZ01-002	BCS D18T407-XXS50C-EP02-GZ01-002
Supply voltage U_B		4…8 V DC	4…8 V DC	4…8 V DC
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC
Ambient temperature T_a		–30…+70 °C	–30…+80 °C	–30…+80 °C
Switching frequency f		100 Hz	100 Hz	100 Hz
Degree of protection as per IEC 60529		IP 66	IP 66	IP 66
Material	Housing	Stainless steel	Stainless steel	Stainless steel
	Sensing surface	PTFE	PTFE	PTFE
Connection		2 m PVC cable, 3×0.09 mm²	2 m PUR cable, 3×0.14 mm²	2 m PUR cable, 3×0.14 mm²

Sensor amplifiers for capacitive mini-sensors can be found on page 841.



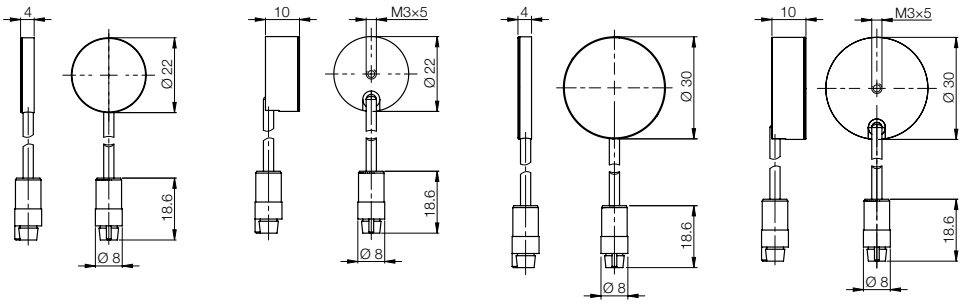




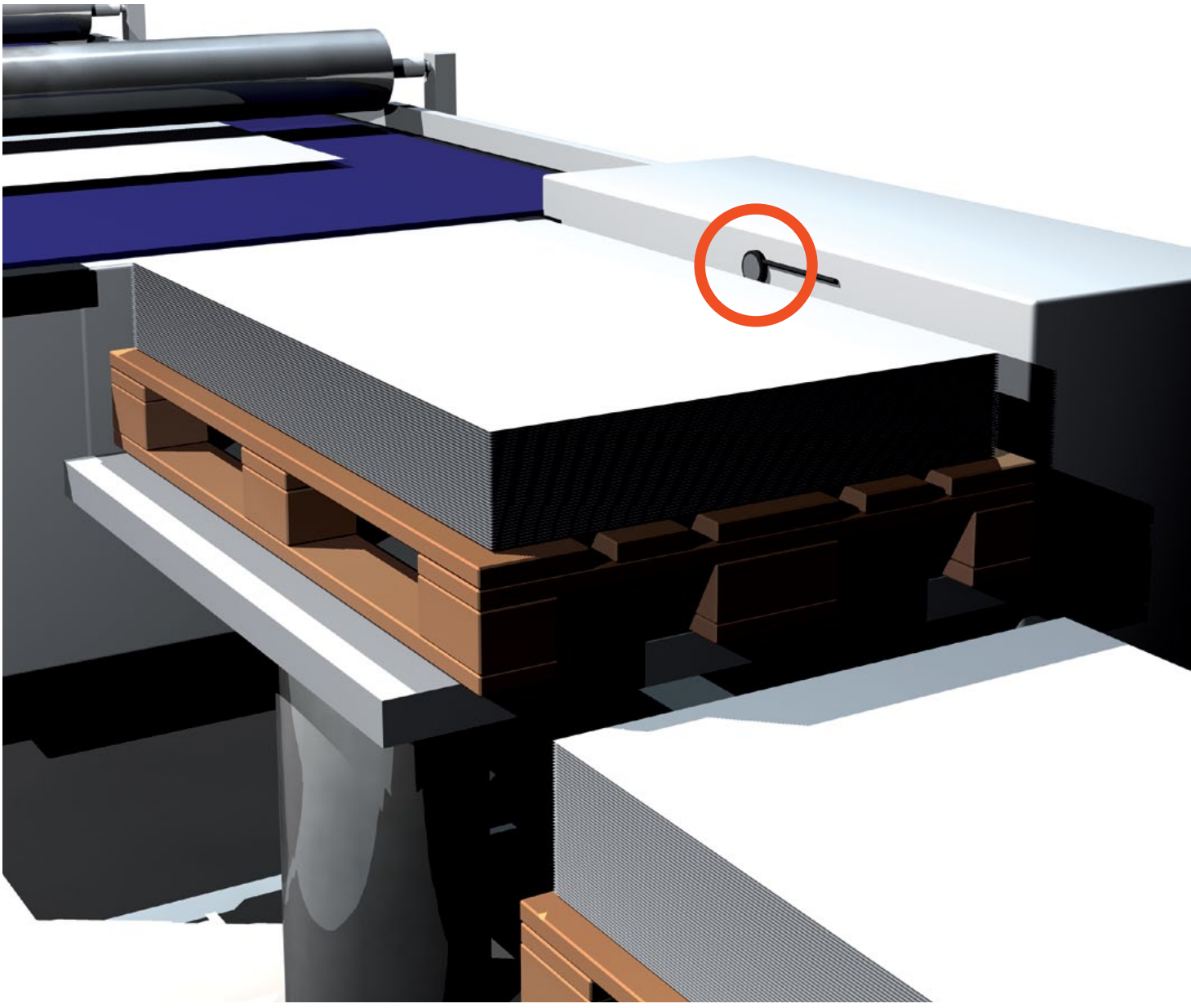
Capacitive Sensors for Object Detection

Mini-sensors, disk designs, Ø 22 mm, Ø 30 mm

	Ø 22×4 mm	Ø 22×10 mm	Ø 30×4 mm	Ø 30×10 mm	
	Flush	Flush	Flush	Flush	
	1…10 mm	**1…10 mm**	**1…15 mm**	**1...15 mm**	
	BCS001F	**BCS001H**	**BCS001J**	**BCS001K**	
	BCS D22T405-XXS10C-EP02-GZ01-002	BCS D22T408-XXS10C-EP02-GZ01-002	BCS D30T406-XXS15C-EP02-GZ01-002	BCS D30T409-XXS15C-EP02-GZ01-002	
	4…8 V DC	4…8 V DC	4...8 V DC	4…8 V DC	
	75 V DC	75 V DC	75 V DC	75 V DC	
	–30…+80 °C	–30…+80 °C	–30…+80 °C	–30…+80 °C	
	100 Hz	100 Hz	100 Hz	100 Hz	
	IP 66	IP 66	IP 66	IP 66	
	Stainless steel	Stainless steel	Stainless steel	Stainless steel	
	PTFE	PTFE	PTFE	PTFE	
	2 m PUR cable, 3×0.14 mm²	2 m PUR cable, 3×0.14 mm²	2 m PUR cable, 3×0.14 mm²	2 m PUR cable, 3×0.14 mm²	



Paper and printing industry:
Stack height control in sheet-fed offset printing
Integrated in printing, folding and bookbinding machines, capacitive sensors not only check stack height, but also provide for perfect stacking of the papers, so that there is as little waste as possible during further processing.
Despite a dirty environment (due to paper dust and anti-set-off spray powder), the sensor works perfectly. Laterally or from above, it measures stack heights even in small increments, and raises and lowers the stack as soon as it recognizes its height.
In the **paper cutting machine**, the capacitive sensor also measures the width of the stack to be cut, so that the cutting pressure of the cutting knife can be set in relation to it. In doing so, it proves to be not only insensitive to dust, but also completely uninfluenced by different colors of paper.



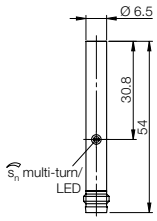
Capacitive Sensors for Object Detection

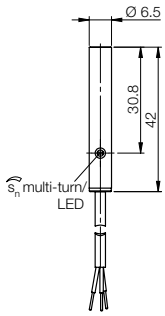
Standard sensors, cylinder designs, DC 3-wire, Ø 6.5 mm

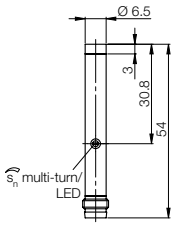
Size		**Ø 6.5 mm**	**Ø 6.5 mm**	**Ø 6.5 mm**
Installation type		Flush	Flush	Not flush
Rated switching distance s_n		**0.1…1.5 mm**	**0.1…1.5 mm**	**0.1…3 mm**
PNP, NO	**Ordering code**	**BCS001R** ②	**BCS001L** ①	**BCS0022** ②
	Part number	BCS G06T4D2-PSM15C-S49G	BCS G06T4E1-PSM15C-EP02	BCS G06T4D2-PSM30G-S49G
PNP, NC	**Ordering code**	**BCS001T** ⑦	**BCS001M** ⑤	**BCS0023** ⑦
	Part number	BCS G06T4D2-POM15C-S49G	BCS G06T4E1-POM15C-EP02	BCS G06T4D2-POM30G-S49G
NPN, NO	**Ordering code**	**BCS001U** ④	**BCS001N** ③	**BCS0024** ④
	Part number	BCS G06T4D2-NSM15C-S49G	BCS G06T4E1-NSM15C-EP02	BCS G06T4D2-NSM30G-S49G
NPN, NC	**Ordering code**	**BCS001W** ⑩	**BCS001P** ⑧	**BCS0025** ⑩
	Part number	BCS G06T4D2-NOM15C-S49G	BCS G06T4E1-NOM15C-EP02	BCS G06T4D2-NOM30G-S49G
Supply voltage U_B		11…30 V DC	11…30 V DC	11…30 V DC
Voltage drop U_d at I_e		≤ 2 V	≤ 2 V	≤ 2 V
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC
Output current max.		50 mA	50 mA	50 mA
No-load supply current I_0 max.		≤ 10 mA	≤ 10 mA	≤ 10 mA
Polarity reversal protected/output miswiring protected/ short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		–10…+70 °C	–10…+70 °C	–10…+70 °C
Switching frequency f		100 Hz	100 Hz	100 Hz
Output function indicator		Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 65	IP 65	IP 65
Material	Housing	Stainless steel	Stainless steel	Stainless steel
	Sensing surface	PTFE	PTFE	PTFE
	Cover	PA	POM	PA
Connection		M8 connector, 3-pin	2 m PUR cable, 3×26 AWG	M8 connector, 3-pin
Suggested mating cable		BCC M313-0000-10-001-PX43T2-050		BCC M313-0000-10-001-PX43T2-050

① = Connection-Switching diagram, see page 849.

Additional cable lengths on request.







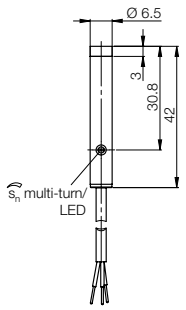
Capacitive Sensors for Object Detection

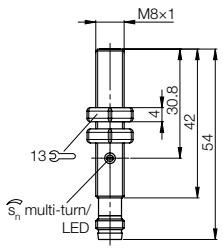
Standard sensors, cylinder designs, DC 3-wire, Ø 6.5 mm, M8×1

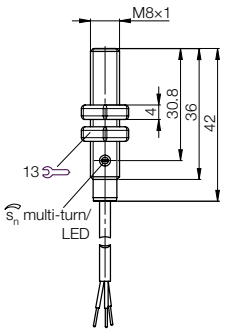
Size		**Ø 6.5 mm**	**M8×1**	**M8×1**	
Installation type		Not flush	Flush	Flush	
Rated switching distance s_n		**0.1…3 mm**	**0.1…1.5 mm**	**0.1…1.5 mm**	
PNP, NO	**Ordering code**	**BCS001Y** ①	**BCS002A** ②	**BCS0026** ①	
	Part number	BCS G06T4E1-PSM30G-EP02	BCS M08T4E2-PSM15C-S49G	BCS M08T4E1-PSM15C-EP02	
PNP, NC	**Ordering code**	**BCS001Z** ⑤	**BCS002C** ⑦	**BCS0027** ⑤	
	Part number	BCS G06T4E1-POM30G-EP02	BCS M08T4E2-POM15C-S49G	BCS M08T4E1-POM15C-EP02	
NPN, NO	**Ordering code**	**BCS0020** ③	**BCS002E** ④	**BCS0028** ③	
	Part number	BCS G06T4E1-NSM30G-EP02	BCS M08T4E2-NSM15C-S49G	BCS M08T4E1-NSM15C-EP02	
NPN, NC	**Ordering code**	**BCS0021** ⑧	**BCS002F** ⑩	**BCS0029** ⑧	
	Part number	BCS G06T4E1-NOM30G-EP02	BCS M08T4E2-NOM15C-S49G	BCS M08T4E1-NOM15C-EP02	
Supply voltage U_B		11…30 V DC	11…30 V DC	11…30 V DC	
Voltage drop U_d at I_e		≤ 2 V	≤ 2 V	≤ 2 V	
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC	
Output current max.		50 mA	50 mA	50 mA	
No-load supply current I_0 max.		≤ 10 mA	≤ 10 mA	≤ 10 mA	
Polarity reversal protected/output miswiring protected/ short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	
Ambient temperature T_a		–10…+70 °C	–10…+70 °C	–10…+70 °C	
Switching frequency f		100 Hz	100 Hz	100 Hz	
Output function indicator		Yellow LED	Yellow LED	Yellow LED	
Degree of protection as per IEC 60529		IP 65	IP 65	IP 65	
Material	Housing	Stainless steel	Stainless steel	Stainless steel	
	Sensing surface	PTFE	PTFE	PTFE	
	Cover	POM	Stainless steel	POM	
Connection		2 m PUR cable, 3×26 AWG	M8 connector, 3-pin	2 m PUR cable, 3×26 AWG	
Suggested mating cable			BCC M313-0000-10-001-PX43T2-050		

① = Connection-Switching diagram, see page 849.

Additional cable lengths on request.



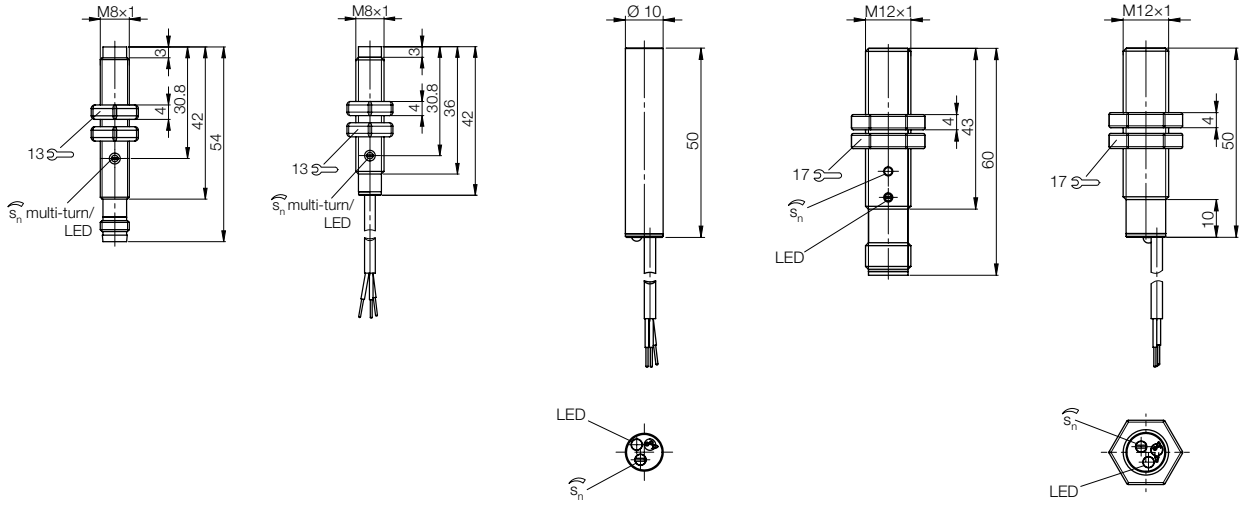




Capacitive Sensors for Object Detection

Standard sensors, cylinder designs, DC 3-wire, M81, Ø 10 mm, M12×1

M8×1	**M8×1**	**Ø 10 mm**	**M12×1**	**M12×1**
Not flush	Not flush	Flush	Flush	Flush
0.1…3 mm	**0.1…3 mm**	**1…4 mm**	**1…4 mm**	**1…4 mm**
BCS002M ②	**BCS002H** ①	**BCS002T** ①	**BCS0037** ②	**BCS002Z** ①
BCS M08T4E2-PSM30G-S49G	BCS M08T4E1-PSM30G-EP02	BCS G10T4H-PSM40C-EP02	BCS M12T4D2-PSM40C-S04G	BCS M12T4G1-PSM40C-EP02
BCS002N ⑦	**BCS002J** ⑤	**BCS002U** ⑤	**BCS0038** ⑦	**BCS0030** ⑤
BCS M08T4E2-POM30G-S49G	BCS M08T4E1-POM30G-EP02	BCS G10T4H-POM40C-EP02	BCS M12T4D2-POM40C-S04G	BCS M12T4G1-POM40C-EP02
BCS002P ④	**BCS002K** ③	**BCS002W** ③	**BCS0039** ④	**BCS0031** ③
BCS M08T4E2-NSM30G-S49G	BCS M08T4E1-NSM30G-EP02	BCS G10T4H-NSM40C-EP02	BCS M12T4D2-NSM40C-S04G	BCS M12T4G1-NSM40C-EP02
BCS002R ⑩	**BCS002L** ⑧	**BCS002Y** ⑧	**BCS00AC** ⑩	**BCS0032** ⑧
BCS M08T4E2-NOM30G-S49G	BCS M08T4E1-NOM30G-EP02	BCS G10T4H-NOM40C-EP02	BCS M12T4D2-NOM40C-S04G	BCS M12T4G1-NOM40C-EP02
11…30 V DC	11…30 V DC	12…35 V DC	12…35 V DC	12…35 V DC
≤ 2 V	≤ 2 V	≤ 0.8 V	≤ 1.5 V	≤ 0.8 V
75 V DC	75 V DC	75 V DC	75 V DC	75 V DC
50 mA	50 mA	200 mA	200 mA	200 mA
≤ 10 mA	≤ 10 mA	≤ 10 mA	≤ 10 mA	≤ 10 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
–10…+70 °C	–10…+70 °C	–30…+70 °C	–30…+70 °C	–30…+70 °C
100 Hz	100 Hz	100 Hz	100 Hz	100 Hz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 65	IP 65	IP 65	IP 65	IP 65
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
PTFE	PTFE	PTFE	PTFE	PTFE
Stainless steel	POM	POM	PA	POM
M8 connector, 3-pin	2 m PUR cable, 3×26 AWG	2 m PUR cable, 3×26 AWG	M12 connector, 4-pin	2 m PUR cable, 3×26 AWG
BCC M313-0000-10-001-PX43T2-050			BCC M415-0000-1A-003-PX44T2-050	



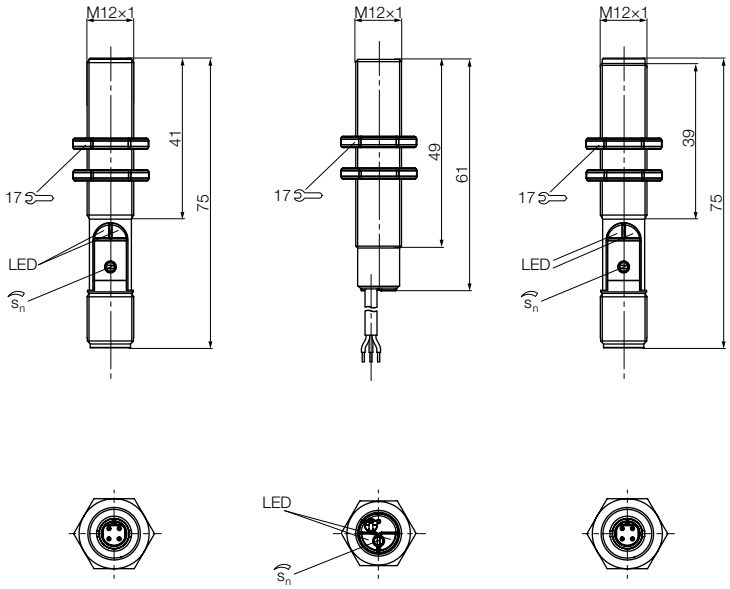
Capacitive Sensors for Object Detection

Standard sensors, cylinder designs, DC 3-wire, M12x1

Size		**M12×1**	**M12×1**	**M12×1**
Installation type		Flush	Flush	Flush
Rated switching distance s_n		**1…4 mm**	**1…4 mm**	**1…4 mm**
PNP, NO	**Ordering code**	**BCS00P0** ②	**BCS00R4** ①	**BCS00PJ** ②
	Part number	BCS M12B4G2-PSC40D-S04K	BCS M12B4I1-PSC40D-EP02	BCS M12BBG2-PSC40D-S04K
PNP, NC	**Ordering code**	**BCS00P1** ⑥	**BCS00P8** ⑤	**BCS00PK** ⑥
	Part number	BCS M12B4G2-POC40D-S04K	BCS M12B4I1-POC40D-EP02	BCS M12BBG2-POC40D-S04K
NPN, NO	**Ordering code**	**BCS00P2** ④	**BCS00P9** ③	**BCS00PL** ④
	Part number	BCS M12B4G2-NSC40D-S04K	BCS M12B4I1-NSaC40D-EP02	BCS M12BBG2-NSC40D-S04K
NPN, NC	**Ordering code**	**BCS00P3** ⑨	**BCS00PA** ⑧	**BCS00PM** ⑨
	Part number	BCS M12B4G2-NOC40D-S04K	BCS M12B4I1-NOC40D-EP02	BCS M12BBG2-NOC40D-S04K
Supply voltage U_B		10... 30 V DC	10... 30 V DC	10... 30 V DC
Voltage drop U_d at I_e		≤ 1.5 V	≤ 1.5 V	≤ 1.5 V
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC
Output current max.		100 mA	100 mA	100 mA
No-load supply current I_0 max.		≤ 15 mA	≤ 15 mA	≤ 15 mA
Polarity reversal protected/output miswiring protected/ short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		–25…+85 °C	–25…+85 °C	–25…+85 °C
Switching frequency f		100 Hz	100 Hz	100 Hz
Supply voltage/Output function indicator		Green LED/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67	IP 67
Material	Housing	Stainless steel	Stainless steel	PBT
	Sensing surface	PBT	PBT	PBT
	Cover	PA 12, PBT	PA 12	PA 12, PBT
Connection		M12 connector, 4-pin	2 m PUR cable, 3×26 AWG	M12 connector, 4-pin
Suggested mating cable		BCC M415-0000-1A-003-VX44T2-050-C013		BCC M415-0000-1A-003-VX44T2-050-C013

① = Connection-Switching diagram, see page 849.

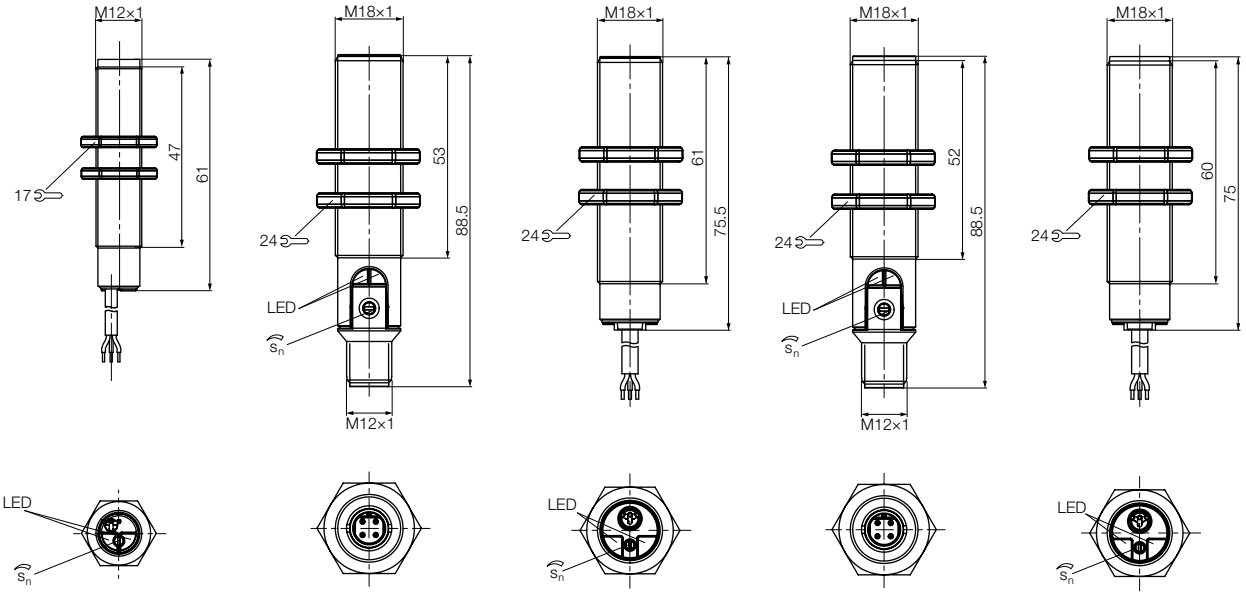
Additional cable lengths on request.



Capacitive Sensors for Object Detection

Standard sensors, cylinder designs, DC 3-wire, Mx12, M18x1

M12×1	**M18×1**	**M18×1**	**M18×1**	**M18×1**
Flush	Flush	Flush	Flush	Flush
1…4 mm	**2…8 mm**	**2…8 mm**	**2…8 mm**	**2…8 mm**
BCS00PU ①	**BCS00MF** ②	**BCS00LK** ①	**BCS00M8** ②	**BCS00NZ** ①
BCS M12BBI1-PSC40D-EP02	BCS M18B4I3-PSC80D-S04K	BCS M18B4N1-PSC80D-EP02	BCS M18BBI3-PSC80D-S04K	BCS M18B4N1-PSC80D-EP02
BCS00PW ⑤	**BCS00M4** ⑥	**BCS00LR** ⑤	**BCS00MH** ⑥	**BCS00M1** ⑤
BCS M12BBI1-POC40D-EP02	BCS M18B4I3-POC80D-S04K	BCS M18B4N1-POC80D-EP02	BCS M18BBI3-POC80D-S04K	BCS M18BBN1-POC80D-EP02
BCS00PY ③	**BCS00M5** ④	**BCS00LN** ③	**BCS00MJ** ④	**BCS00M2** ③
BCS M12BBI1-NSC40D-EP02	BCS M18B4I3-NSC80D-S04K	BCS M18B4N1-NSC80D-EP02	BCS M18BBI3-NSC80D-S04K	BCS M18BBN1-NSC80D-EP02
BCS00PZ ⑧	**BCS00M6** ⑨	**BCS00LP** ⑧	**BCS00MK** ⑨	**BCS00M3** ⑧
BCS M12BBI1-NOC40D-EP02	BCS M18B4I3-NOC80D-S04K	BCS M18B4N1-NOC80D-EP02	BCS M18BBI3-NOC80D-S04K	BCS M18BBN1-NOC80D-EP02
10... 30 V DC	10... 30 V DC	10... 30 V DC	10... 30 V DC	10... 30 V DC
≤ 1.5 V	≤ 1.5 V	≤ 1.5 V	≤ 1.5 V	≤ 1.5 V
75 V DC	75 V DC	75 V DC	75 V DC	75 V DC
100 mA	100 mA	100 mA	100 mA	100 mA
≤ 15 mA	≤ 15 mA	≤ 15 mA	≤ 15 mA	≤ 15 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
–25…+85 °C	–25…+85 °C	–25…+85 °C	–25…+85 °C	–25…+85 °C
100 Hz	100 Hz	100 Hz	100 Hz	100 Hz
Green LED/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED
IP 67	IP 67	IP 67	IP 67	IP 67
PBT	Stainless steel	Stainless steel	PBT	PBT
PBT	PBT	PBT	PBT	PBT
PA 12	PA 12, PBT	PA 12	PA 12, PBT	PA 12
2 m PUR cable, 3×26 AWG	M12 connector, 4-pin	2 m PUR cable, 3×22 AWG	M12 connector, 4-pin	2 m PUR cable, 3×22 AWG
	BCC M415-0000-1A-003-VX44T2-050-C013		BCC M415-0000-1A-003-VX44T2-050-C013	



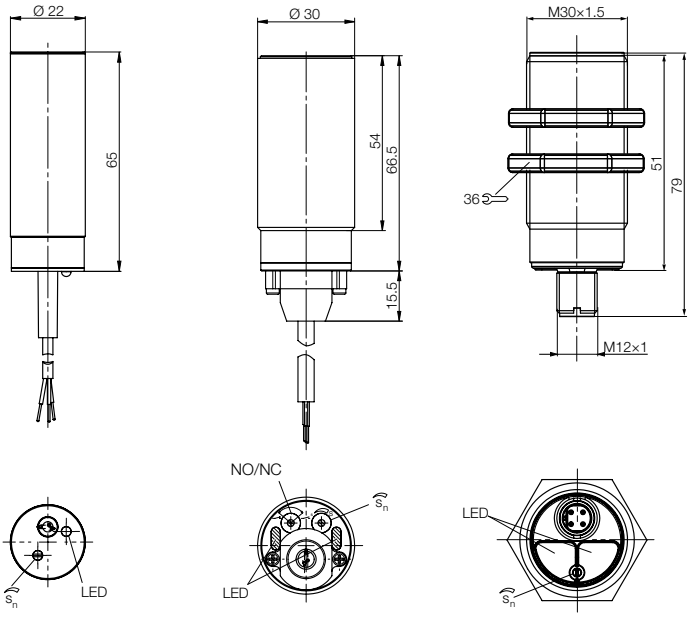
Capacitive Sensors for Object Detection

Standard sensors, cylinder designs, DC 3-wire, Ø 22 mm, Ø 30 mm, M30×1.5

Size		**Ø 22 mm**	**Ø 30 mm**	**M30×1.5**
Installation type		Flush	Flush	Flush
Rated switching distance s_n		**2…10 mm**	**2…20 mm**	**2…15 mm**
PNP, NO	**Ordering code**	**BCS0033** ①		**BCS00MR** ②
	Part number	BCS D22V4M1-PSC10C-EV02		BCS M30B4I2-PSC15D-S04K
PNP, NC	**Ordering code**	**BCS0034** ⑤		**BCS00MT** ⑥
	Part number	BCS D22V4M1-POC10C-EV02		BCS M30B4I2-POC15D-S04K
PNP, NO/NC, switch selectable	**Ordering code**		**BCS004H** ①	
	Part number		BCS D30B4M3-PPC20C-EP02	
NPN, NO	**Ordering code**	**BCS0035** ③		**BCS00MU** ④
	Part number	BCS D22V4M1-NSC10C-EV02		BCS M30B4I2-NSC15D-S04K
NPN, NC	**Ordering code**	**BCS0036** ⑧		**BCS00MW** ⑨
	Part number	BCS D22V4M1-NOC10C-EV02		BCS M30B4I2-NOC15D-S04K
NPN, NO/NC, switch selectable	**Ordering code**		**BCS004J** ③	
	Part number		BCS D30B4M3-NPC20C-EP02	
Supply voltage U_B		10…35 V DC	10…35 V DC	10...30 V DC
Voltage drop U_d at I_e		≤ 1.5 V	≤ 1.8 V	≤ 1.5 V
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC
Output current max.		300 mA	300 mA	100 mA
No-load supply current I_0 max.		≤ 10 mA	≤ 15 mA	≤ 15 mA
Polarity reversal protected/output miswiring protected/ short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		–30…+60 °C	–30…+70 °C	–25…+85 °C
Switching frequency f		100 Hz	100 Hz	100 Hz
Supply voltage/Output function indicator		No/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 64	IP 67
Material	Housing	Stainless steel	Stainless steel	Stainless steel
	Sensing surface	PVC	PBT	PBT
	Cover	PVC	PBT, PE	PA 12, PBT
Connection		2 m PVC cable, 3×24 AWG	2 m PUR cable, 3×22 AWG	M12 connector, 4-pin
Suggested mating cable				BCC M415-0000-1A-003-VX44T2-050-C013

① = Connection-Switching diagram, see page 849.

Additional cable lengths on request.



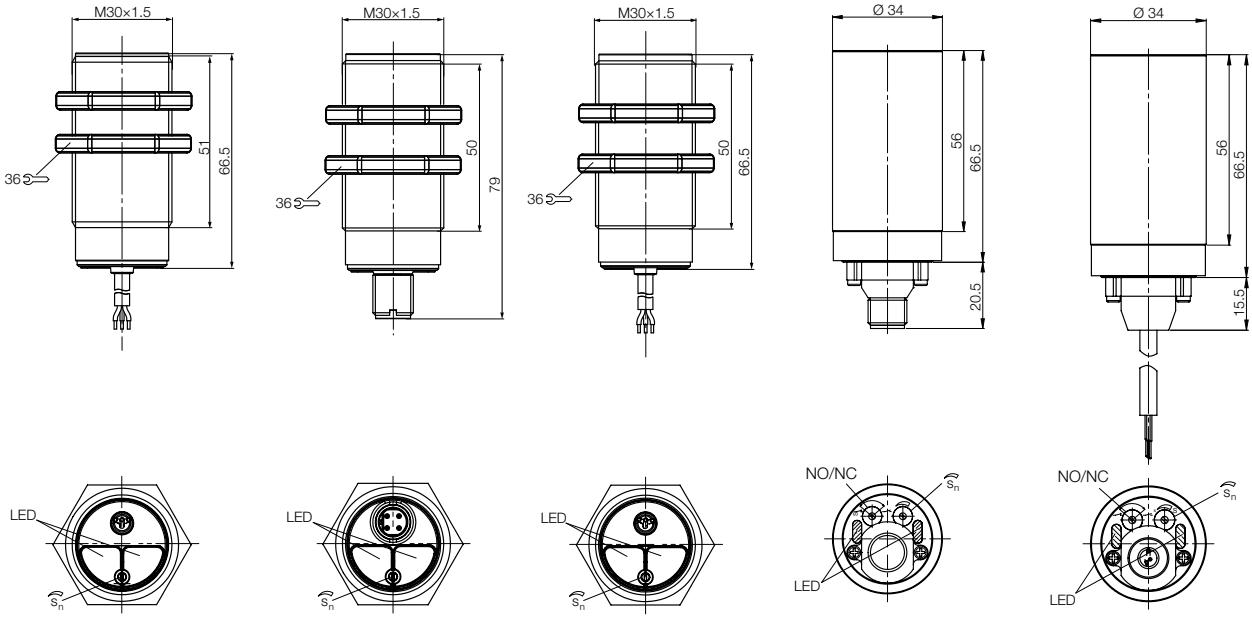
Capacitive Sensors for Object Detection

Standard sensors, cylinder designs, DC 3-wire, M30×1.5, Ø 34 mm



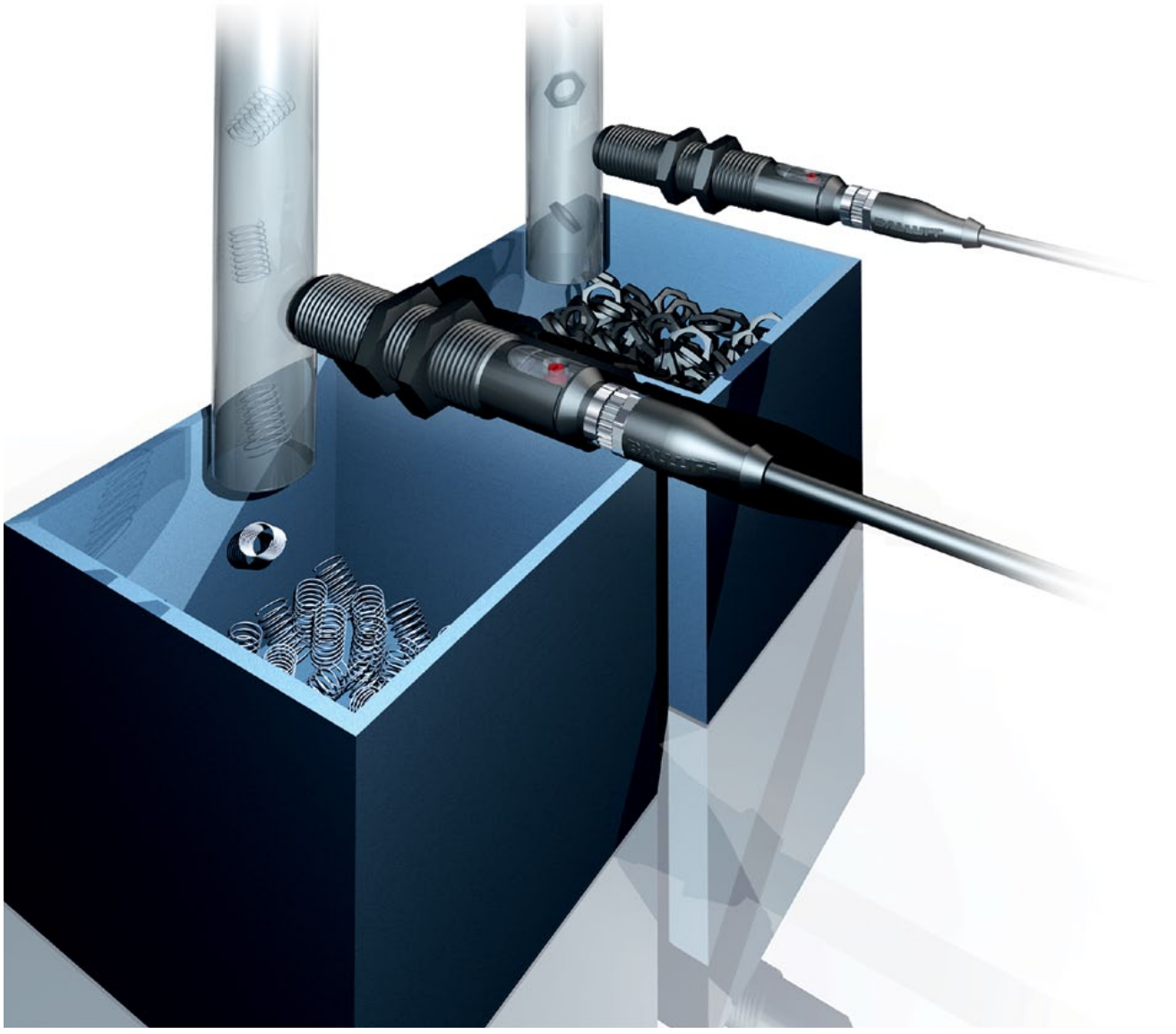


	M30×1.5	**M30×1.5**	**M30×1.5**	**Ø 34 mm**	**Ø 34 mm**
	Flush	Flush	Flush	Flush	Flush
	2…15 mm	**2…15 mm**	**2…15 mm**	**1…25 mm**	**1…25 mm**
	BCS00N2 ①	**BCS00NA** ②	**BCS00NM** ①		
	BCS M30B4I1-PSC15D-EP02	BCS M30BBI2-PSC15D-S04K	BCS M30BBI1-PSC15D-EP02		
	BCS00N3 ⑤	**BCS00NC** ⑥	**BCS00NN** ⑤		
	BCS M30B4I1-POC15D-EP02	BCS M30BBI2-POC15D-S04K	BCS M30BBI1-POC15D-EP02		
				BCS004Z ②	**BCS004W** ①
				BCS G34VVM2-PPM20C-S04G	BCS G34VVM3-PPM20C-EP02
	BCS00N4 ③	**BCS00NE** ④	**BCS00NP** ③		
	BCS M30B4I1-NSC15D-EP02	BCS M30BBI2-NSC15D-S04K	BCS M30BBI1-NSC15D-EP02		
	BCS00N5 ⑧	**BCS00NF** ⑨	**BCS00NR** ⑧		
	BCS M30B4I1-NOC15D-EP02	BCS M30BBI2-NOC15D-S04K	BCS M30BBI1-NOC15D-EP02		
				BCS0050 ④	**BCS004Y** ③
				BCS G34VVM2-NPM20C-S04G	BCS G34VVM3-NPM20C-EP02
	10...30 V DC	10...30 V DC	10...30 V DC	10…35 V DC	10…35 V DC
	≤ 1.5 V	≤ 1.5 V	≤ 1.5 V	≤ 1.8 V	≤ 1.8 V
	75 V DC	75 V DC	75 V DC	75 V DC	75 V DC
	100 mA	100 mA	100 mA	300 mA	300 mA
	≤ 15 mA	≤ 15 mA	≤ 15 mA	≤ 15 mA	≤ 15 mA
	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
	–25…+85 °C	–25…+85 °C	–25…+85 °C	–30…+70 °C	–30…+70 °C
	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz
	Green LED/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED
	IP 67	IP 67	IP 67	IP 64	IP 64
	Stainless steel	PBT	PBT	PVC	PVC
	PBT	PBT	PBT	PVC	PVC
	PA 12, PBT	PA 12, PBT	PA 12, PBT	PBT, PE	PBT, PE
	2 m PUR cable, 3×22 AWG	M12 connector, 4-pin	2 m PUR cable, 3×22 AWG	M12 connector, 4-pin	2 m PUR cable, 3×22 AWG
		BCC M415-0000-1A-003-VX44T2-050-C013		BCC M415-0000-1A-001-PX43T2-050	



Food and pharmaceutical industry:
presence check in the packaging process
If, for example, bottles in individual cartons are to be packaged perfectly, capacitive sensors optimize the packaging process. In this way, the BCS checks whether the bottle is present as desired after packaging, without the carton wall being able to impede the process. In doing so, it makes no difference whether the bottle is made of glass or plastic. Capacitive sensors provide a quick, reliable result, which is also more cost-effective than a weighing system.

Special machine construction:
Determining numbers of pieces
Whether screws, nuts or springs made of metallic or non-metallic material, capacitive sensors check for completeness. To do so, they accurately determine the exact number of pieces, without wear or contact through container walls up to 4 mm thick. If the tube is even thicker, there are other capacitive solutions available from us.



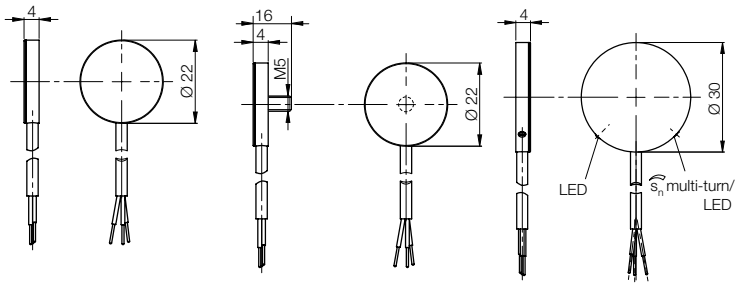
Capacitive Sensors for Object Detection

Standard sensors, disk designs, DC 3-wire, Ø 22 mm, Ø 30 mm

Size		**Ø 22×4 mm**	**Ø 22×4 mm**	**Ø 30×4 mm**
Installation type		Flush	Flush	Flush
Rated switching distance s_n		**6 mm ±10 %**	**6 mm ±10 %**	**2…15 mm**
PNP, NO	**Ordering code**	**BCS003H** ①	**BCS00HK** ①	**BCS003A** ①
	Part number	BCS D22T403-PSM60C-EP02	BCS D22T402-PSM60C-EP02	BCS D30T401-PSC15C-EP02
PNP, NC	**Ordering code**			**BCS003C** ⑤
	Part number			BCS D30T401-POC15C-EP02
NPN, NO	**Ordering code**	**BCS003J** ③		**BCS003E** ③
	Part number	BCS D22T403-NSM60C-EP02		BCS D30T401-NSC15C-EP02
NPN, NC	**Ordering code**			**BCS003F** ⑧
	Part number			BCS D30T401-NOC15C-EP02
Supply voltage U_B		12…30 V DC	12…30 V DC	10…35 V DC
Voltage drop U_d at I_e		≤ 0.8 V	≤ 0.8 V	≤ 0.8 V
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC
Output current max.		300 mA	300 mA	300 mA
No-load supply current I_0 max.		≤ 10 mA	≤ 10 mA	≤ 10 mA
Polarity reversal protected/output miswiring protected/ short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		–30…+70 °C	–30…+70 °C	–30…+70 °C
Switching frequency f		100 Hz	100 Hz	100 Hz
Output function indicator				Yellow LED
Degree of protection as per IEC 60529		IP 64	IP 64	IP 67
Material	Housing	Stainless steel	Stainless steel	Stainless steel
	Sensing surface	PTFE	PTFE	PTFE
Connection		2 m PUR cable, 3×26 AWG	2 m PUR cable, 3×26 AWG	2 m PUR cable, 3×26 AWG
Suggested mating cable				

① = Connection-Switching diagram, see page 849.

Additional cable lengths on request.



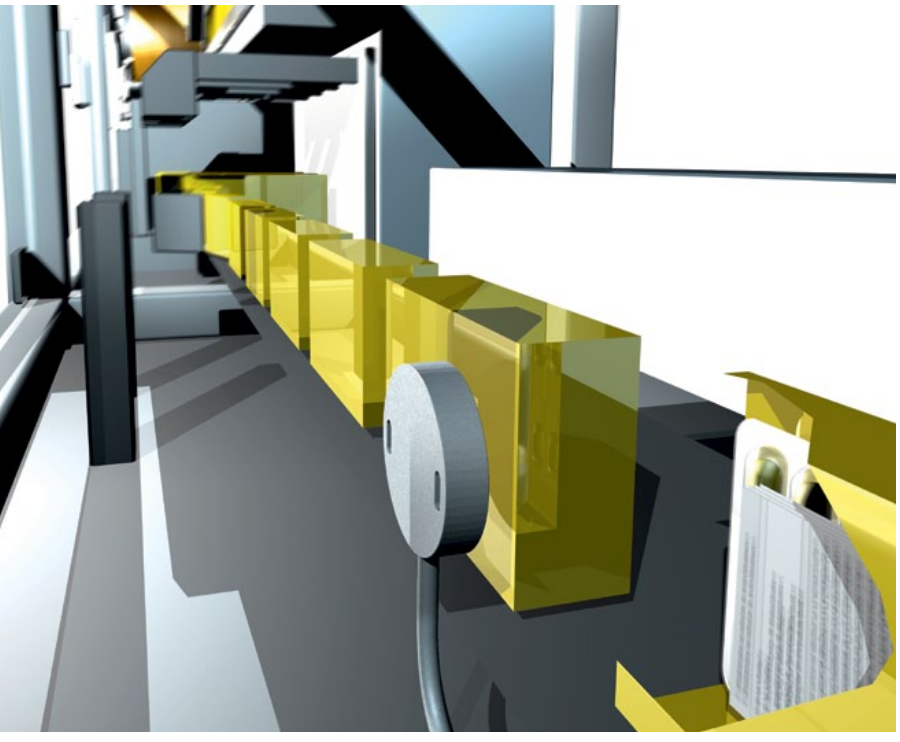
Capacitive Sensors for Object Detection

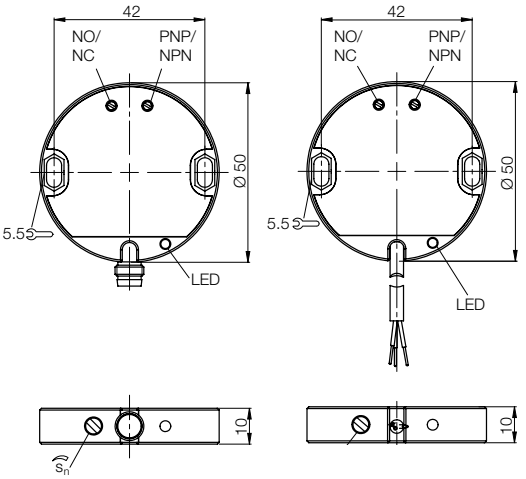
Standard sensors, disk designs, DC 3-wire, Ø 50 mm

Size		**Ø 50×10 mm**	**Ø 50×10 mm**
Installation type		Flush	Flush
Rated switching distance s_n		**2…25 mm**	**2…25 mm**
PNP/NPN and NO/NC, wiring selected	**Ordering code**	**BCS003L** ⑪	**BCS003K** ⑪
	Part number	BCS D50OO03-YPC25C-S49G	BCS D50OO02-YPC25C-EV02
Supply voltage U_B		10…30 V DC	10…30 V DC
Voltage drop U_d at I_e		≤ 2 V	≤ 2 V
Rated insulation voltage U_i		75 V DC	75 V DC
Output current max.		150 mA	150 mA
No-load supply current I_0 max.		≤ 15 mA	≤ 15 mA
Polarity reversal protected/output miswiring protected/ short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		–30…+60 °C	–30…+60 °C
Switching frequency f		50 Hz	50 Hz
Output function indicator		Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 65	IP 67
Material	Housing	POM	POM
	Sensing surface	POM	POM
	Cover	POM	POM
Connection		M8 connector, 3-pin	2 m PVC cable, 3×22 AWG
Suggested mating cable			

① = Connection-Switching diagram, see page 849.

Additional cable lengths on request.





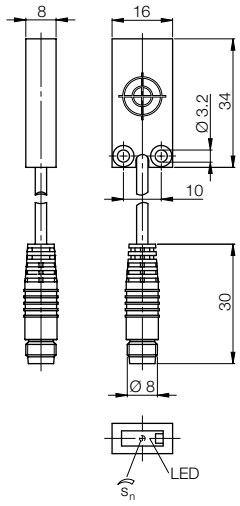
Capacitive Sensors for Object Detection

Standard sensors, block designs, DC 3-wire, 16×34×8 mm MicroBox

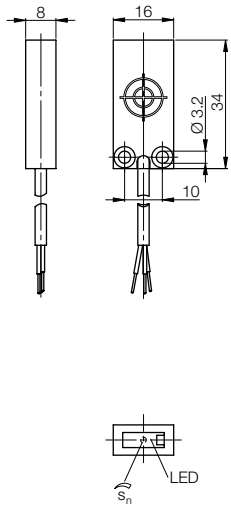
Size		**16×34×8 mm** MicroBox	**16×34×8 mm** MicroBox
Installation type		Flush	Flush
Rated switching distance s_n		**1…8 mm**	**1…8 mm**
PNP, NO	**Ordering code**	**BCS0055** ②	**BCS0051** ①
	Part number	BCS R08RR01-PSM80C-EP00,2-GS49	BCS R08RR01-PSM80C-EP02
PNP, NC	**Ordering code**	**BCS0056** ⑦	**BCS0052** ⑤
	Part number	BCS R08RR01-POM80C-EP00,2-GS49	BCS R08RR01-POM80C-EP02
NPN, NO	**Ordering code**	**BCS0057** ④	**BCS0053** ③
	Part number	BCS R08RR01-NSM80C-EP00,2-GS49	BCS R08RR01-NSM80C-EP02
NPN, NC	**Ordering code**	**BCS0058** ⑩	**BCS0054** ⑧
	Part number	BCS R08RR01-NOM80C-EP00,2-GS49	BCS R08RR01-NOM80C-EP02
Supply voltage U_B		12…30 V DC	12…30 V DC
Voltage drop U_d at I_e		≤ 1.5 V	≤ 1.5 V
Rated insulation voltage U_i		75 V DC	75 V DC
Output current max.		50 mA	50 mA
No-load supply current I_0 max.		≤ 10 mA	≤ 10 mA
Polarity reversal protected/output miswiring protected/ short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		–30…+70 °C	–30…+70 °C
Switching frequency f		100 Hz	100 Hz
Output function indicator		Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67
Material	Housing	PP	PP
	Sensing surface	PP	PP
	Cover	PP	PP
Connection		0.2 m PUR cable with M8 3-pin connector	2 m PUR cable, 3×26 AWG
Suggested mating cable		BCC M313-0000-10-001-PX43T2-050	

① = Connection-Switching diagram, see page 849.

Additional cable lengths on request.



Mounting frame included in delivery



Mounting frame included in delivery

Capacitive Sensors for Object Detection

Standard sensors, block designs, DC 3-wire, 40×40×10 mm, Uniflat

The cost-effective Global series now also provides capacitive sensors in a flat design: in compact plastic housing in 40x40x10 mm. With cable or pigtail connection. And there is an LED display for supply voltage and switching status.

Applications

The BCS capacitive sensors Q40 Uniflat detect oil or granular material through non-metallic walls up to 6 mm thick. Through its installation on the container bottom, it becomes the ideal leak detector.

Application examples

- Checking volume in infeed systems
- Checking content in transport packaging
- Detecting fill level through containers
- Detecting leaks

Switching distance

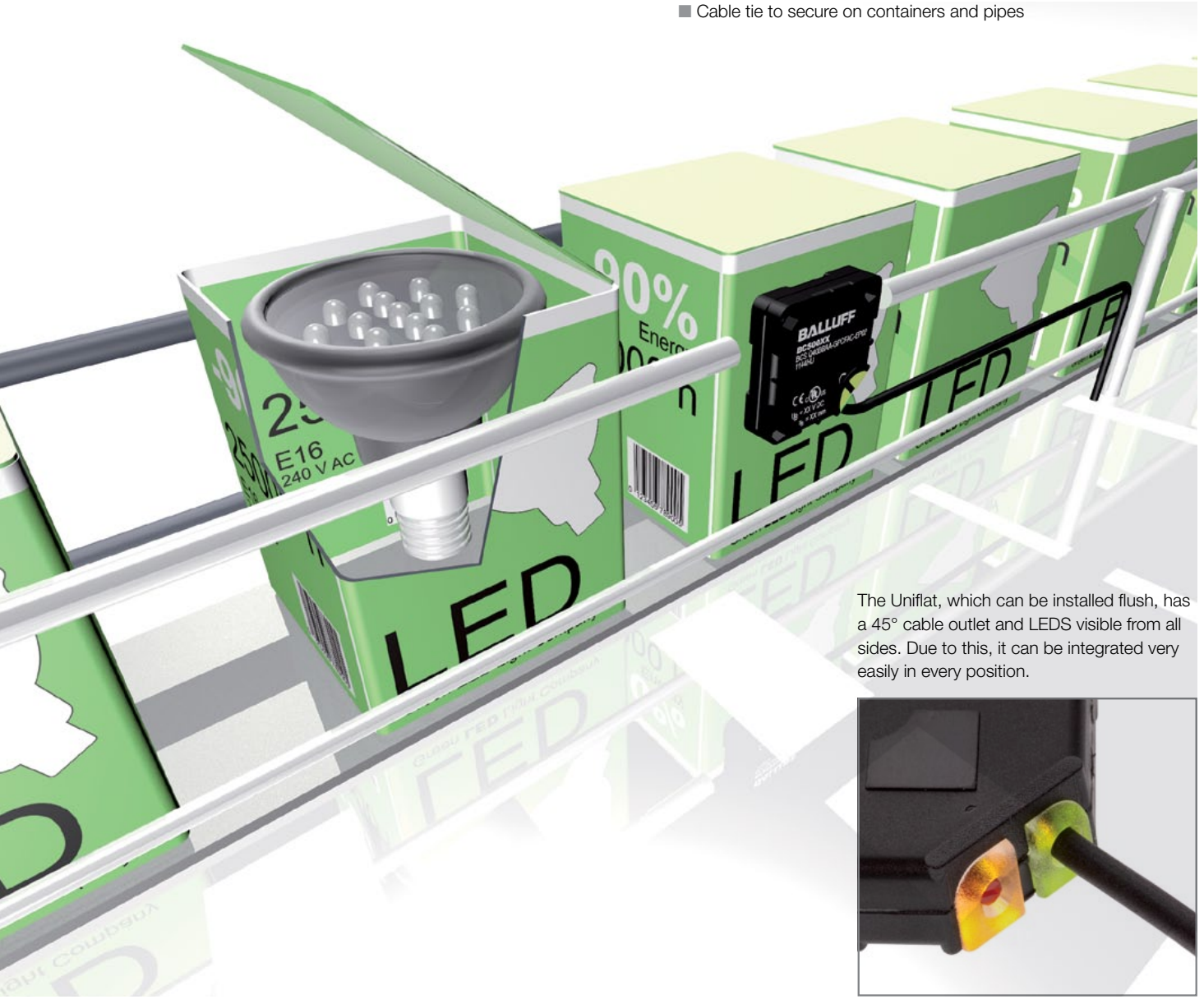
Switching distance can be set precisely from 1 to 20 mm, with a 20-turn potentiometer.
The capacitive Q40 Uniflat provides a PNP or NPN output, which is available as either normally open or as normally closed.

Installation

The capacitive sensors BCS Q40 Uniflat can be installed flush and can be secured in different ways with screws, cable ties or angle brackets. In addition, its universal 45° cable output provides for additional flexibility.

Mounting options

- M4 through bolts
- M3 with double-sided anti-rotation element for nuts
- Sunken M4 assembly with screw DIN 920
- Angle brackets available for Balluff assembly system
- Cable tie to secure on containers and pipes



The Uniflat, which can be installed flush, has a 45° cable outlet and LEDS visible from all sides. Due to this, it can be integrated very easily in every position.

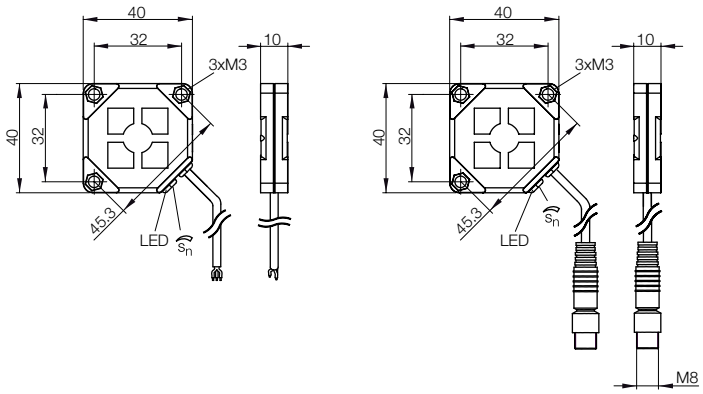
Capacitive Sensors for Object Detection

Standard sensors, block designs, DC 3-wire, 40×40×10 mm, Uniflat

Size		**40×40×10 mm** Uniflat	**40×40×10 mm** Uniflat
Installation type		Flush	Flush
Rated switching distance s_n		**1...20 mm**	**1...20 mm**
PNP/NPN and NO/NC, wiring selected	**Ordering code**	**BCS00TR** ⑪	
	Part number	BCS Q40BBAA-GPC20C-EP02	
PNP, NO	**Ordering code**		**BCS00U6** ②
	Part number		BCS Q40BBAA-PSC20C-EP00,3-GS49
PNP, NC	**Ordering code**		**BCS00U5** ⑥
	Part number		BCS Q40BBAA-POC20C-EP00,3-GS49
Supply voltage U_B		10... 30 V DC	10... 30 V DC
Voltage drop U_d at I_e		≤ 2.5 V	≤ 2.5 V
Rated insulation voltage U_i		75 V DC	75 V DC
Output current max.		100 mA	100 mA
No-load supply current I_0 max.		≤ 15 mA	≤ 15 mA
Polarity reversal protected/output miswiring protected/ short-circuit protected		No/No/Yes	Yes/Yes/Yes
Ambient temperature T_a		–5...+85 °C	–5...+85 °C
Switching frequency f		100 Hz	100 Hz
Supply voltage/Output function indicator		Green LED/Yellow LED	Green LED/Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67
Material	Housing	PBT	PBT
	Sensing surface	PBT	PBT
	Cover	PBT	PBT
Connection		2 m PUR cable, 3×26 AWG	0.3 m PUR cable with M8, 3-pin connector
Suggested mating cable			BCC M313-0000-10-001-PX43T2-050

① = Connection-Switching diagram, see page 849.

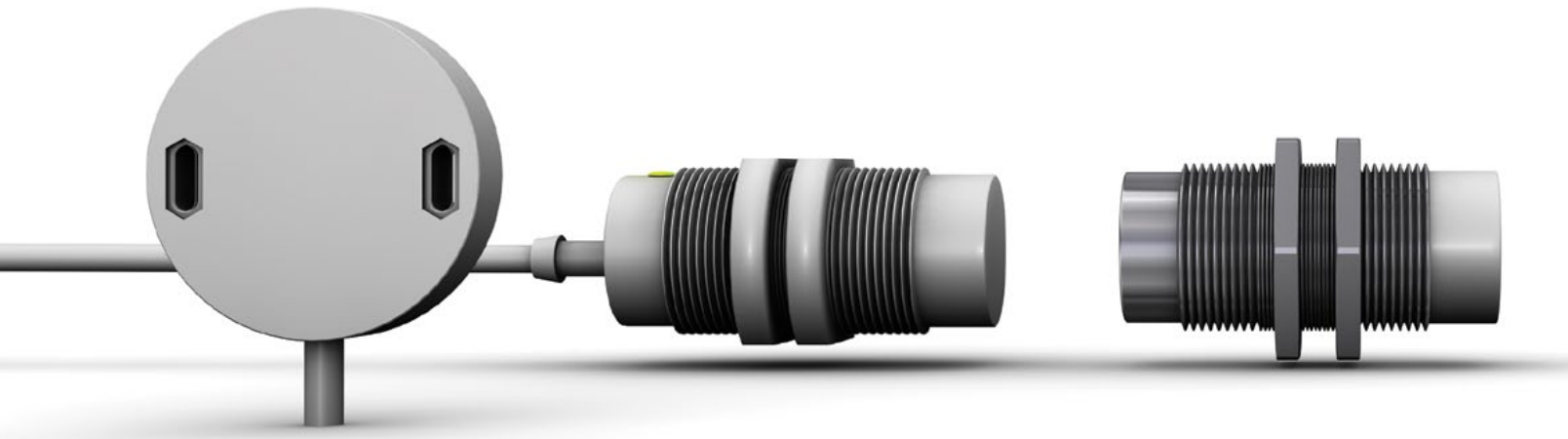
Additional cable lengths on request.



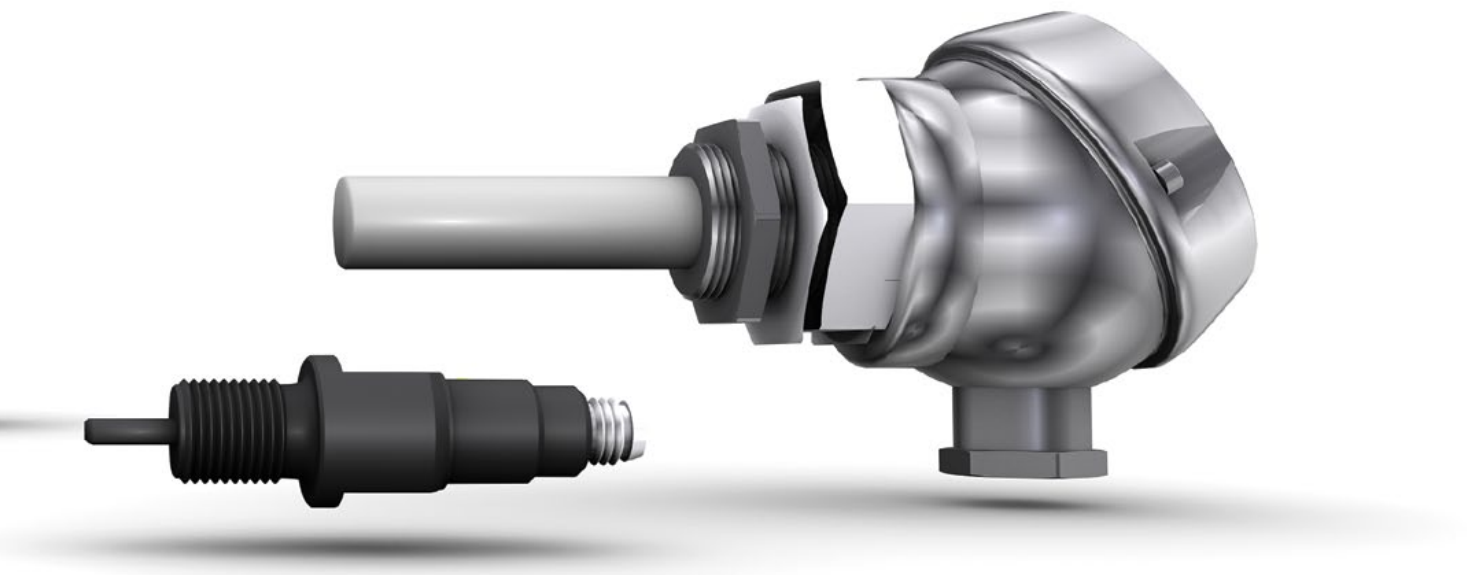
Capacitive Sensors

Capacitive sensors for level detection

Capacitive sensors for level detection use their sensing surface to detect the product, bulk material or liquid (e.g. plastic granulate, sugar, oil, aqueous media) directly or through a container wall. Advantage: Their spherical electrical field effectively compensates for deposits on the sensing surface of the sensor.

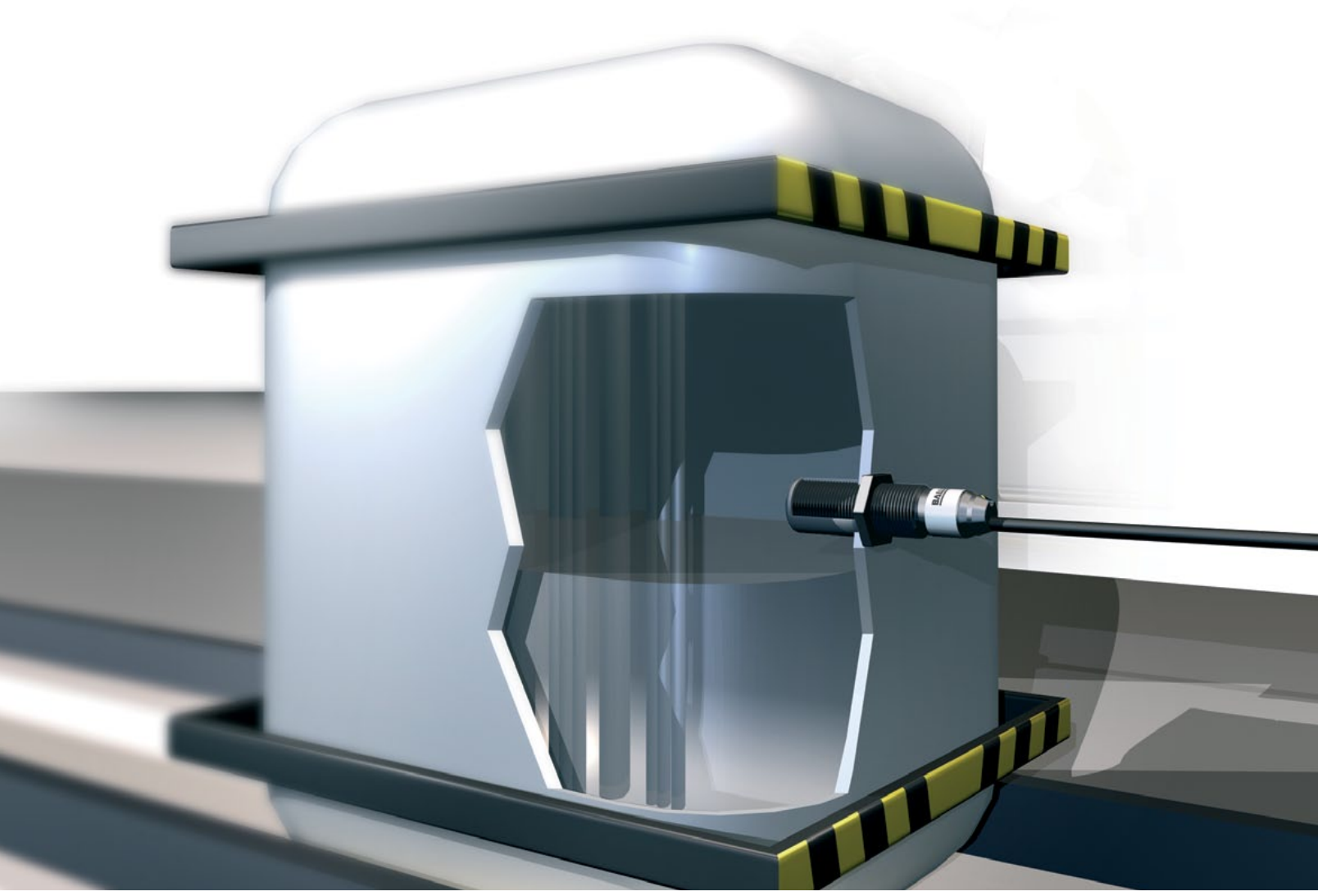


Capacitive Sensors for Level Detection
Contents



Capacitive Sensors for Level Detection
Sensors in use

Whether in coolant reservoir tanks or on glass bypass tubes, the capacitive sensor reliably detects the level and thereby helps to prevent damage to the machine from running it dry.



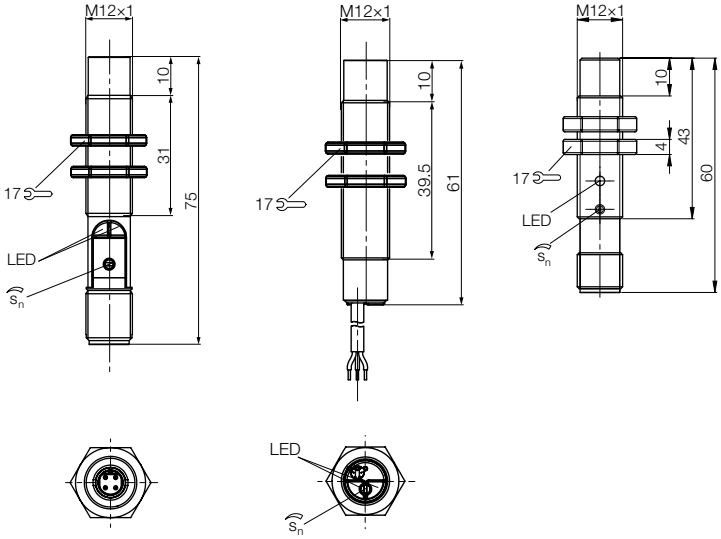
Capacitive Sensors for Level Detection

Standard sensors, cylinder designs, DC 3-wire, M12x1

Size		**M12×1**	**M12×1**	**M12×1**
Installation type		Not flush	Not flush	Not flush
Rated switching distance s_n		**1…8 mm**	**1…8 mm**	**1…8 mm**
PNP, NO	**Ordering code**	**BCS00P4** ②	**BCS00PC** ①	**BCS0062** ②
	Part number	BCS M12B4E2-PSC80H-S04K	BCS M12B4G1-PSC80H-EP02	BCS M12T4D2-PSM80G-S04G
PNP, NC	**Ordering code**	**BCS00P5** ⑥	**BCS00PE** ⑤	**BCS0063** ⑦
	Part number	BCS M12B4E2-POC80H-S04K	BCS M12B4G1-POC80H-EP02	BCS M12T4D2-POM80G-S04G
NPN, NO	**Ordering code**	**BCS00P6** ④	**BCS00PF** ③	**BCS0064** ④
	Part number	BCS M12B4E2-NSC80H-S04K	BCS M12B4G1-NSC80H-EP02	BCS M12T4D2-NSM80G-S04G
NPN, NC	**Ordering code**	**BCS00P7** ⑨	**BCS00PH** ⑧	**BCS0065** ⑩
	Part number	BCS M12B4E2-NOC80H-S04K	BCS M12B4G1-NOC80H-EP02	BCS M12T4D2-NOM80G-S04G
Supply voltage U_B		10...30 V DC	10...30 V DC	12…35 V DC
Voltage drop U_d at I_e		≤ 1.5 V	≤ 1.5 V	≤ 1.5 V
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC
Output current max.		100 mA	100 mA	200 mA
No-load supply current I_0 max.		≤ 15 mA	≤ 15 mA	≤ 10 mA
Polarity reversal protected/output miswiring protected/ short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		–25…+85 °C	–25…+85 °C	–30…+70 °C
Switching frequency f		100 Hz	100 Hz	100 Hz
Output function indicator		Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67	IP 65
Material	Housing	Stainless steel	Stainless steel	Stainless steel
	Sensing surface	PBT	PBT	PTFE
	Cover	PA 12, PBT	PA 12	PA
Connection		M12 connector, 4-pin	2 m PUR cable, 3×26 AWG	M12 connector, 4-pin
Suggested mating cable		BCC M415-0000-1A-003-VX44T2-050-C013		BCC M415-0000-1A-003-PX44T2-050

① = Connection-Switching diagram, see page 849.

Additional cable lengths on request.



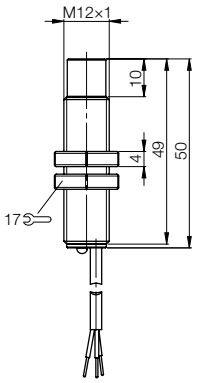
Capacitive Sensors for Level Detection

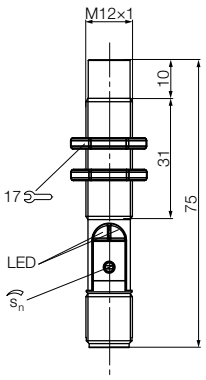
Standard sensors, cylinder designs, DC 3-wire, M12x1

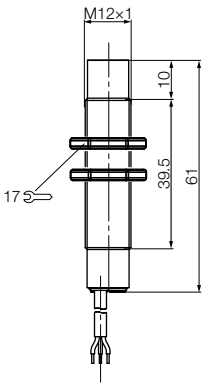
Size		**M12×1**	**M12×1**	**M12×1**
Installation type		Not flush	Not flush	Not flush
Rated switching distance s_n		**1…8 mm**	**1…8 mm**	**1…8 mm**
PNP, NO	**Ordering code**	**BCS005F** ①	**BCS00PN** ②	**BCS00R0** ①
	Part number	BCS M12T4G1-PSM80G-EP02	BCS M12BBE2-PSC80H-S04K	BCS M12BBG1-PSC80H-EP02
PNP, NC	**Ordering code**	**BCS005H** ⑤	**BCS00PP** ⑥	**BCS00R1** ⑤
	Part number	BCS M12T4G1-POM80G-EP02	BCS M12BBE2-POC80H-S04K	BCS M12BBG1-POC80H-EP02
NPN, NO	**Ordering code**	**BCS005J** ③	**BCS00PR** ④	**BCS00R2** ③
	Part number	BCS M12T4G1-NSM80G-EP02	BCS M12BBE2-NSC80H-S04K	BCS M12BBG1-NSC80H-EP02
NPN, NC	**Ordering code**	**BCS005K** ⑧	**BCS00PT** ⑨	**BCS00R3** ⑧
	Part number	BCS M12T4G1-NOM80G-EP02	BCS M12BBE2-NOC80H-S04K	BCS M12BBG1-NOC80H-EP02
Supply voltage U_B		12…35 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_e		≤ 0.8 V	≤ 1.5 V	≤ 1.5 V
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC
Output current max.		200 mA	100 mA	100 mA
No-load supply current I_0 max.		≤ 10 mA	≤ 15 mA	≤ 15 mA
Polarity reversal protected/output miswiring protected/ short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		–30…+70 °C	–25…+85 °C	–25…+85 °C
Switching frequency f		100 Hz	100 Hz	100 Hz
Supply voltage/Output function indicator		No/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED
Degree of protection as per IEC 60529		IP 65	IP 67	IP 67
Material	Housing	Stainless steel	PBT	PBT
	Sensing surface	PTFE	PBT	PBT
	Cover	POM	PA 12, PBT	PA 12
Connection		2 m PUR cable, 3×26 AWG	M12 connector, 4-pin	2 m PUR cable, 3×26 AWG
Suggested mating cable			BCC M415-0000-1A-003-VX44T2-050-C013	

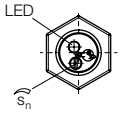
① = Connection-Switching diagram, see page 849.

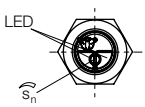
Additional cable lengths on request.









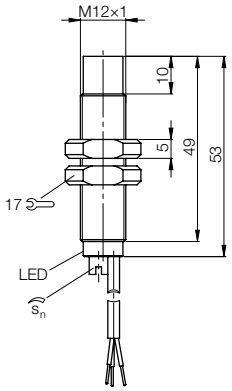


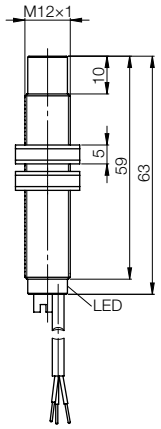
Capacitive Sensors for Level Detection

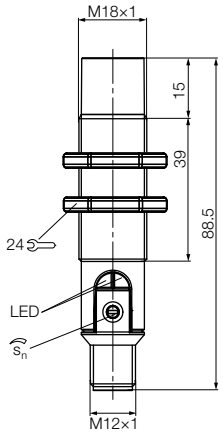
Standard sensors, cylinder designs, DC 3-wire, Mx12, M18x1

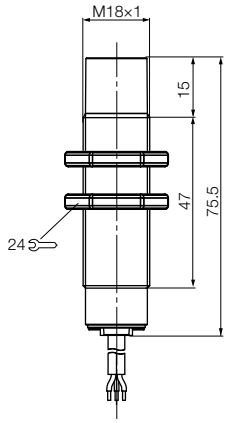
Particularly EMC-proof

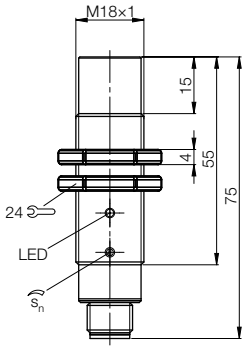
M12×1	**M12×1**	**M18×1**	**M18×1**	**M18×1**
Not flush	Not flush	Not flush	Not flush	Not flush
1…8 mm	**1…6 mm**	**2..15 mm**	**2..15 mm**	**2…15 mm**
BCS006Z ①	**BCS009J** ①	**BCS00ME** ②	**BCS00M7** ①	**BCS006A** ②
BCS M12TTG1-PSM80G-ET02	BCS M12TTI1-PSM60G-ET02-E	BCS M18B4G2-PSC15H-S04K	BCS M18B4H1-PSC15H-EP02	BCS M18T4G2-PSC15G-S04G
BCS0070 ⑤	**BCS009K** ⑤	**BCS00ML** ⑥	**BCS00M9** ⑤	**BCS006C** ⑦
BCS M12TTG1-POM80G-ET02	BCS M12TTI1-POM60G-ET02-E	BCS M18B4G2-POC15H-S04K	BCS M18B4H1-POC15H-EP02	BCS M18T4G2-POC15G-S04G
BCS0071 ③	**BCS009L** ③	**BCS00MM** ④	**BCS00MA** ③	**BCS006E** ④
BCS M12TTG1-NSM80G-ET02	BCS M12TTI1-NSM60G-ET02-E	BCS M18B4G2-NSC15H-S04K	BCS M18B4H1-NSC15H-EP02	BCS M18T4G2-NSC15G-S04G
BCS0072 ⑧	**BCS009M** ⑧	**BCS00MN** ⑨	**BCS00MC** ⑧	**BCS006F** ⑩
BCS M12TTG1-NOM80G-ET02	BCS M12TTI1-NOM60G-ET02-E	BCS M18B4G2-NOC15H-S04K	BCS M18B4H1-NOC15H-EP02	BCS M18T4G2-NOC15G-S04G
12…35 V DC	12…35 V DC	10...30 V DC	10...30 V DC	10…35 V DC
≤ 0.8 V	≤ 0.8 V	≤ 1.5 V	≤ 1.5 V	≤ 1.5 V
75 V DC	75 V DC	75 V DC	75 V DC	75 V DC
200 mA	200 mA	100 mA	100 mA	300 mA
≤ 10 mA	≤ 10 mA	≤ 15 mA	≤ 15 mA	≤ 10 mA
Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
–30…+70 °C	–30…+60 °C	–25…+85 °C	–25…+85 °C	–30…+70 °C
100 Hz	25 Hz	100 Hz	100 Hz	100 Hz
No/Red LED	No/Red LED	Green LED/Yellow LED	Green LED/Yellow LED	No/Yellow LED
IP 65	IP 65	IP 67	IP 67	IP 67
PTFE	PTFE	Stainless steel	Stainless steel	Stainless steel
PTFE	PTFE	PBT	PBT	PTFE
PTFE	PTFE	PA 12, PBT	PA 12	PA
2 m PTFE cable, 3×26 AWG	2 m PTFE cable, 3×26 AWG	M12 connector, 4-pin	2 m PUR cable, 3×22 AWG	M12 connector, 4-pin
		BCC M415-0000-1A-003-VX44T2-050-C013		BCC M415-0000-1A-003-PX44T2-050

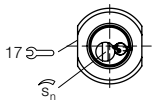


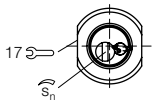


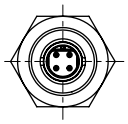


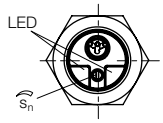












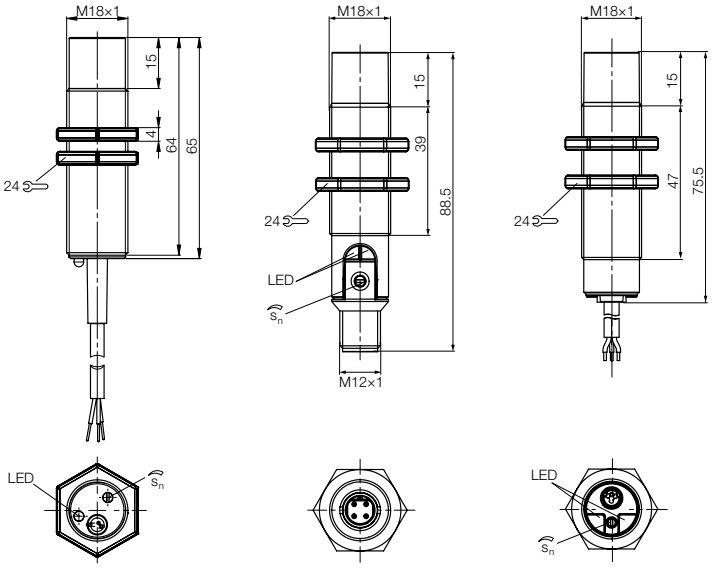
Capacitive Sensors for Level Detection

Standard sensors, cylinder designs, DC 3-wire, M18×1

Size		**M18×1**	**M18×1**	**M18×1**	
Installation type		Not flush	Not flush	Not flush	
Rated switching distance s_n		**2...15 mm**	**2..15 mm**	**2..15 mm**	
PNP, NO	**Ordering code**	**BCS005R** ①	**BCS00LM** ②	**BCS00LL** ①	
	Part number	BCS M18T4I1-PSC15G-DV02	BCS M18BBG2-PSC15H-S04K	BCS M18BBH1-PSC15H-EP02	
PNP, NC	**Ordering code**	**BCS005T** ⑤	**BCS00LT** ⑥	**BCS00LY** ⑤	
	Part number	BCS M18T4I1-POC15G-DV02	BCS M18BBG2-POC15H-S04K	BCS M18BBH1-POC15H-EP02	
PNP, NO/NC, switch selectable	**Ordering code**				
	Part number				
NPN, NO	**Ordering code**	**BCS005U** ③	**BCS00LU** ④	**BCS00LZ** ③	
	Part number	BCS M18T4I1-NSC15G-DV02	BCS M18BBG2-NSC15H-S04K	BCS M18BBH1-NSC15H-EP02	
NPN, NC	**Ordering code**	**BCS005W** ⑧	**BCS00LW** ⑨	**BCS00M0** ⑧	
	Part number	BCS M18T4I1-NOC15G-DV02	BCS M18BBG2-NOC15H-S04K	BCS M18BBH1-NOC15H-EP02	
NPN, NO/NC, switch selectable	**Ordering code**				
	Part number				
Supply voltage U_B		10...35 V DC	10...30 V DC	10...30 V DC	
Voltage drop U_d at I_e		≤ 1.5 V	≤ 1.5 V	≤ 1.5 V	
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC	
Output current max.		300 mA	100 mA	100 mA	
No-load supply current I_0 max.		≤ 10 mA	≤ 15 mA	≤ 15 mA	
Polarity reversal protected/output miswiring protected/ short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	
Ambient temperature T_a		–30...+70 °C	–25...+85 °C	–25...+85 °C	
Switching frequency f		100 Hz	100 Hz	100 Hz	
Supply voltage/Output function indicator		No/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED	
Degree of protection as per IEC 60529		IP 67	IP 67	IP 67	
Material	Housing	Stainless steel	PBT	PBT	
	Sensing surface	PTFE	PBT	PBT	
	Cover	POM	PA 12, PBT	PA 12	
Connection		2 m PVC cable, 3×24 AWG	M12 connector, 4-pin	2 m PUR cable, 3×22 AWG	
Suggested mating cable			BCC M415-0000-1A-003-VX44T2-050-C013		

① = Connection-Switching diagram, see page 849.

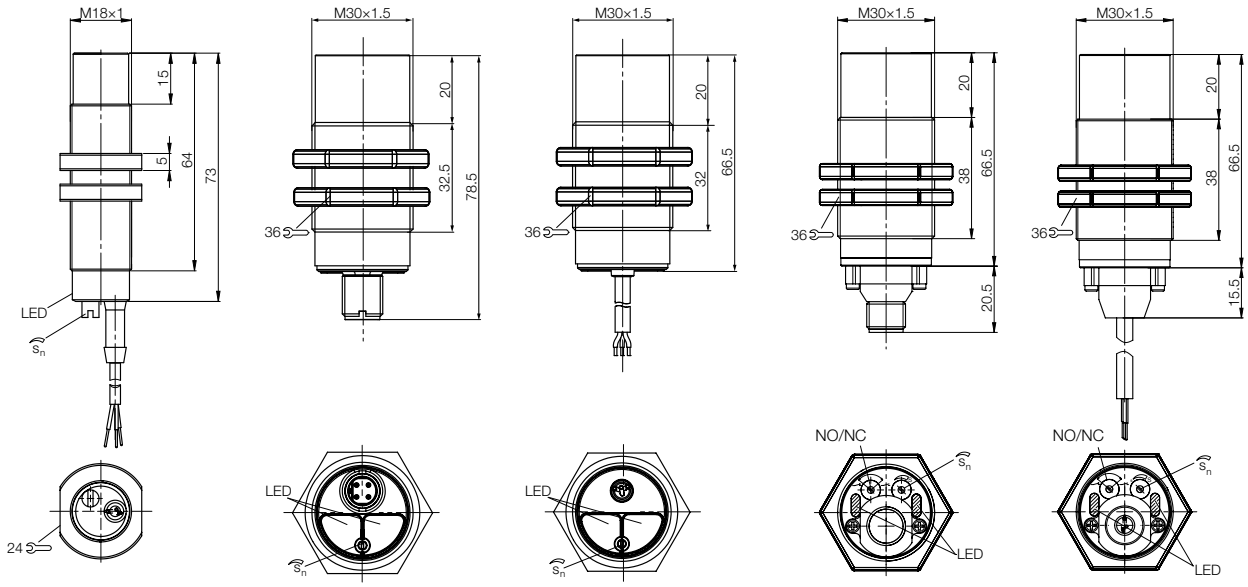
Additional cable lengths on request.



Capacitive Sensors for Level Detection

Standard sensors, cylinder designs, DC 3-wire, M18×1, M30×1.5

M18×1	**M30×1.5**	**M30×1.5**	**M30×1.5**	**M30×1.5**
Not flush	Not flush	Not flush	Not flush	Not flush
2…15 mm	**1…25 mm**	**1…25 mm**	**1…30 mm**	**2…30 mm**
BCS0073 ①	**BCS00MY** ②	**BCS00N6** ①		
BCS M18TTI2-PSC15G-AT02	BCS M30B4E2-PSC25H-S04K	BCS M30B4E1-PSC25H-EP02		
BCS0074 ⑤	**BCS00MZ** ⑥	**BCS00N7** ⑤		
BCS M18TTI2-POC15G-AT02	BCS M30B4E2-POC25H-S04K	BCS M30B4E1-POC25H-EP02		
			BCS007L ②	**BCS007J** ①
			BCS M30T4M2-PPC30G-S04G	BCS M30T4M3-PPC30G-EP02
BCS0075 ③	**BCS00N0** ④	**BCS00N8** ③		
BCS M18TTI2-NSC15G-AT02	BCS M30B4E2-NSC25H-S04K	BCS M30B4E1-NSC25H-EP02		
BCS0076 ⑧	**BCS00N1** ⑨	**BCS00N9** ⑧		
BCS M18TTI2-NOC15G-AT02	BCS M30B4E2-NOC25H-S04K	BCS M30B4E1-NOC25H-EP02		
			BCS007M ④	**BCS007K** ③
			BCS M30T4M2-NPC30G-S04G	BCS M30T4M3-NPC30G-EP02
10…35 V DC	10...30 V DC	10...30 V DC	10…35 V DC	10…35 V DC
≤ 1.5 V	≤ 1.5 V	≤ 1.5 V	≤ 1.8 V	≤ 1.8 V
75 V DC	75 V DC	75 V DC	75 V DC	75 V DC
300 mA	100 mA	100 mA	300 mA	300 mA
≤ 10 mA	≤ 15 mA	≤ 15 mA	≤ 15 mA	≤ 15 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
–30…+70 °C	–25…+85 °C	–25…+85 °C	–30…+70 °C	–30…+70 °C
100 Hz	100 Hz	100 Hz	100 Hz	100 Hz
No/Red LED	Green LED/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED
IP 67	IP 67	IP 67	IP 64	IP 64
PTFE	Stainless steel	Stainless steel	Stainless steel	Stainless steel
PTFE	PBT	PBT	PTFE	PTFE
PTFE	PA 12, PBT	PA 12, PBT	PBT, PE	PBT, PE
2 m PTFE cable, 3×24 AWG	M12 connector, 4-pin	2 m PUR cable, 3×22 AWG	M12 connector, 4-pin	2 m PUR cable, 3×22 AWG
	BCC M415-0000-1A-003-VX44T2-050-C013		BCC M415-0000-1A-003-PX44T2-050	



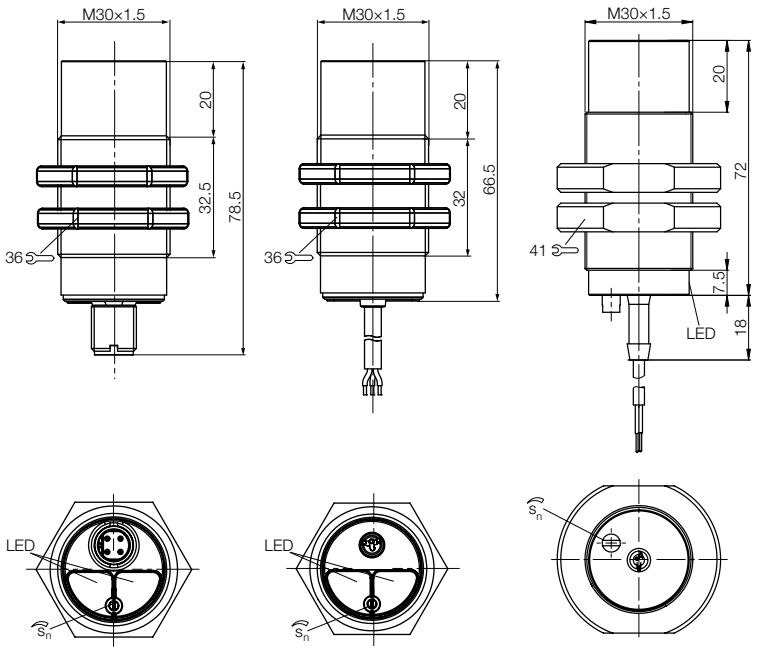
Capacitive Sensors for Level Detection

Standard sensors, cylinder designs, DC 3-wire, M30×1.5

Size		**M30×1.5**	**M30×1.5**	**M30×1.5**
Installation type		Not flush	Not flush	Not flush
Rated switching distance s_n		**1…25 mm**	**1…25 mm**	**2…30 mm**
PNP, NO	**Ordering code**	**BCS00NH**	**BCS00NT**	**BCS0077**
	Part number	BCS M30BBE2-PSC25H-S04K ②	BCS M30BBE1-PSC25H-EP02 ①	BCS M30TTH2-PSC30G-AT02 ①
PNP, NC	**Ordering code**	**BCS00NJ**	**BCS00NU**	**BCS0078**
	Part number	BCS M30BBE2-POC25H-S04K ⑥	BCS M30BBE1-POC25H-EP02 ⑤	BCS M30TTH2-POC30G-AT02 ⑤
NPN, NO	**Ordering code**	**BCS00NK**	**BCS00NW**	**BCS0079**
	Part number	BCS M30BBE2-NSC25H-S04K ④	BCS M30BBE1-NSC25H-EP02 ③	BCS M30TTH2-NSC30G-AT02 ③
NPN, NC	**Ordering code**	**BCS00NL**	**BCS00NY**	**BCS007A**
	Part number	BCS M30BBE2-NOC25H-S04K ⑨	BCS M30BBE1-NOC25H-EP02 ⑧	BCS M30TTH2-NOC30G-AT02 ⑧
Supply voltage U_B		10...30 V DC	10...30 V DC	10…35 V DC
Voltage drop U_d at I_e		≤ 1.5 V	≤ 1.5 V	≤ 1.8 V
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC
Output current max.		100 mA	100 mA	300 mA
No-load supply current I_0 max.		≤ 15 mA	≤ 15 mA	≤ 10 mA
Polarity reversal protected/output miswiring protected/ short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		–25…+85 °C	–25…+85 °C	–30…+70 °C
Switching frequency f		100 Hz	100 Hz	100 Hz
Supply voltage/Output function indicator		Green LED/Yellow LED	Green LED/Yellow LED	No/Red LED
Degree of protection as per IEC 60529		IP 67	IP 67	IP 67
Material	Housing	PBT	PBT	PTFE
	Sensing surface	PBT	PBT	PTFE
	Cover	PA 12, PBT	PA 12, PBT	PTFE
Connection		M12 connector, 4-pin	2 m PUR cable, 3×22 AWG	2 m PTFE cable, 3×26 AWG
Suggested mating cable		BCC M415-0000-1A-003-VX44T2-050-C013		

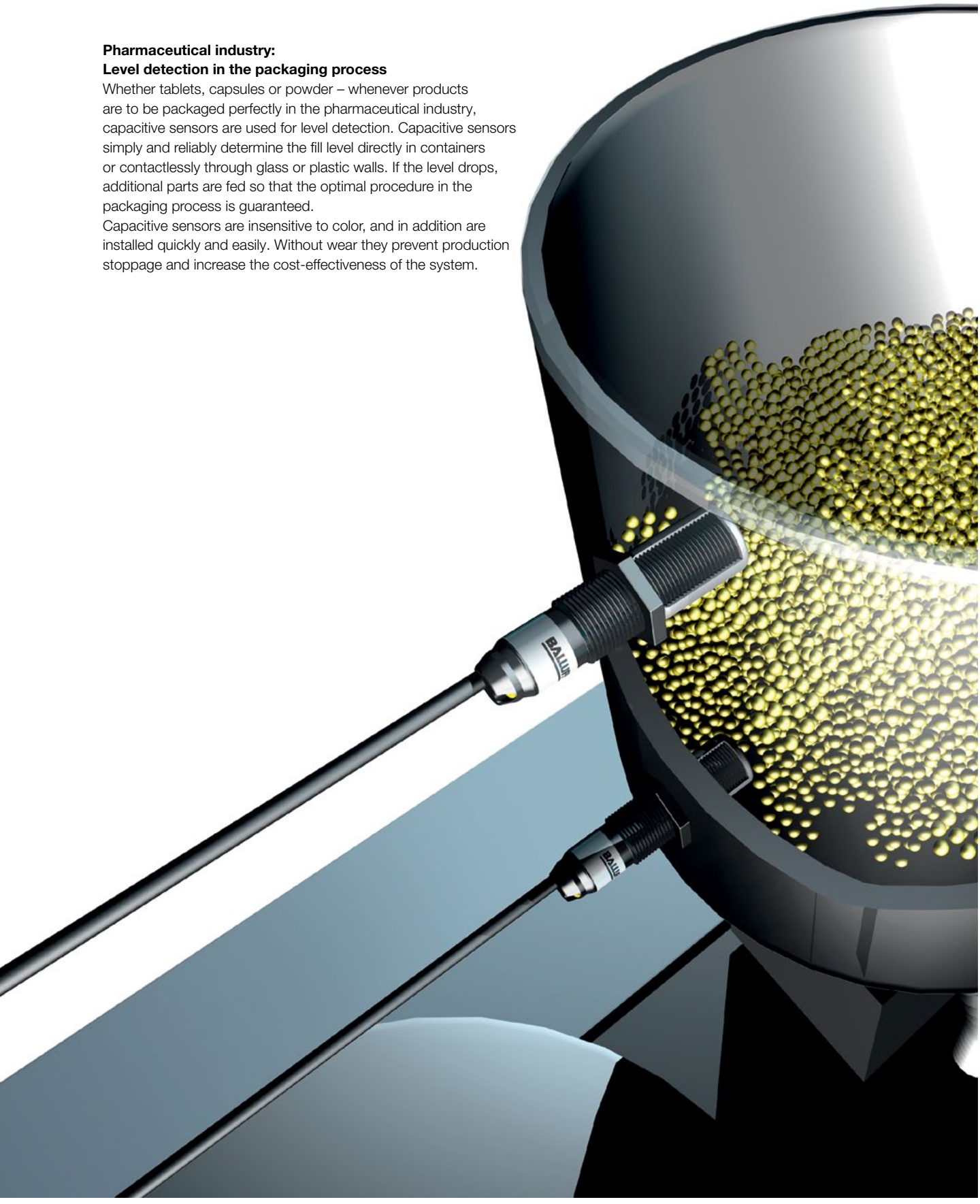
① = Connection-Switching diagram, see page 849.

Additional cable lengths on request.



Pharmaceutical industry:
Level detection in the packaging process

Whether tablets, capsules or powder – whenever products are to be packaged perfectly in the pharmaceutical industry, capacitive sensors are used for level detection. Capacitive sensors simply and reliably determine the fill level directly in containers or contactlessly through glass or plastic walls. If the level drops, additional parts are fed so that the optimal procedure in the packaging process is guaranteed.
Capacitive sensors are insensitive to color, and in addition are installed quickly and easily. Without wear they prevent production stoppage and increase the cost-effectiveness of the system.

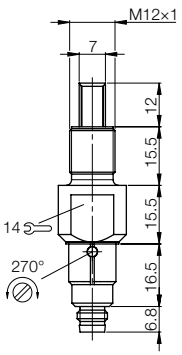


Capacitive Sensors for Level Detection

Standard sensors, cylinder designs, DC 3-wire, M12×1, G 1/4", NPT 1/4" MicroLevel

Size		**M12×1** MicroLevel
Installation type		Not flush
Rated switching distance s_n		**Level adjustable**
PNP/NPN and NO/NC, wiring selected	**Ordering code**	**BCS009T** ⑪
	Part number	BCS S41SS01-GPCFNG-S49G
Supply voltage U_B		10…35 V DC
Voltage drop U_d at I_e		≤ 3 V
Rated insulation voltage U_i		75 V DC
Output current max.		50 mA
No-load supply current I_0 max.		≤ 20 mA
Polarity reversal protected/output miswiring protected/ short-circuit protected		No/No/Yes
Ambient temperature T_a		–10…+70 °C
Switching frequency f		5 Hz
Supply voltage/Output function indicator		Green LED/Yellow LED
Degree of protection as per IEC 60529		IP 67 (sensing surface: IP 68 at max. 10 bar)
Material	Housing	PSU
	Sensing surface	PSU
	Cover	PSU
Connection		M8 connector, 3-pin
Suggested mating cables		BCC M313-0000-10-001-PX43T2-050

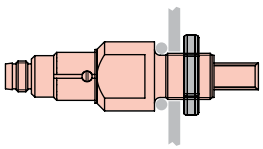
With level sensors in the MicroLevel housing, an adjustment is only necessary in exceptional cases. The potentiometer has a setting path of 270° and has to be carefully adjusted.



For the protective covering (M18 or G 1/2") for MicroLevel sensors, see Section Accessories, page 848.

① = Connection-Switching diagram, see page 849.

Additional cable lengths on request.

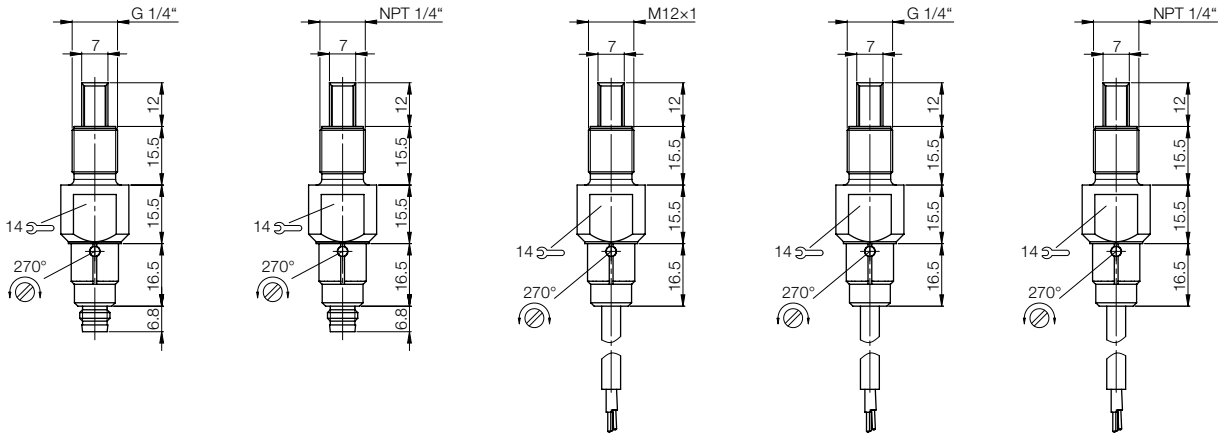


The **standard mounting** uses through-holes with included nut. This can be ignored when threaded holes are used or serve as additional security. Sealing is accomplished using an O-ring or gasket.

Capacitive Sensors for Level Detection

Standard sensors, cylinder designs, DC 3-wire, M12×1, G 1/4", NPT 1/4" MicroLevel

	G 1/4" MicroLevel	**NPT 1/4"** MicroLevel	**M12×1** MicroLevel	**G 1/4"** MicroLevel	**NPT 1/4"** MicroLevel
	Not flush	Not flush	Not flush	Not flush	Not flush
	Level adjustable	**Level adjustable**	**Level adjustable**	**Level adjustable**	**Level adjustable**
	BCS009U ⑪	**BCS009W** ⑪	**BCS009N** ⑪	**BCS009P** ⑪	**BCS009R** ⑪
	BCS S41SS02-GPCFNG-S49G	BCS S41SS03-GPCFNG-S49G	BCS S40SS01-GPCFNG-EP02	BCS S40SS02-GPCFNG-EP02	BCS S40SS03-GPCFNG-EP02
	10…35 V DC	10…35 V DC	10…35 V DC	10…35 V DC	10…35 V DC
	≤ 3 V	≤ 3 V	≤ 3 V	≤ 3 V	≤ 3 V
	75 V DC	75 V DC	75 V DC	75 V DC	75 V DC
	50 mA	50 mA	50 mA	50 mA	50 mA
	≤ 20 mA	≤ 20 mA	≤ 20 mA	≤ 20 mA	≤ 20 mA
	No/No/Yes	No/No/Yes	No/No/Yes	No/No/Yes	No/No/Yes
	–10…+70 °C	–10…+70 °C	–10…+70 °C	–10…+70 °C	–10…+70 °C
	5 Hz	5 Hz	5 Hz	5 Hz	5 Hz
	Green LED/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED
	IP 67 (sensing surface: IP 68 at max. 10 bar)	IP 67 (sensing surface: IP 68 at max. 10 bar)	IP 67 (sensing surface: IP 68 at max. 10 bar)	IP 67 (sensing surface: IP 68 at max. 10 bar)	IP 67 (sensing surface: IP 68 at max. 10 bar)
	PSU	PSU	PSU	PSU	PSU
	PSU	PSU	PSU	PSU	PSU
	PSU	PSU	PSU	PSU	PSU
	M8 connector, 3-pin BCC M313-0000-10-001-PX43T2-050	M8 connector, 3-pin BCC M313-0000-10-001-PX43T2-050	2 m PUR cable, 3×22 AWG	2 m PUR cable, 3×22 AWG	2 m PUR cable, 3×22 AWG



Capacitive Sensors for Level Detection

Standard sensors, cylinder designs, DC 3-wire, M12×1, G 1/4", NPT 1/4" MicroLevel

Reverse installation

Reverse installation

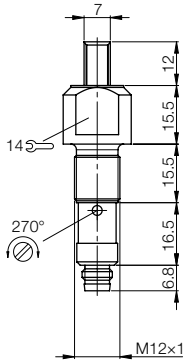
Reverse installation

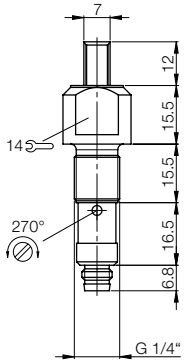
Size		**M12×1** MicroLevel	**G 1/4"** MicroLevel	**NPT 1/4"** MicroLevel	
Installation type		Not flush	Not flush	Not flush	
Rated switching distance s_n		**Level adjustable**	**Level adjustable**	**Level adjustable**	
PNP, NO	**Ordering code**				
	Part number				
PNP, NC	**Ordering code**				
	Part number				
NPN, NO	**Ordering code**				
	Part number				
NPN, NC	**Ordering code**				
	Part number				
PNP/NPN and NO/NC, wiring selected	**Ordering code**	**BCS009Y** ⑪	**BCS009Z** ⑪	**BCS00A0** ⑪	
	Part number	BCS S42SS01-GPCFNG-S49G	BCS S42SS02-GPCFNG-S49G	BCS S42SS03-GPCFNG-S49G	
Supply voltage U_B		10…35 V DC	10…35 V DC	10…35 V DC	
Voltage drop U_d at I_e		≤ 3 V	≤ 3 V	≤ 3 V	
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC	
Output current max.		50 mA	50 mA	50 mA	
No-load supply current I_0 max.		≤ 20 mA	≤ 20 mA	≤ 20 mA	
Polarity reversal protected/output miswiring protected/ short-circuit protected		No/No/Yes	No/No/Yes	No/No/Yes	
Ambient temperature T_a		–10…+70 °C	–10…+70 °C	–10…+70 °C	
Switching frequency f		5 Hz	5 Hz	5 Hz	
Supply voltage/Output function indicator		Green LED/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED	
Degree of protection as per IEC 60529		IP 64 (sensing surface: IP 68 at max. 10 bar)	IP 64 (sensing surface: IP 68 at max. 10 bar)	IP 64 (sensing surface: IP 68 at max. 10 bar)	
Material	Housing	PSU	PSU	PSU	
	Sensing surface	PSU	PSU	PSU	
	Cover	PSU	PSU	PSU	
Connection		M8 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin	
Suggested mating cable		BCC M313-0000-10-001-PX43T2-050	BCC M313-0000-10-001-PX43T2-050	BCC M313-0000-10-001-PX43T2-050	

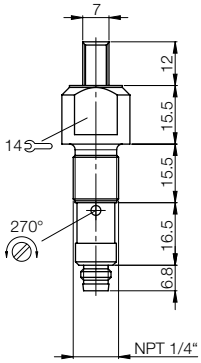
With level sensors in a MicroLevel housing, an adjustment is only necessary in exceptional cases. The potentiometer has a setting path of 270° for adjustment.

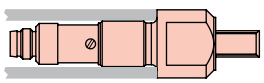
① = Connection-Switching diagram, see page 849.

Additional cable lengths on request.







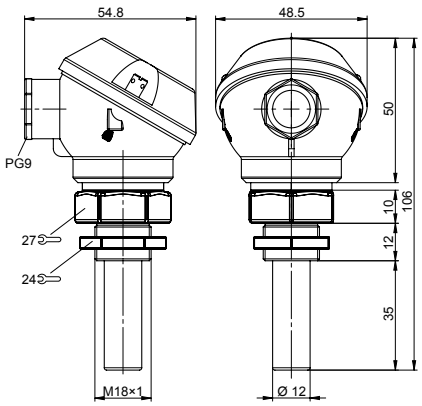


The **reverse mounting** in a tube of any desired length for fashioning "point-switching" rod sensors.
The sealing can be done with an O-ring or with a flat seal.

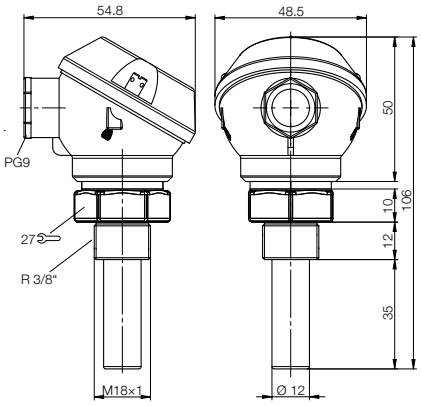
Capacitive Sensors for Level Detection

Standard sensors, cylinder designs, DC 3-wire, M18×1, R 3/8", NPTF 3/8"

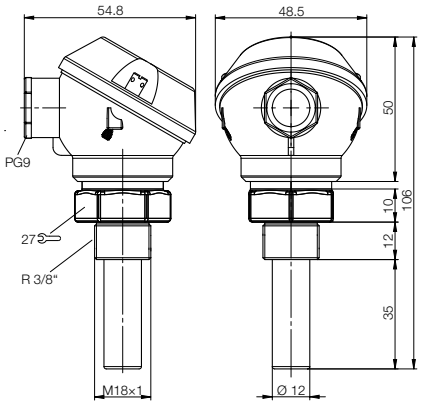
	Pressure rated to 10 bar	Pressure rated to 10 bar	Pressure rated to 10 bar
	M18×1	**R 3/8"**	**NPTF 3/8"**
	Not flush	Not flush	Not flush
	Level adjustable	**Level adjustable**	**Level adjustable**
	BCS006H ①	**BCS006M** ①	**BCS00A6** ①
	BCS S01T401-PSCFNG-KM16-T02	BCS S02T401-PSCFNG-KM16-T02	BCS S03T401-PSCFNH-KM16-T02
	BCS006J ⑤	**BCS006N** ⑤	**BCS00A7** ⑤
	BCS S01T401-POCFNG-KM16-T02	BCS S02T401-POCFNG-KM16-T02	BCS S03T401-POCFNH-KM16-T02
	BCS006K ③	**BCS006P** ③	**BCS00A8** ③
	BCS S01T401-NSCFNG-KM16-T02	BCS S02T401-NSCFNG-KM16-T02	BCS S03T401-NSCFNH-KM16-T02
	BCS006L ⑧	**BCS006R** ⑧	**BCS00A9** ⑧
	BCS S01T401-NOCFNG-KM16-T02	BCS S02T401-NOCFNG-KM16-T02	BCS S03T401-NOCFNH-KM16-T02
	10…35 V DC	10…35 V DC	10…35 V DC
	≤ 2.7 V	≤ 2.7 V	≤ 2.7 V
	75 V DC	75 V DC	75 V DC
	100 mA	100 mA	100 mA
	≤ 10 mA	≤ 10 mA	≤ 10 mA
	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
	–30…+125 °C	–30…+125 °C	–30…+125 °C
	5 Hz	5 Hz	5 Hz
	No/Yellow LED	No/Yellow LED	No/Yellow LED
	IP 67 (sensing surface:	IP 67 (sensing surface:	IP 67 (sensing surface:
	IP 68 at max. 10 bar)	IP 68 at max. 10 bar)	IP 68 at max. 10 bar)
	Cast aluminum	Cast aluminum	Cast aluminum
	PTFE	PTFE	PTFE
	Cast aluminum	Cast aluminum	Cast aluminum
	Screw terminals	Screw terminals	Screw terminals



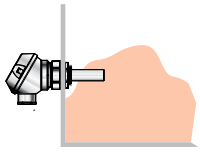
Gasket not included in the delivery.



Gasket not included in the delivery.



Gasket not included in the delivery.



Adjustment:
The adjustment is carried out with a potentiometer. The objective is to set a middle value between the turn-on and turn-off point when the sensor is damped. In individual cases when temperature swings are great and very sticky media are used a slight readjustment may be necessary. Otherwise, our adjustment instructions for non-flush mount sensor versions apply.

SmartLevel sensors exceed limits
Simply describing the output of SmartLevel sensors as level sensors for reliable sensing of liquids and conductive media does not do its strengths justice. This is because SmartLevel can do much more – when all other capacitive sensors reach their limit.

SmartLevel
- Compensate for moisture, foam and deposits.
- Penetrate wall thicknesses of glass and plastic even over 10 mm.
- Detect aqueous to highly conductive media.
- Have a chemically resistant housing made of PTFE.

In short: SmartLevel sensors exceed limits. This is because they are the solution in applications that, until now, were extremely difficult.

SmartLevel sensors also reduce costs, because they
- Provide freedom from cleaning in most applications
- Reduced use of materials
- Only require low construction effort (for example, bypass tubes are omitted)

In this way, SmartLevel sensors optimize the production process and increase the application security.

SmartLevel sensors are assigned to fluid sensors, which we label in orange.

Size		
Installation type		
Rated switching distance s_n		
PNP, NO	**Ordering code**	
	Part number	
PNP, NC	**Ordering code**	
	Part number	
NPN, NO	**Ordering code**	
	Part number	
NPN, NC	**Ordering code**	
	Part number	
Supply voltage U_B		
Voltage drop U_d at I_e		
Rated insulation voltage U_i		
Output current max.		
No-load supply current I_0 max.		
Polarity reversal protected/output miswiring protected/short-circuit protected		
Ambient temperature T_a		
Switching frequency f		
Output function indicator		
Degree of protection as per IEC 60529		
Material	Housing	
	Sensing surface	
	Cover	
Connection		
Suggested mating cable		

① = Connection-Switching diagram, see page 849.

SmartLevel sensors take off
Airbus is equipping the rest rooms in their 4-engine large-body A380 with a mixer tap. The heart of this exclusive system in the elegant Airbus design are compact SmartLevel capacitive sensors. These enable passengers to conveniently select the desired water temperature with the assistance of an LED indicator. The show-stopper: sensing errors are impossible, since SmartLevel sensors ignore clinging dirt, liquid films and soap foam. Touching the faucet triggers a switching operation, even if a wet paper towel covers it.

Capacitive Sensors for Level Detection

SMART*LEVEL*, cylinder design, DC 3-wire, Ø 7 mm, M18×1

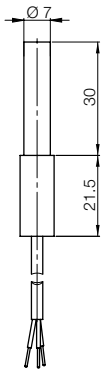
SMART*LEVEL* 15

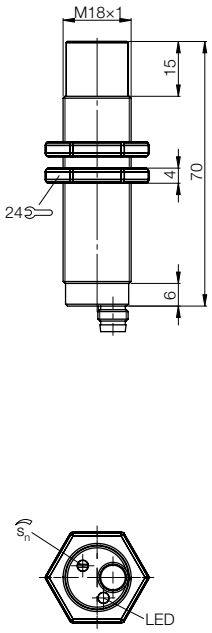
SMART*LEVEL* 15

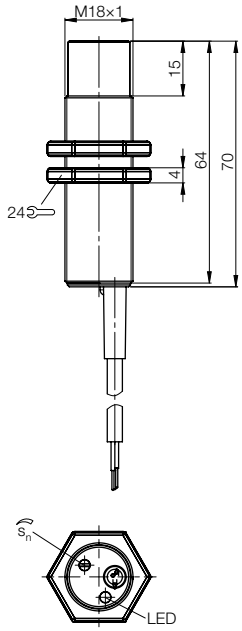
SMART*LEVEL* 15

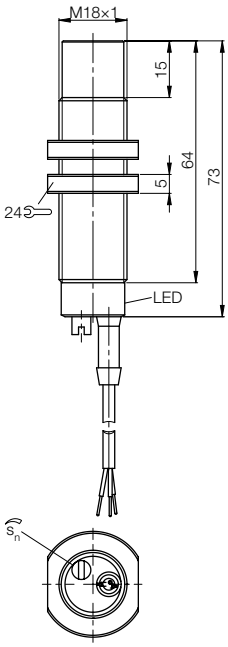
SMART*LEVEL* 15

Ø 7×52 mm	**M18×1**	**M18×1**	**M18×1**
Not flush	Not flush	Not flush	Not flush
Fixed adjustment, media-dependent	**Media-dependent**	**Media-dependent**	**Media-dependent**
BCS009C ①	**BCS008T** ②	**BCS007N** ①	**BCS008A** ①
BCS S20TT01-PSLFAG-ET02	BCS M18VVN-PSCFAG-S49G	BCS M18VVI1-PSCFAG-DV02	BCS M18TTI2-PSCFAG-AT02
BCS009E ⑤	**BCS008U** ⑦	**BCS007P** ⑤	**BCS008C** ⑤
BCS S20TT01-POLFAG-ET02	BCS M18VVN-POCFAG-S49G	BCS M18VVI1-POCFAG-DV02	BCS M18TTI2-POCFAG-AT02
BCS0088 ③	**BCS008W** ④	**BCS007R** ③	**BCS008E** ③
BCS M30TTH2-NSCFAG-AT02	BCS M18VVN-NSCFAG-S49G	BCS M18VVI1-NSCFAG-DV02	BCS M18TTI2-NSCFAG-AT02
BCS0089 ⑧	**BCS008Y** ⑩	**BCS007T** ⑧	**BCS008F** ⑧
BCS M30TTH2-NOCFAG-AT02	BCS M18VVN-NOCFAG-S49G	BCS M18VVI1-NOCFAG-DV02	BCS M18TTI2-NOCFAG-AT02
10…30 V DC	10…35 V DC	10…35 V DC	10…35 V DC
≤ 1.5 V	≤ 1.8 V	≤ 1.8 V	≤ 1.8 V
75 V DC	75 V DC	75 V DC	75 V DC
50 mA	300 mA	300 mA	300 mA
≤ 20 mA	≤ 20 mA	≤ 20 mA	≤ 20 mA
No/No/No	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
+5…+100 °C	–10…+60 °C	–10…+60 °C	–10…+60 °C
10 Hz	2 Hz	2 Hz	2 Hz
No	Yellow LED	Yellow LED	Red LED
IP 66	IP 64	IP 64	IP 64
PTFE	PVC	PVC	PTFE
PTFE	PVC	PVC	PTFE
PTFE	PVC	PVC	PTFE
2 m PTFE cable, 3×26 AWG	M8 connector, 3-pin	2 m PVC cable, 3×24 AWG	2 m PTFE cable, 3×26 AWG
	BCC M313-0000-10-001-VX43T2-050		









For direct installation in containers:
The non-flush sensors for level detection M12...M30 in plastic or PTFE housing provide IP 68 protection (at approx. 5 bar) at the sensing surface. Sensors in stainless steel housing meet IP 67 at the sensing surface.

Capacitive Sensors for Level Detection

SMARTLEVEL, cylinder design, DC 3-wire, M30×1.5

SmartLevel sensors are assigned to fluid sensors, which we label in orange.

SMARTLEVEL 15

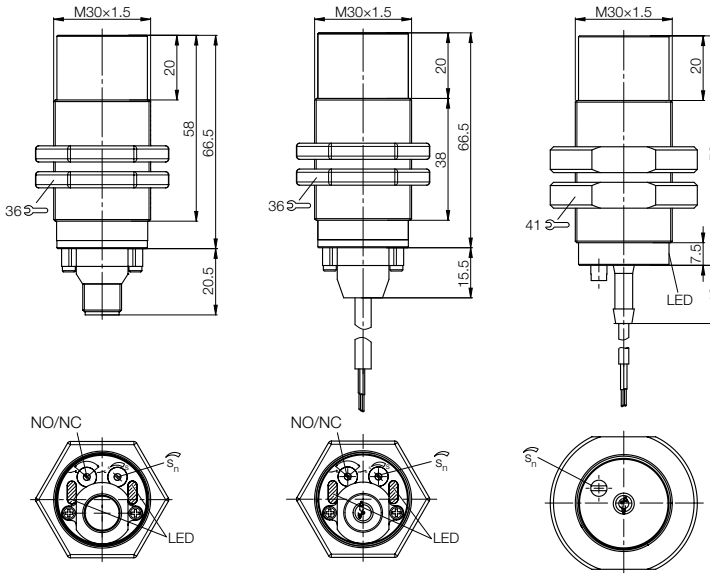
SMARTLEVEL 15

SMARTLEVEL 15

Size		**M30×1.5**	**M30×1.5**	**M30×1.5**
Installation type		Not flush	Not flush	Not flush
Rated switching distance s_n		**Media-dependent**	**Media-dependent**	**Media-dependent**
PNP, NO	**Ordering code**			**BCS0086** ①
	Part number			BCS M30TTH2-PSCFAG-AT02
PNP, NC	**Ordering code**			**BCS0087** ⑤
	Part number			BCS M30TTH2-POCFAG-AT02
PNP, NO/NC, switch selectable	**Ordering code**	**BCS007Y** ②	**BCS007U** ①	
	Part number	BCS M30BBM2-PPCFAG-S04G	BCS M30BBM3-PPCFAG-EP02	
NPN, NO	**Ordering code**			**BCS0088** ③
	Part number			BCS M30TTH2-NSCFAG-AT02
NPN, NC	**Ordering code**			**BCS0089** ⑧
	Part number			BCS M30TTH2-NOCFAG-AT02
NPN, NO/NC, switch selectable	**Ordering code**	**BCS007Z** ⑥	**BCS007W** ③	
	Part number	BCS M30BBM2-NPCFAG-S04G	BCS M30BBM3-NPCFAG-EP02	
Supply voltage U_B		10…35 V DC	10…35 V DC	10…35 V DC
Voltage drop U_d at I_e		≤ 1.8 V	≤ 1.8 V	≤ 1.8 V
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC
Output current max.		300 mA	300 mA	300 mA
No-load supply current I_0 max.		≤ 20 mA	≤ 20 mA	≤ 20 mA
Polarity reversal protected/output miswiring protected/ short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		–10…+60 °C	–10…+60 °C	–10…+60 °C
Switching frequency f		2 Hz	2 Hz	2 Hz
Supply voltage/Output function indicator		Green LED/Yellow LED	Green LED/Yellow LED	No/Red LED
Degree of protection as per IEC 60529		IP 64	IP 64	IP 64
Material	Housing	PBT	PBT	PTFE
	Sensing surface	PBT	PBT	PTFE
	Cover	PBT, PE	PBT, PE	PTFE
Connection		M12 connector, 4-pin	2 m PUR cable, 3×22 AWG	2 m PTFE cable, 3×24 AWG
Suggested mating cable		BCC M415-0000-1A-003-PX44T2-050		

① = Connection-Switching diagram, see page 849.

Additional cable lengths on request.



Capacitive Sensors with Special Properties

SMART*LEVEL* 500+, **cylinder designs, DC 3-wire, M30×1.5, Ø 30 mm**

- Detecting highly conductive acids, such as sulphuric or hydrochloric acid, through plastic or glass containers that are up to 10 mm thick
- Reliable detection of levels in food items, such as ketchup or mustard, despite heavy deposits
- Detecting concentrated cleaning agents in plastic containers

Industrial wastewater

Disinfection agent

Table salt solution

Ketchup/mustard

Phosphoric acid (10 %)

Sulfuric acid (10 %)

Calcium chloride (30 %)

Hydrochloric acid (40 %)

Nitric acid (12 %)

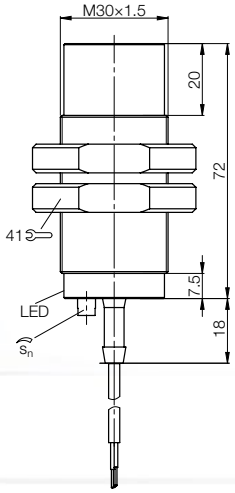
SMART*LEVEL* **500+**
Approx. 50...500 mS and greater

SmartLevel sensors are assigned to fluid sensors, which we label in orange.

SMART*LEVEL* 500+

Size		**M30×1.5**
Installation type		Not flush
Rated switching distance s_n		**Media-dependent**
PNP/NPN and NO/NC, wiring selected	**Ordering code**	**BCS00TZ** ⑪
	Part number	BCS M30TTH2-GPCFVG-AT02
Supply voltage U_B		10…30 V DC
Voltage drop U_d at I_e		≤ 2 V
Rated insulation voltage U_i		75 V DC
Output current max.		100 mA
No-load supply current I_0 max.		< 15 mA
Polarity reversal protected/output miswiring protected/short-circuit protected		No/No/Yes
Ambient temperature T_a		–10…+60 °C
Switching frequency f		5 Hz
Supply voltage/Output function indicator		No/Red LED
Degree of protection as per IEC 60529		IP 67
Material	Housing	PTFE
	Sensing surface	PTFE
	Cover	PTFE
Connection		2 m PTFE cable, 3×0.2 mm²

① = Connection-Switching diagram, see page 849.
Additional cable lengths on request.



Capacitive Sensors for Level Detection

SMART*LEVEL*, cylinder design, DC 3-wire, M12×1, G 1/4", NPT 1/4" MicroLevel

SmartLevel sensors are assigned to fluid sensors, which we label in orange.

SMART*LEVEL* 15

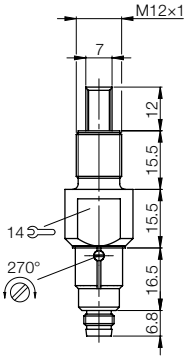
SMART*LEVEL* 15

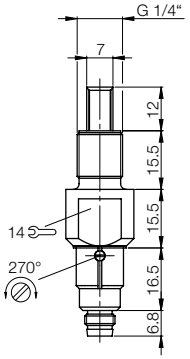
SMART*LEVEL* 15

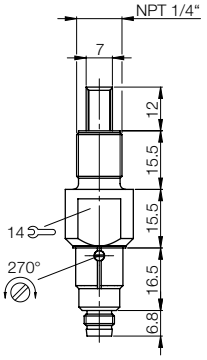
Size		**M12×1** MicroLevel	**G 1/4"** MicroLevel	**NPT 1/4"** MicroLevel
Installation type		Not flush	Not flush	Not flush
Rated switching distance s_n		**Media-dependent**	**Media-dependent**	**Media-dependent**
PNP/NPN and	**Ordering code**	**BCS0095** ①	**BCS0096** ①	**BCS0097** ①
NO/NC, wiring selected	Part number	BCS S41SS01-GPCFAG-S49G	BCS S41SS02-GPCFAG-S49G	BCS S41SS03-GPCFAG-S49G
Supply voltage U_B		10…35 V DC	10…35 V DC	10…35 V DC
Voltage drop U_d at I_e		≤ 3 V	≤ 3 V	≤ 3 V
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC
Output current max.		50 mA	50 mA	50 mA
No-load supply current I_0 max.		≤ 20 mA	≤ 20 mA	≤ 20 mA
Polarity reversal protected/output miswiring protected/ short-circuit protected		No/No/Yes	No/No/Yes	No/No/Yes
Ambient temperature T_a		–10…+105 °C	–10…+105 °C	–10…+105 °C
Switching frequency f		5 Hz	5 Hz	5 Hz
Supply voltage/Output function indicator		Green LED/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED
Degree of protection as per IEC 60529		IP 67 (sensing surface: IP 68 at max. 10 bar)	IP 67 (sensing surface: IP 68 at max. 10 bar)	IP 67 (sensing surface: IP 68 at max. 10 bar)
Material	Housing	PSU	PSU	PSU
	Sensing surface	PSU	PSU	PSU
	Cover	PSU	PSU	PSU
Connection		M8 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin
Suggested mating cable		BCC M313-0000-10-001-PX43T2-050	BCC M313-0000-10-001-PX43T2-050	BCC M313-0000-10-001-PX43T2-050

With level sensors in the MicroLevel housing, an adjustment is only necessary in exceptional cases. The potentiometer has a setting path of 270° and has to be carefully adjusted.

For the protective covering (M18 or G 1/2") for MicroLevel sensors, see Section Accessories, page 848.







① = Connection-Switching diagram, see page 849.

SmartLevel sensors are assigned to fluid sensors, which we label in orange.

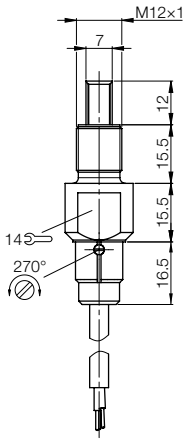
SMARTLEVEL 15

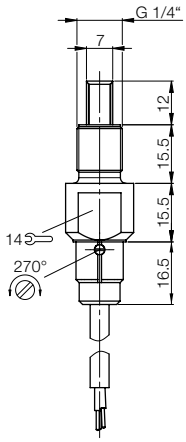
SMARTLEVEL 15

Size		**M12×1** MicroLevel	**G 1/4"** MicroLevel
Installation type		Not flush	Not flush
Rated switching distance s_n		**Media-dependent**	**Media-dependent**
PNP/NPN and	**Ordering code**	**BCS008Z** ⑪	**BCS0090** ⑪
NO/NC, wiring selected	Part number	BCS S40SS01-GPCFAG-EP02	BCS S40SS02-GPCFAG-EP02
Supply voltage U_B		10…35 V DC	10…35 V DC
Voltage drop U_d at I_e		≤ 3 V	≤ 3 V
Rated insulation voltage U_i		75 V DC	75 V DC
Output current max.		50 mA	50 mA
No-load supply current I_0 max.		≤ 20 mA	≤ 20 mA
Polarity reversal protected/output miswiring protected/ short-circuit protected		No/No/Yes	No/No/Yes
Ambient temperature T_a		–10…+105 °C	–10…+105 °C
Switching frequency f		5 Hz	5 Hz
Supply voltage/Output function indicator		Green LED/Yellow LED	Green LED/Yellow LED
Degree of protection as per IEC 60529		IP 67 (sensing surface: IP 68 at max. 10 bar)	IP 67 (sensing surface: IP 68 at max. 10 bar)
Material	Housing	PSU	PSU
	Sensing surface	PSU	PSU
	Cover	PSU	PSU
Connection		2 m PUR cable, 3x22 AWG	2 m PUR cable, 3x22 AWG
Suggested mating cable			

With level sensors in the MicroLevel housing, an adjustment is only necessary in exceptional cases. The potentiometer has a setting path of 270° and has to be carefully adjusted.

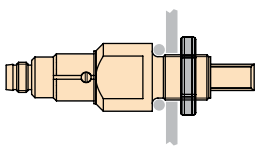
For the protective covering (M18 or G 1/2") for MicroLevel sensors, see Section Accessories, page 848.





① = Connection-Switching diagram, see page 849.

Additional cable lengths on request.



The **standard mounting** uses through-holes with included nut. This can be ignored when threaded holes are used or serve as additional security. Sealing is done with an O-ring or gasket.

Capacitive Sensors for Level Detection

SMART*LEVEL*, cylinder design, DC 3-wire, M12×1, G 1/4", NPT 1/4" MicroLevel

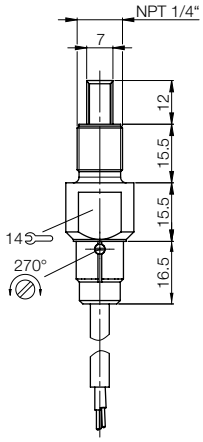
SMART*LEVEL* 15

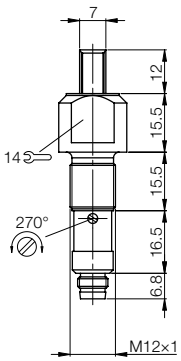
Reverse installation
SMART*LEVEL* 15

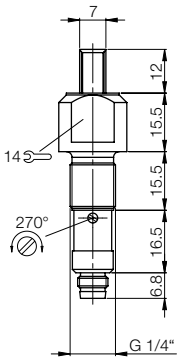
Reverse installation
SMART*LEVEL* 15

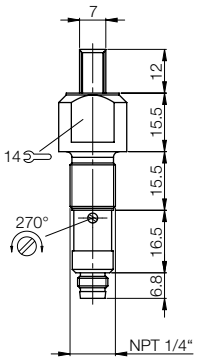
Reverse installation
SMART*LEVEL* 15

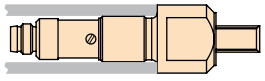
	NPT 1/4" MicroLevel	**M12×1** MicroLevel	**G 1/4"** MicroLevel	**NPT 1/4"** MicroLevel
	Not flush	Not flush	Not flush	Not flush
	Media-dependent	**Media-dependent**	**Media-dependent**	**Media-dependent**
	BCS0091 ⑪	**BCS0098** ⑪	**BCS0099** ⑪	**BCS009A** ⑪
	BCS S40SS03-GPCFAG-EP02	BCS S42SS01-GPCFAG-S49G	BCS S42SS02-GPCFAG-S49G	BCS S42SS03-GPCFAG-S49G
	10…35 V DC	10…35 V DC	10…35 V DC	10...35 V DC
	≤ 3 V	≤ 3 V	≤ 3 V	≤ 3 V
	75 V DC	75 V DC	75 V DC	75 V DC
	50 mA	50 mA	50 mA	50 mA
	≤ 20 mA	≤ 20 mA	≤ 20 mA	≤ 20 mA
	No/No/Yes	No/No/Yes	No/No/Yes	No/No/Yes
	–10…+105 °C	–10…+105 °C	–10…+105 °C	–10…+105 °C
	5 Hz	5 Hz	5 Hz	5 Hz
	Green LED/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED
	IP 67 (sensing surface: IP 68 at max. 10 bar)	IP 64 (sensing surface: IP 68 at max. 10 bar)	IP 64 (sensing surface: IP 68 at max. 10 bar)	IP 64 (sensing surface: IP 68 at max. 10 bar)
	PSU	PSU	PSU	PSU
	PSU	PSU	PSU	PSU
	PSU	PSU	PSU	PSU
	2 m PUR cable, 3x22 AWG	M8 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin
		BCC M313-0000-10-001-PX43T2-050	BCC M313-0000-10-001-PX43T2-050	BCC M313-0000-10-001-PX43T2-050











Reverse mounting in a tube of any desired length for fashioning "point-switching" rod sensors. The sealing can be done with an O-ring or with a flat seal.

Capacitive Sensors for Level Detection
SMARTLEVEL, disk designs, DC 3-wire, Ø 50 mm

The SmartLevel capacitive sensor is always well put to use if applications are difficult to find solutions for, whether in the semiconductor industry, in special machine design, in the food and packaging segment or in industrial cleaning technology. For conductive media, the SmartLevel 15 is recommended. And in highly conductive media, SmartLevel 50 is best used.

Wafer processing (semiconductor industry)
During wafer processing, SmartLevel monitors the overflow of hydrochloric acid through a container wall, so that it can come into contact with condensate containing salt. The highly conductive deposit of the condensate does not, however, impede it.

Cold deformation (oil spraying system in special machine design)
Likewise, the SmartLevel ignores highly conductive graphite deposits when it reliably measures the level of an oil-graphite mixture through the wall of a plastic container in special machine construction. Through this, it is ensured that the mixture can be continuously sprayed on metal plates, in order to better be able to bend it during cold deformation.

Filling bottles of body lotion (packaging industry)
The SmartLevel is suited for detecting conductive, paste-type media which can cause heavier deposits. Therefore, it is ideally used during filling of bottles of body lotion. Through a 10 mm-thick inspection glass, it monitors their fill level in stainless steel containers with absolute reliability and, through its external positioning, also reduces the effort for cleaning.

Brining pretzels (food industry)
SmartLevel also finds use directly in foaming media. For example, in the stainless steel container of a system in which pretzels are sprayed with caustic soda lye. In doing so, it controls the minimum-maximum fill level of the caustic soda lye with absolute reliability.

Cleaning metal parts (industrial cleaning technology)
SmartLevel controls the fill level of a supply tank for cleaning metal parts, because it can compensate for foam, grease and filmimg. Water spray and temperatures up to 105 °C do not impede it. In addition, its PTFE sleeve protects it from aggressive media.

SmartLevel sensors are assigned to fluid sensors, which we label in orange.

c UL us LISTED CE

Size		
Installation type		
Rated switching distance s_n		
PNP, NO	**Ordering code**	
	Part number	
PNP, NC	**Ordering code**	
	Part number	
PNP, NO/NC, switch selectable	**Ordering code**	
	Part number	
NPN, NO	**Ordering code**	
	Part number	
NPN, NC	**Ordering code**	
	Part number	
NPN, NO/NC, switch selectable	**Ordering code**	
	Part number	
Supply voltage U_B		
Voltage drop U_d at I_e		
Rated insulation voltage U_i		
Output current max.		
No-load supply current I_0 max.		
Polarity reversal protected/output miswiring protected/ short-circuit protected		
Ambient temperature T_a		
Switching frequency f		
Output function indicator		
Degree of protection as per IEC 60529		
Material	Housing	
	Sensing surface	
	Cover	
Connection		

① = Connection-Switching diagram, see page 849.

Additional cable lengths on request.

Capacitive Sensors for Level Detection

SMART*LEVEL*, disk designs, DC 3-wire, Ø 50 mm

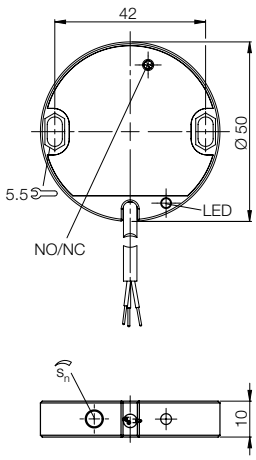
SMART*LEVEL* 15

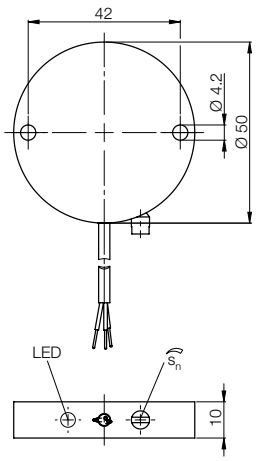
SMART*LEVEL* 15

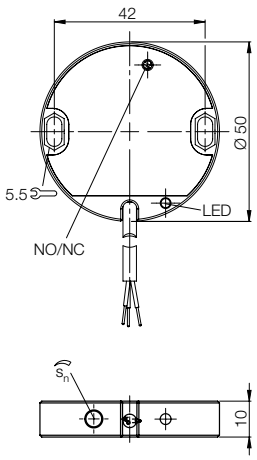
SMART*LEVEL* 50

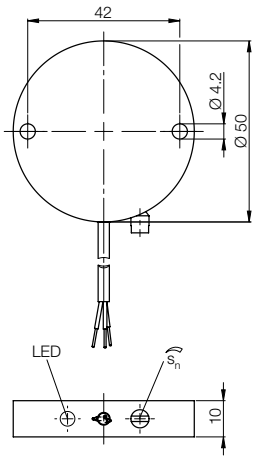
SMART*LEVEL* 50

	Ø 50×10 mm	**Ø 50×10 mm**	**Ø 50×10 mm**	**Ø 50×10 mm**
	Flush	Flush	Flush	Flush
	Media-dependent	**Media-dependent**	**Media-dependent**	**Media-dependent**
		BCS0080 ①	**BCS00CK** ①	**BCS00UW** ①
		BCS D50TT05-PSCFAC-ET02	BCS D50OO06-PSFSC-EV02	BCS D50TT06-PSCFSC-ET02
		BCS0081 ⑤	**BCS00CM** ⑤	**BCS00UY** ⑤
		BCS D50TT05-POCFAC-ET02	BCS D50OO06-POFSC-EV02	BCS D50TT06-POCFSC-ET02
	BCS0084 ①			
	BCS D50OO04-PPCFAC-EV02			
		BCS0082 ③	**BCS00HE** ③	**BCS00WO** ③
		BCS D50TT05-NSCFAC-ET02	BCS D50OO06-NSFSC-EV02	BCS D50TT06-NSCFSC-ET02
		BCS0083 ⑧	**BCS00C1** ⑧	**BCS00UZ** ⑧
		BCS D50TT05-NOCFAC-ET02	BCS D50OO06-NOFSC-EV02	BCS D50TT06-NOCFSC-ET02
	BCS0085 ③			
	BCS D50OO04-NPCFAC-EV02			
	10…35 V DC	10…35 V DC	10…30 V DC	10…30 V DC
	≤ 1.8 V	≤ 1.8 V	≤ 1.8 V	≤ 1.8 V
	75 V DC	75 V DC	75 V DC	75 V DC
	300 mA	300 mA	300 mA	300 mA
	≤ 20 mA	≤ 20 mA	≤ 10 mA	≤ 10 mA
	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
	–10…+60 °C	–10…+60 °C	–10…+60 °C	–10…+60 °C
	2 Hz	2 Hz	2 Hz	2 Hz
	Yellow LED	Red LED	Yellow LED	Red LED
	IP 67	IP 67	IP 67	IP 67
	POM	PTFE	POM	PTFE
	POM	PTFE	POM	PTFE
	POM	PTFE	POM	PTFE
	2 m PVC cable, 3×24 AWG	2 m PTFE cable, 3×26 AWG	2 m PVC cable, 3×24 AWG	2 m PTFE cable, 3×26 AWG









Capacitive Sensors for Level Detection

SMARTLEVEL, block design, DC 3-wire, 16×34×8 mm Micro-Box

SmartLevel sensors are assigned to fluid sensors, which we label in orange.

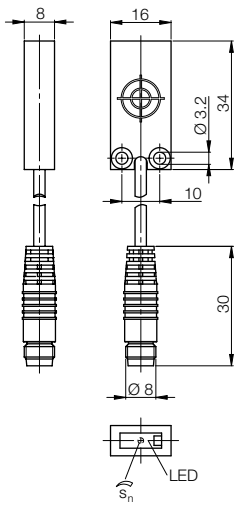
SMARTLEVEL 15

SMARTLEVEL 15

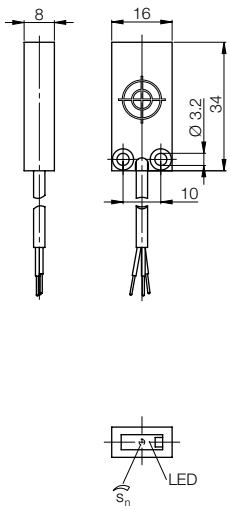
Size			**16×34×8 mm** Micro-Box	**16×34×8 mm** Micro-Box
Installation type			Flush	Flush
Rated switching distance s_n			**Media-dependent**	**Media-dependent**
PNP	NO	**Ordering code**	**BCS008M** ②	**BCS008H** ①
		Part number	BCS R08RR01-PSMFAC-EP00,2-GS49	BCS R08RR01-PSMFAC-EP02
PNP	NC	**Ordering code**	**BCS008N** ⑦	**BCS008J** ⑤
		Part number	BCS R08RR01-POMFAC-EP00,2-GS49	BCS R08RR01-POMFAC-EP02
NPN	NO	**Ordering code**	**BCS008P** ④	**BCS008K** ③
		Part number	BCS R08RR01-NSMFAC-EP00,2-GS49	BCS R08RR01-NSMFAC-EP02
NPN	NC	**Ordering code**	**BCS008R** ⑩	**BCS008L** ⑧
		Part number	BCS R08RR01-NOMFAC-EP00,2-GS49	BCS R08RR01-NOMFAC-EP02
Supply voltage U_B			12…30 V DC	12...30 V DC
Voltage drop U_d at I_e			≤ 1.5 V	≤ 1.5 V
Rated insulation voltage U_i			75 V DC	75 V DC
Output current max.			50 mA	50 mA
No-load supply current I_0 max.			≤ 10 mA	≤ 10 mA
Polarity reversal protected/output miswiring protected/ short-circuit protected			Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a			–30…+70 °C	–30…+70 °C
Switching frequency f			2 Hz	2 Hz
Output function indicator			Yellow LED	Yellow LED
Degree of protection as per IEC 60529			IP 67	IP 67
Material		Housing	PP	PP
		Sensing surface	PP	PP
		Cover	PP	PP
Connection			0.2 m PUR cable, with M8 3-pin connector	2 m PUR cable, 3×26 AWG
Suggested mating cable			BCC M313-0000-10-001-VX43T2-050	

① = Connection-Switching diagram, see page 849.

Additional cable lengths on request.



Mounting frame included in delivery.



Mounting frame included in delivery.

Capacitive Sensors for Level Detection

SMART*LEVEL*, block design, DC 3-wire, 40×40×10 mm Uniflat

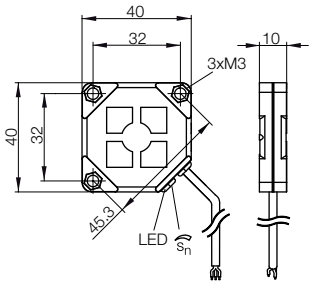
SmartLevel sensors are assigned to fluid sensors, which we label in orange.

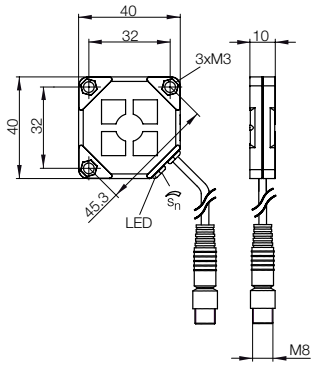
SMART*LEVEL* 15

SMART*LEVEL* 15

Size		**40×40×10 mm** Uniflat	**40×40×10 mm** Uniflat
Installation type		Flush	Flush
Rated switching distance s_n		**Media-dependent**	**Media-dependent**
PNP/NPN and NO/NC, wiring selected	**Ordering code**	**BCS00TP** ⑪	
	Part number	BCS Q40BBAA-GPCFAC-EP02	
PNP NO	**Ordering code**		**BCS00U8** ②
	Part number		BCS Q40BBAA-PSCFAC-EP00,3-GS49
PNP NC	**Ordering code**		**BCS00U7** ⑥
	Part number		BCS Q40BBAA-POCFAC-EP00,3-GS49
Supply voltage U_B		10...30 V DC	10...30 V DC
Voltage drop U_d at I_e		≤ 2.5 V	≤ 2.5 V
Rated insulation voltage U_i		75 V DC	75 V DC
Output current max.		100 mA	100 mA
No-load supply current I_0 max.		≤ 11 mA	≤ 11 mA
Polarity reversal protected/output miswiring protected/ short-circuit protected		No/No/Yes	Yes/Yes/Yes
Ambient temperature T_a		–5...+85 °C	–5...+85 °C
Switching frequency f		10 Hz	10 Hz
Supply voltage/Output function indicator		Green LED/Yellow LED	Green LED/Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67
Material	Housing	PBT	PBT
	Sensing surface	PBT	PBT
	Cover	PBT	PBT
Connection		2 m PUR cable, 3×26 AWG	0.3 m PUR cable with M8 3-pin connector
Suggested mating cable			BCC M313-0000-10-001-PX43T2-050

① = Connection-Switching diagram, see page 849.





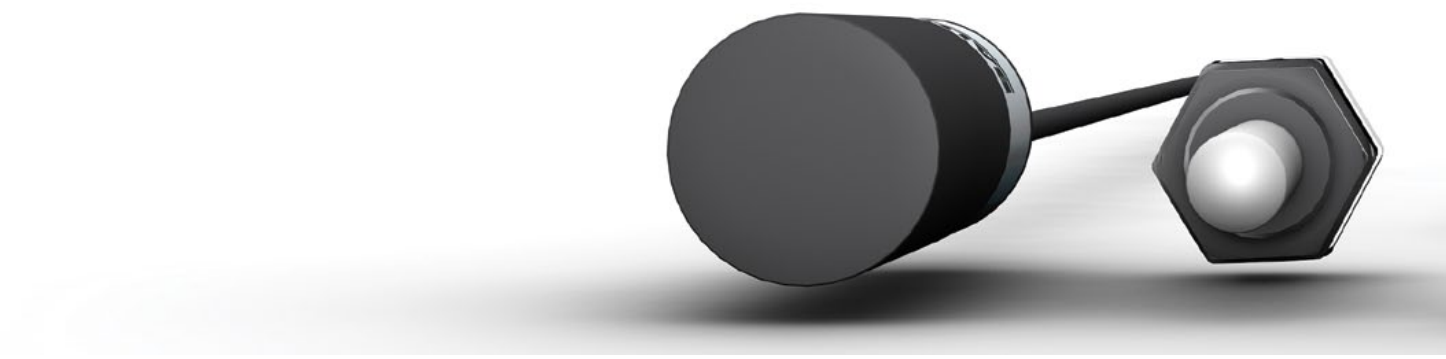
The new capacitive SmartLevel sensors in the Uniflat design detects conductive media through non-metallic container walls with a thickness up to 10 mm.
Installation is quick and easy. This is because they can be screwed on or attached to bypass tubes with cable ties. The connection is made using a 2 m cable or a short pigtail line with an M8 plug.
The codable output function provides PNP or NPN and normally open or normally closed functionality.

SmartLevel
- Suppress foam and deposits
- Easy to install on tubes with cable ties
- Regular cleaning can be omitted

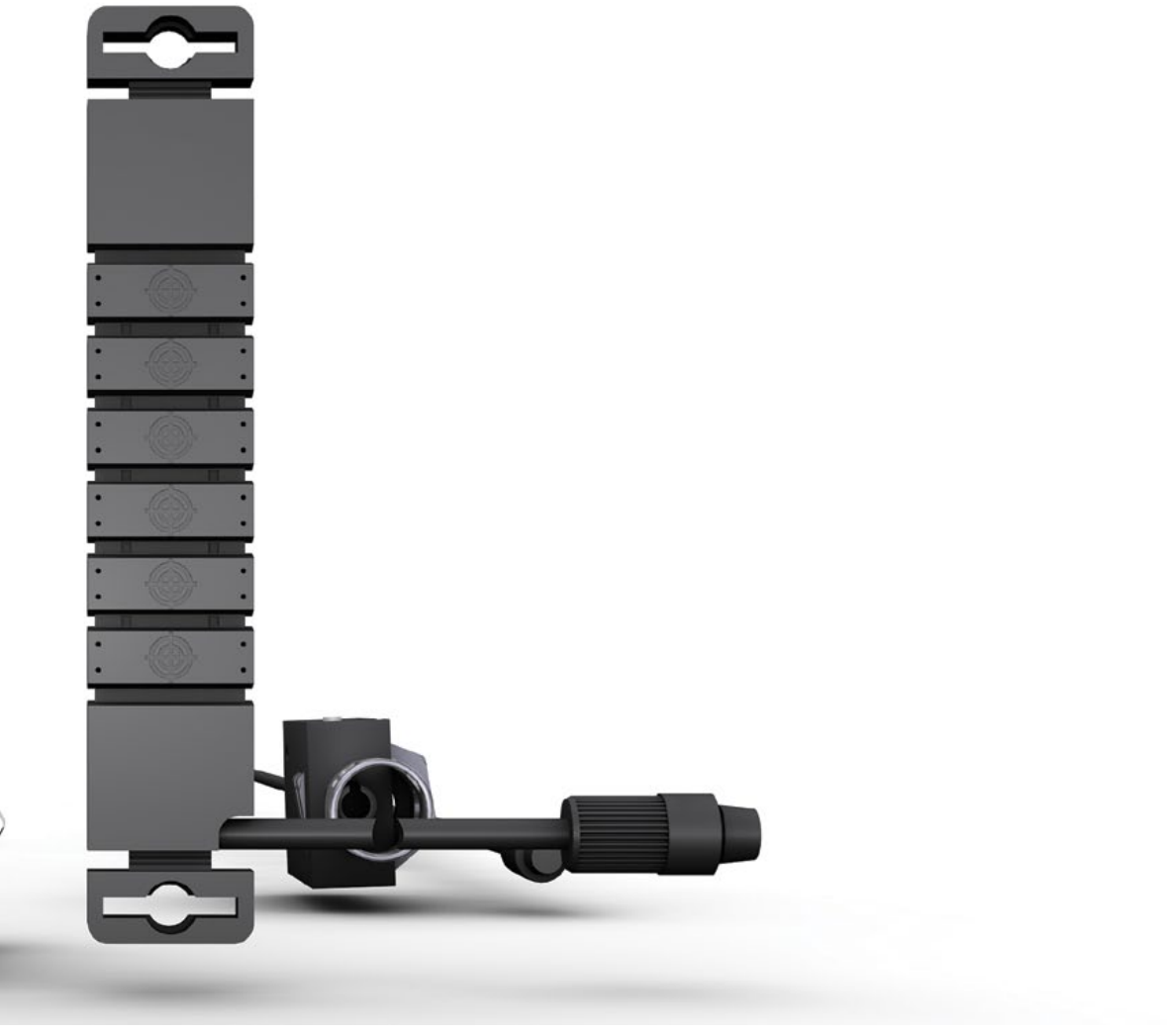
Capacitive Sensors

Capacitive sensors with special properties

Balluff capacitive sensors are available in high temperature and pressure ratings, stainless steel and Teflon housings for harsh environments, a wide supply voltage range and especially compact designs are all available in the BCS family. Capacitive adhesive sensors adapt to the shape of the housing with great flexibility.



Capacitive Sensors with Special Properties
Contents



Capacitive Sensors with Special Properties
High temperature rated sensors, cylinder designs, DC 3-wire

+250 °C

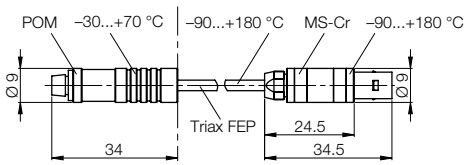
Balluff high-temperature capacitive sensors can be used for level detection of liquid, paste-like or powdery media at high temperatures up to 250 °C. To withstand such extreme conditions, the housing of the high-temperature rated sensors is made of stainless steel and the sensor heads of PTFE. The sensors are also used with a special Triax sensor cable and a separate amplifier.

Size		
Installation type		
Rated switching distance s_n		
With sensor amplifier	**Ordering code**	
	Part number	
Supply voltage U_B		
Ambient temperature T_a		
Degree of protection as per IEC 60529		
Material	Housing	
	Sensing surface	
	Cover	
Connection		

Sensor amplifiers for capacitive high pressure rated sensors can be found on page 841.

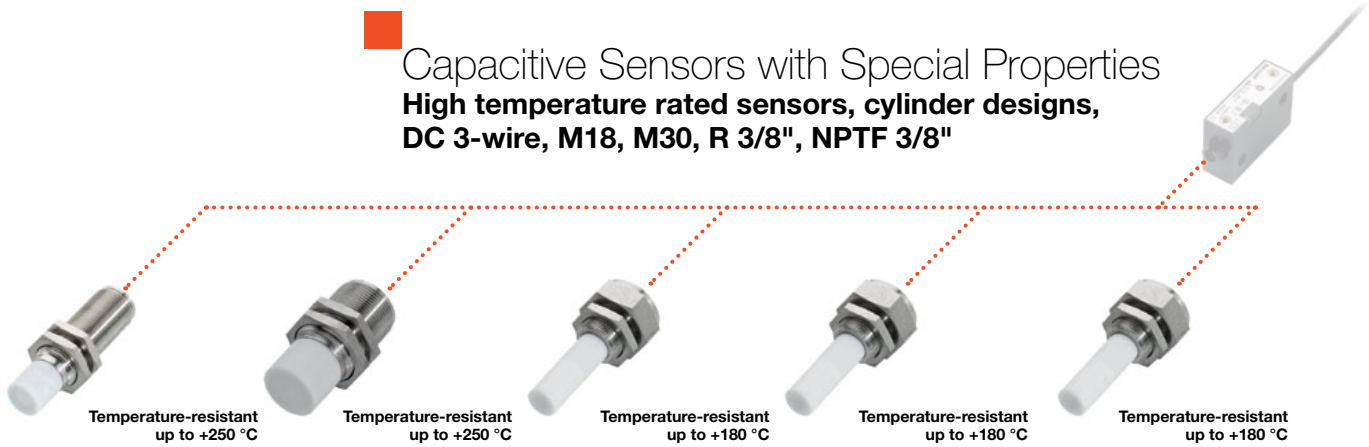
Additional cable lengths on request.

Description	**Connectors for high-temperature sensors**
Ordering code	**BCC04JW**
Part number	BCC Z003-020
Ambient temperature T_a	See drawing
Degree of protection as per IEC 60529	IP 54
Connection	2 m Triax FEP

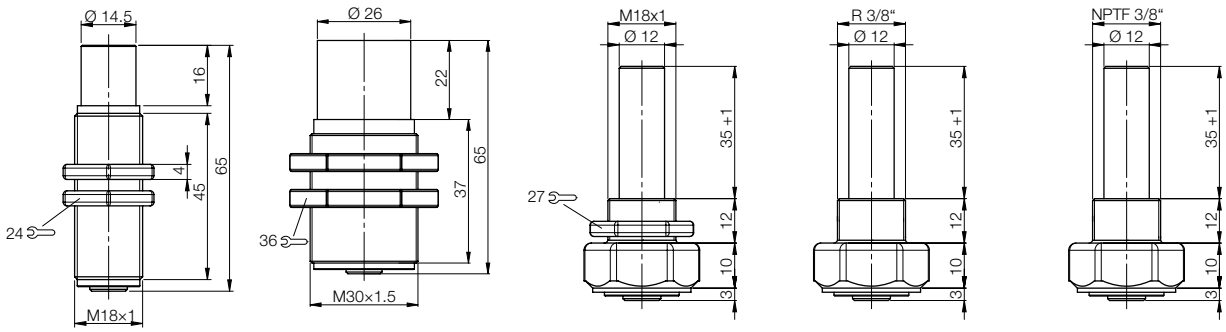


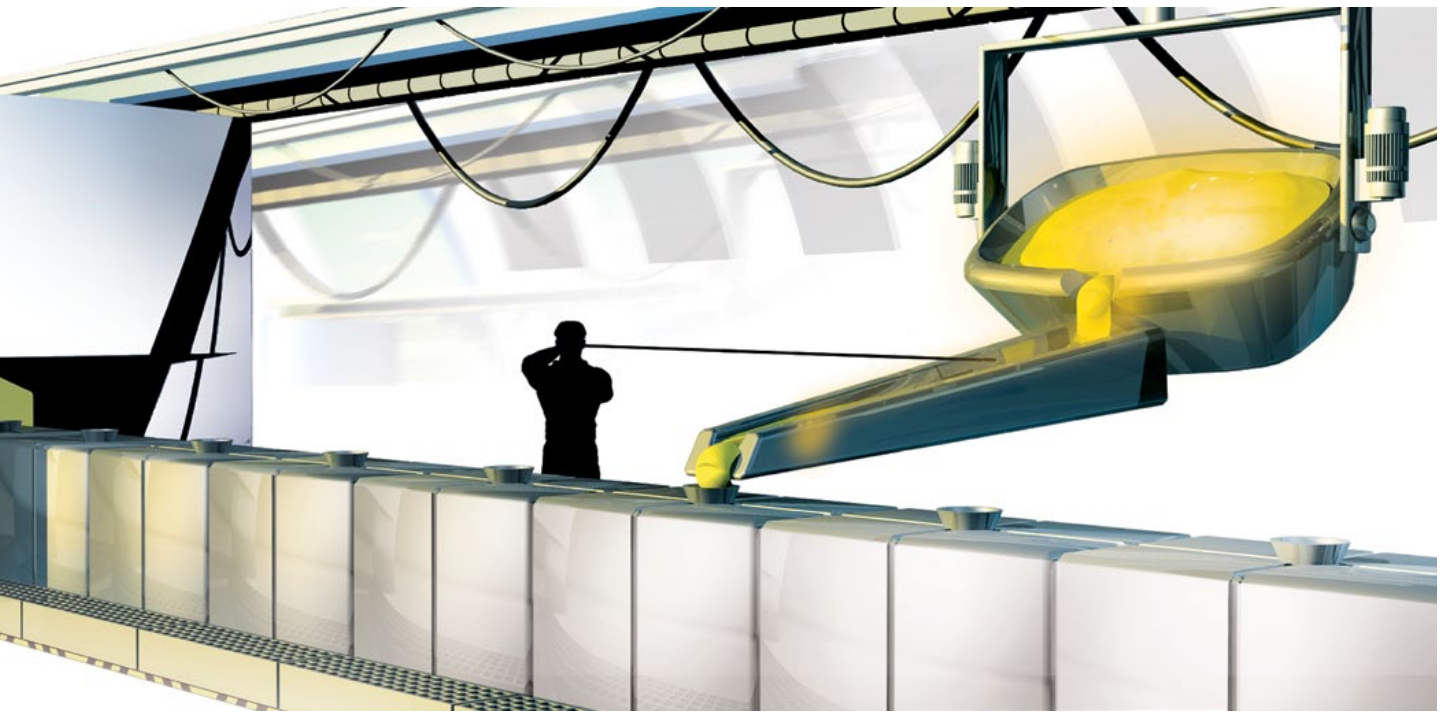
Capacitive Sensors with Special Properties

High temperature rated sensors, cylinder designs, DC 3-wire, M18, M30, R 3/8", NPTF 3/8"



	Temperature-resistant up to +250 °C	Temperature-resistant up to +250 °C	Temperature-resistant up to +180 °C	Temperature-resistant up to +180 °C	Temperature-resistant up to +180 °C
	M18×1	**M30×1.5**	**M18×1**	**R 3/8"**	**NPTF 3/8"**
	Not flush	Not flush	Not flush	Not flush	Not flush
	1…10 mm	**1…20 mm**	**Level adjustable**	**Level adjustable**	**Level adjustable**
	BCS00A1	**BCS00A2**	**BCS00A3**	**BCS00A4**	**BCS00A5**
	BCS M18T4H1-XXS10H-SZ02-T08	BCS M30T4G1-XXS20H-SZ02-T08	BCS S10T401-XXSFNC-SZ02-T07	BCS S10T402-XXSFNC-SZ02-T07	BCS S10T403-XXSFNC-SZ02-T07
	4…8 V DC	4…8 V DC	4…8 V DC	4…8 V DC	4…8 V DC
	–180…+250 °C	**–180…+250 °C**	**–10…+180 °C**	**–10…+180 °C**	**–10…+180 °C**
	IP 54	IP 54	IP 54 (sensing surface: IP 68 at max. 6 bar)	IP 54 (sensing surface: IP 68 at max. 6 bar)	IP 54 (sensing surface: IP 68 at max. 6 bar)
	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
	PTFE	PTFE	PTFE	PTFE	PTFE
	PTFE, MS-Cr	PTFE, MS-Cr	PTFE, MS-Cr	PTFE, MS-Cr	PTFE, MS-Cr
	Triax sensor cable	Triax sensor cable	Triax sensor cable	Triax sensor cable	Triax sensor cable





Capacitive Sensors with Special Properties

High pressure rated sensors, cylinder designs, DC 3-wire, M12

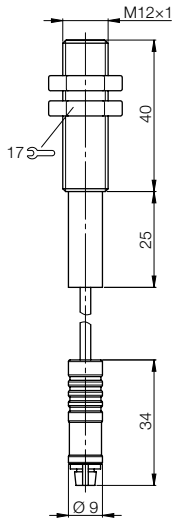
up to 150 bar

Pressure rated to 150 bar

Size		**M12×1**
Installation type		Flush
Rated switching distance s_n		**1 mm**
With sensor amplifier	**Ordering code**	**BCS00CR**
	Part number	BCS M12EG2-XXS10B-BT01-GZ01-501
Supply voltage U_B		4...8 V DC
Rated insulation voltage U_i (protection class)		75 V DC
Ambient temperature T_a		0...+70 °C
Degree of protection as per IEC 60529		IP 67
Material	Housing	Stainless steel
	Sensing surface	PTFE
	Cover	POM
Connection		Triax sensor cable

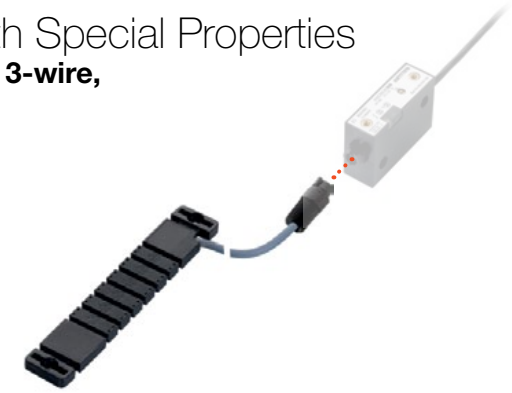
Sensor amplifiers for capacitive high pressure rated sensors can be found on page 841.

Additional cable lengths on request.



Capacitive Sensors with Special Properties

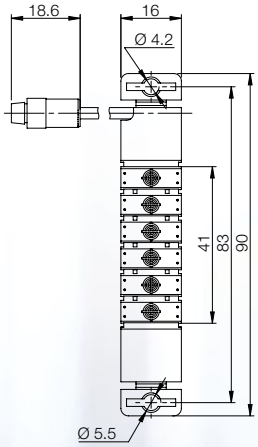
Flexible adhesive sensor, DC 3-wire, 90×16×4 mm



Size		**90×16×4 mm**
Installation type		Flush
Rated switching distance s_n		**0…10 mm**
With sensor amplifier	**Ordering code**	**BCS000Y**
	Part number	BCS F01CP01-XXS10C-EP02-GZ01-002
Supply voltage U_B		4…8 V DC
Rated insulation voltage U_i		75 V DC
Ambient temperature T_a		0…+60 °C
Switching frequency f		100 Hz
Degree of protection as per IEC 60529		IP 60
Material	Housing	PC, PUR
	Sensing surface	PUR
Connection		2 m PUR cable, 26 AWG

Sensor amplifiers for capacitive adhesive sensors can be found on page 841.

Additional cable lengths on request.

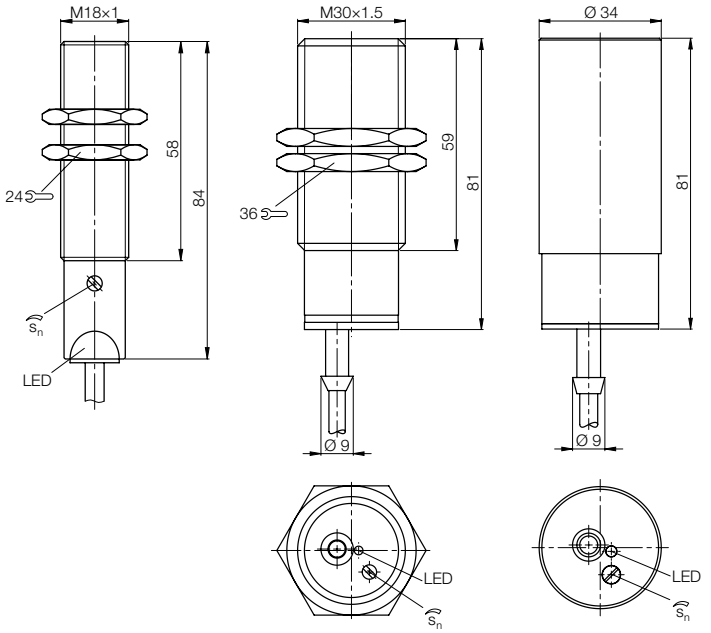


AC/DC, cylinder designs, 2-wire, M18, M30, Ø 34 mm

Size		**M18×1**	**M30×1.5**	**Ø 34 mm**
Installation type		Not flush	Not flush	Not flush
Rated switching distance s_n		**8 mm**	**15 mm**	**20 mm**
NO	**Ordering code**	**BCS000K** ⑫	**BCS000W** ⑫	**BCS0007** ⑫
	Part number	BCS M18KM3-UST80G-BV02	BCS M30KN2-UST15G-AV02	BCS G34KN2-UST20G-AV02
NC	**Ordering code**	**BCS000J** ⑬	**BCS000U** ⑬	**BCS0006** ⑬
	Part number	BCS M18KM3-UOT80G-BV02	BCS M30KN2-UOT15G-AV02	BCS G34KN2-UOT20G-AV02
Supply voltage U_B		20...250 V AC/DC	20...250 V AC/DC	20...250 V AC/DC
Voltage drop U_d at I_e		≤ 6 V	≤ 10 V	≤ 10 V
Rated insulation voltage U_i (protection class)		250 V AC (⧈)	250 V AC (⧈)	250 V AC (⧈)
Output current max.		350 mA (AC)/100 mA (DC)	250 mA (AC)/100 mA (DC)	250 mA (AC)/100 mA (DC)
Short-circuit protected		No	No	No
Ambient temperature T_a		–25...+80 °C	–25...+70 °C	–25...+70 °C
Switching frequency f		25 Hz (AC)/50 Hz (DC)	25 Hz (AC)/40 Hz (DC)	25 Hz (AC)/40 Hz (DC)
Output function indicator		Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 65	IP 65
Material	Housing	PBT	PBT	PBT
	Sensing surface	PBT	PBT	PBT
	Cover	PBT	PBT	PBT
Connection		2 m PVC cable, 3×22 AWG	2 m PVC cable, 3×22 AWG	2 m PVC cable, 3×20 AWG

① = Connection-Switching diagram, see page 849.

Additional cable lengths on request.

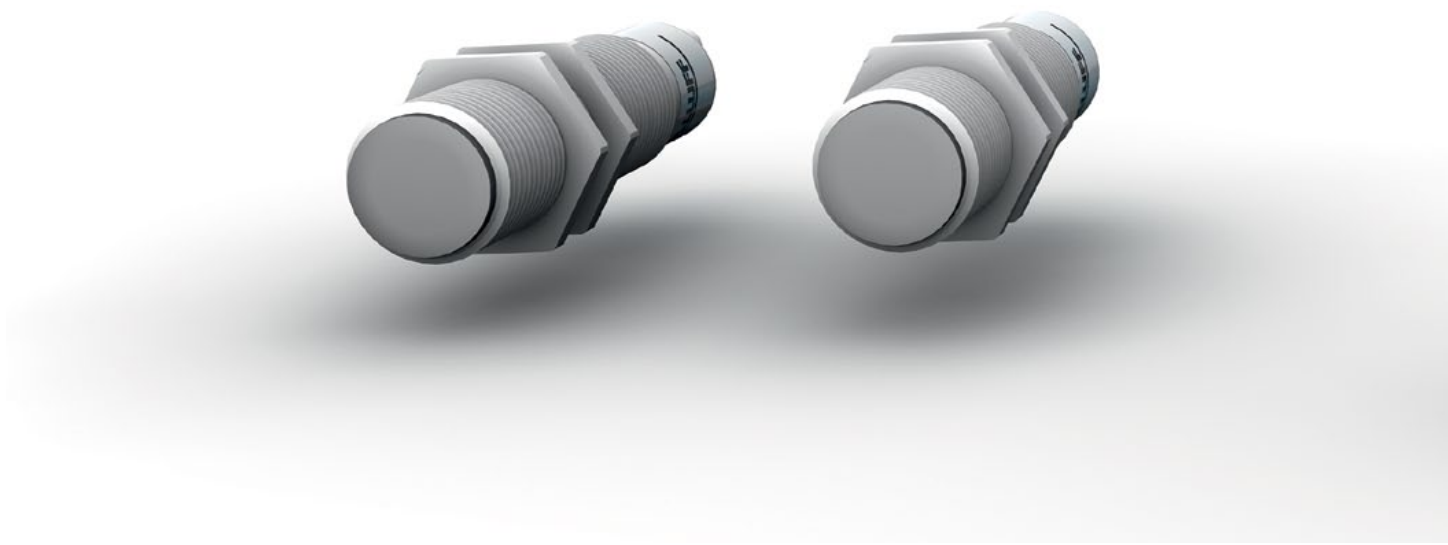


Mounting cuff included in delivery.

Capacitive Sensors

Capacitive sensors for analog distance measurement

Capacitive sensors for analog distance measurement have a measuring range of 0 to 8 mm. Their current output signal is 4 to 20 mA. They are installed flush and are available in an M18 housing.



Capacitive Sensor for Analog Distance Measurement

Contents

Capacitive Sensor for Analog Distance Measurement

Object color and surface properties do not influence its measurement results.

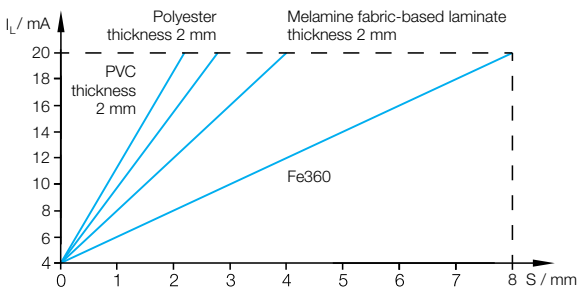
Technical details

- Adjustable measuring range of 0…8 mm
- Flush installation
- Output signal, current 4…20 mA
- Housing M18

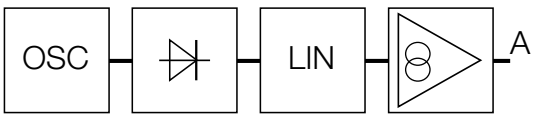
Function

The capacitive distance sensor measures objects that are in its response range without contact. As soon as the object enters it, the electrical field changes its sensing surface and, with it, the output current. In this way, material composition, size and distance of the object to the sensing surface can be determined.

The output signal (4…20 mA) can be adapted to the material using the potentiometer (LED lights green). It is evaluated directly on the analog output of the controller.



Added plus: A blinking LED signals to the user a high-impedance load.

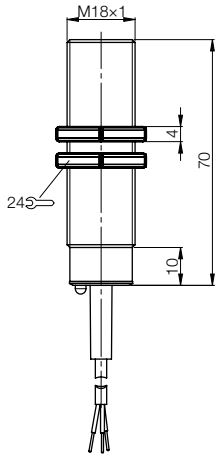


Capacitive Sensor for Analog Distance Measurement

Standard sensor, cylinder design, DC 3-wire, M18×1

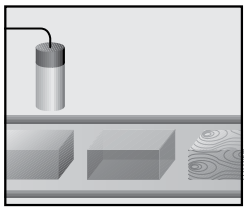
Distance sensors are assigned the linear position sensing and measurement that we have marked in blue.

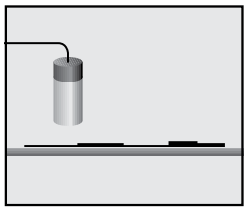
Size		**M18×1**
Installation type		Flush
Measuring range		**0…8 mm**
Output current		4…20 mA
PNP/NPN and	**Ordering code**	**BCW0001**
NO/NC, wiring selected	Part number	BCW M18B4M1-ICM80C-DV02
Supply voltage U_B		12…35 V DC
Rated insulation voltage U_i		75 V DC
No-load supply current I_0 max.		< 17 mA
Polarity reversal protected/output miswiring protected/short-circuit protected		Yes/Yes/Yes, with load monitoring
Ambient temperature T_a		–10 to +55 °C
Switching frequency f		100 Hz (3 dB limit frequency)
Supply voltage/Output function indicator		Green LED/Red LED
Degree of protection as per IEC 60529		IP 67
Material	Housing	Stainless steel
	Sensing surface	PBT
Connection		2 m PVC cable, 3 x 24 AWG

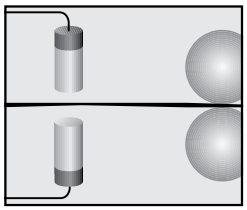


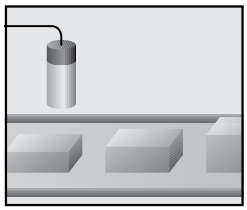
Applications

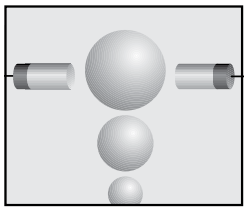
The capacitive analog sensor makes linear evaluation of a position possible for the first time; as soon as an object is located within the sensor's measuring range, a precise output current is produced. The uses shown represent only a fraction of the multifaceted application options provided by the capacitive analog sensor.

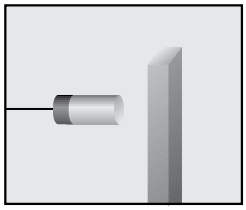

Material selection

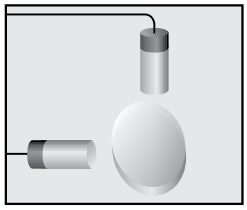

Measuring nonmetallic coating thicknesses

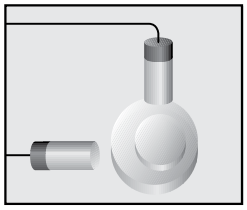

Product thickness monitoring

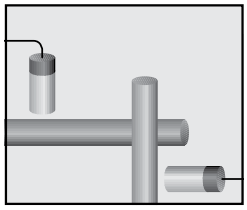

Height measurement

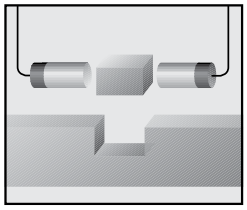

Determining diameters


Static/Dynamic movement


Registering radial runout


Concentricity and eccentricity


Axial and radial concentricity deviation


Monitoring fit

Capacitive Sensors

Special accessories for capacitive sensors

The numerous varieties of capacitive sensors for individual solutions are enhanced by custom matched accessories. For example, there are switching devices for particular flexibility with varying voltage, in order to be able to attach the sensors optimally.
Precisely matched mounting elements ensure exact positioning.

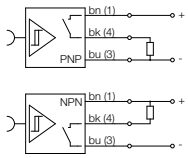
Accessories for Capacitive Sensors
Contents

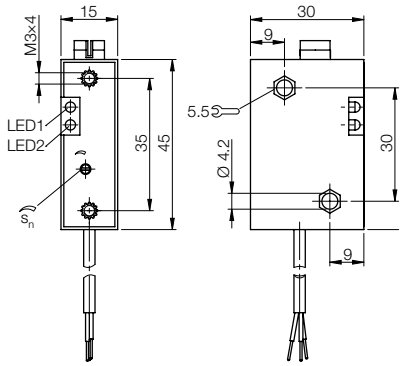
Accessories for capacitive sensors

Sensor amplifier for capacitive sensors without internal amplifier

Size			**45×30×15 mm**
PNP	NO	**Ordering code**	**BAE009E**
		Part number	BAE SA-CS-001-PS
PNP	NC	**Ordering code**	**BAE009F**
		Part number	BAE SA-CS-001-PO
NPN	NO	**Ordering code**	**BAE009H**
		Part number	BAE SA-CS-001-NS
NPN	NC	**Ordering code**	**BAE009J**
		Part number	BAE SA-CS-001-NO
Supply voltage U_B			12…35 V DC
Voltage drop U_d at I_e			0.8 V
Rated insulation voltage U_i			75 V DC
Output current max.			300 mA
No-load supply current I_0 max.			20 mA
Polarity reversal protected/transposition protected/short-circuit protected			Yes/Yes/Yes
Ambient temperature T_a			–30…+70 °C
Switching frequency f			100 Hz
Supply voltage/Output function indicator			Green LED/Yellow LED
Degree of protection as per IEC 60529			IP 67
Material		Housing	PC
Connection			2 m PUR cable 3×26 AWG

Pin assignments





Function overview

- LED 1: Switching state indicator
- LED 2: Shows supply voltage
- Item 1: Through-hole
  Ø 4.2 mm, hexagonal on both sides
  for inserting an M3 nut

Accessories for Capacitive Sensors

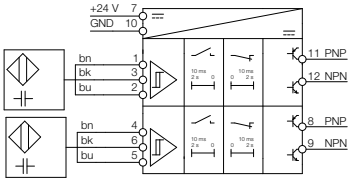
Sensor amplifier for two capacitive sensors, without internal amplifier

Technical details

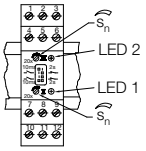
- Two separate sensor amplifiers in one housing
- Connection for two capacitive sensors without internal amplifier
- PNP and NPN transistor output
- Function normally open/ normally closed can be switched
- Actuation delay (normally open) selectable 10 ms/2 s
- Turn-off delay (normally closed) selectable 10 ms/2s
- Clamping terminal
- Switching distance for sensors separately adjustable
- Switching status indicated by two separate LEDs

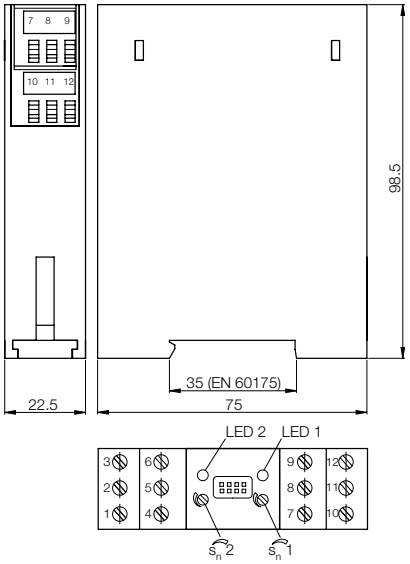
Size		**98.5×75×22.5 mm**
Installation type		DIN rail (EN 60751)
PNP/NPN and NO/NC, wiring selected	**Ordering code**	**BAE009P**
	Part number	BAE SA-CS-002-YP
Supply voltage U_B		10…35 V DC
Voltage drop U_d at I_e		0.8 V
Rated insulation voltage U_i		75 V DC
Output current max.		300 mA
No-load supply current I_0 max.		15 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes
Ambient temperature T_a		–30…+70 °C
Switching frequency f		100 Hz
Output function indicator		Yellow LED
Degree of protection as per IEC 60529		IP 40 (IP 20 at terminal box)
Material	Housing	PC
Connection		max. 14 AWG

Pin assignments



Display





Sensor amplifier with logic for two capacitive sensors without internal amplifier

Sensor amplifier with logic
- Connection for two capacitive sensors without internal amplifier
- Two outputs each PNP/NPN for Q and Q
- Pick-up delay selectable 10 ms/2 s
- Function OR, AND, RS-FF, min/max selectable
- Clamping terminal
- Switching distance for sensors separately adjustable
- Switching status indicated by two separate LEDs

OR function
Output Q active when one or both sensors are damped.

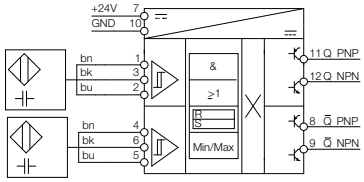
AND function
Output Q active only when both sensors are damped.

RS-FF function
Output Q active when the sensor is first damped on the Set input. This status is retained until the sensor is damped on the Reset input.

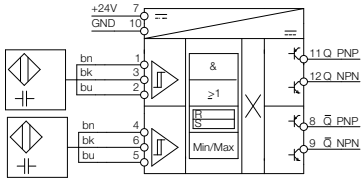
Function min/max
Output Q active when both sensors are damped. The output is only reset when both sensors are undamped.

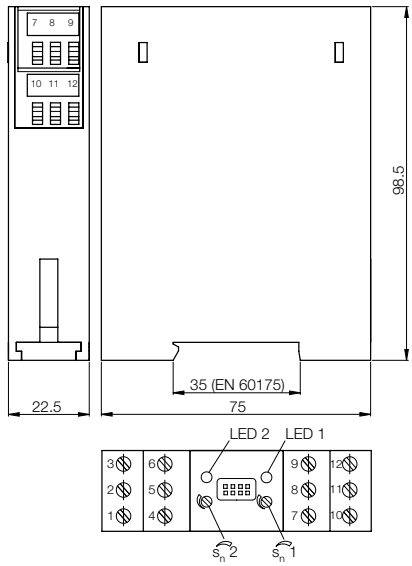
Size		**98.5×75×22.5 mm**
Installation type		DIN rail (EN 60751)
PNP/NPN and NO/NC, wiring selected	**Ordering code**	**BAE009R**
	Part number	BAE SA-CS-003-YP
Supply voltage U_B		10…35 V DC
Voltage drop U_d at I_e		0.8 V
Rated insulation voltage U_i		75 V DC
Output current max.		300 mA
No-load supply current I_0 max.		25 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes
Ambient temperature T_a		–30…+70 °C
Switching frequency f		100 Hz
Output function indicator		Yellow LED
Degree of protection as per IEC 60529		IP 40 (IP 20 at terminal box)
Material	Housing	PC
Connection		Max. 14 AWG

Pin assignments



Display



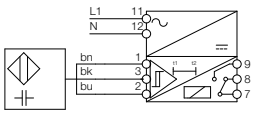


Accessories for Capacitive Sensors

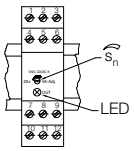
Sensor amplifier for one capacitive sensor without internal amplifier

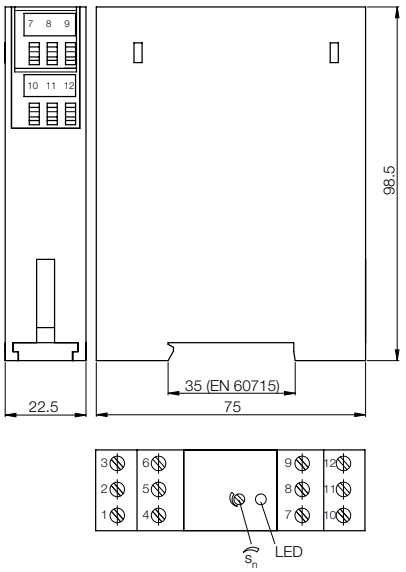
Size		**98.5×75×22.5 mm**	**98.5×75×22.5 mm**
Installation type		DIN rail (EN 60751)	DIN rail (EN 60751)
PNP/NPN and NO/NC, wiring selected	**Ordering code**	**BAE009K**	**BAE009L**
	Part number	BAE SA-CS-006-XR	BAE SA-CS-007-XR
Supply voltage U_B		230 V AC	115 V AC
Rated insulation voltage U_i (protection class)		250 V AC (⧈)	250 V AC (⧈)
Output current max.		8 A	8 A
No-load supply current I_0 max.		20 mA	20 mA
Polarity reversal protected/transposition protected/short-circuit protected		Floating relay	Floating relay
Ambient temperature T_a		–30…+70 °C	–30…+70 °C
Switching frequency f		10 Hz	10 Hz
Output function indicator		Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 20	IP 20
Material	Housing	PC	PC
Connection		Max. 14 AWG	Max. 14 AWG

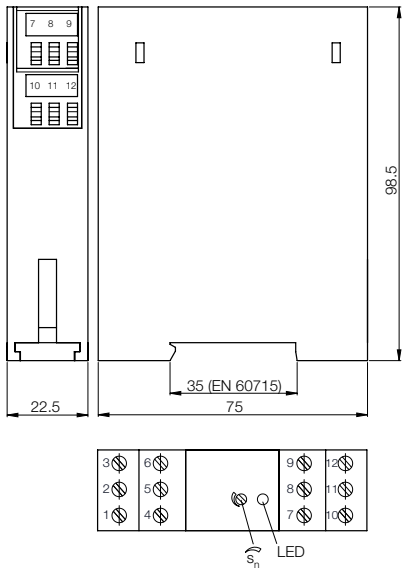
Pin assignments



Display





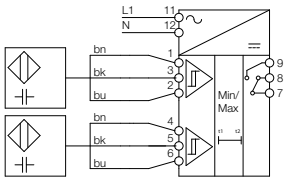


Accessories for Capacitive Sensors

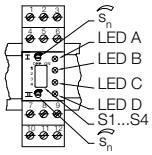
Sensor amplifier with Min/Max level control for two capacitive sensors without internal amplifier

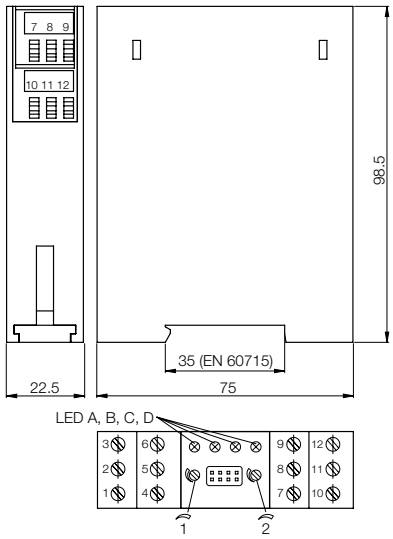
Size		**98.5×75×22.5 mm**	**98.5×75×22.5 mm**
Installation type		DIN rail (EN 60751)	DIN rail (EN 60751)
PNP/NPN and NO/NC, wiring selected	**Ordering code**	**BAE009T**	**BAE009U**
	Part number	BAE SA-CS-004-XR	BAE SA-CS-005-XR
Supply voltage U_B		230 V AC	115 V AC
Rated insulation voltage U_i (protection class)		250 V AC (⧈)	250 V AC (⧈)
Output current max.		8 A	8 A
No-load supply current I_0 max.		20 mA	40 mA
Polarity reversal protected/transposition protected/short-circuit protected		Floating relay	Floating relay
Ambient temperature T_a		–30…+70 °C	–30…+70 °C
Switching frequency f		5 Hz	5 Hz
Output function indicator		Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 40 (IP 20 terminal enclosure)	IP 40 (IP 20 terminal enclosure)
Material	Housing	PC	PC
Connection		Max. 14 AWG	Max. 14 AWG

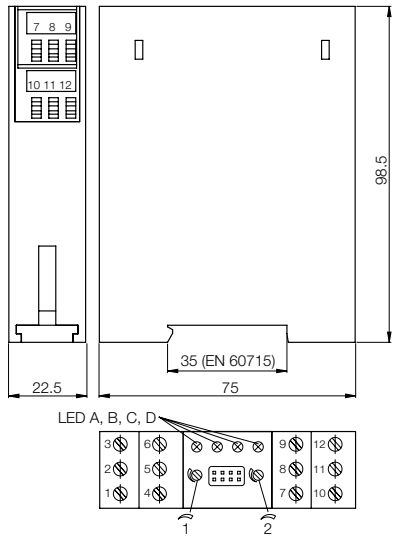
Pin assignments



Display







Function

When both sensors are undamped, the relay turns on - "LED" empty" lights up (contact 7/9 closed). If the Min sensor is damped, "Fill LED" lights up. When both sensors are damped, the relay turns off - "LED full" lights up (contact 7/9 open). If the Max sensor is damped, "LED empty" lights up. The relay does not turn on until both sensors are again undamped.
Other functions are selectable using the mini dip switches.

Dip switch functions

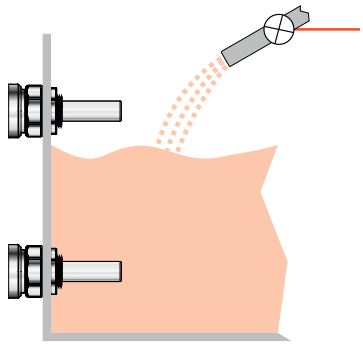
S1 – Time delay max-sensor (off: approx. 0.2 s; on: approx. 5 s)
S2 – Time delay min-sensor (off: approx. 0.2 s; on: approx. 5 s)
S3 – Power-on setup (off: fill; on: empty)
S4 – Output (relay inverse)

Function indicators

A – Full
B – Fill
C – Empty
D – Empty

Sensor adjustment

Max sensor: Pot I
Min sensor: Pot II



Applications

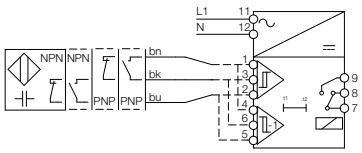
- Min and max level control
- Input for connecting two capacitive sensors for level sensing, adjustable separately using two potentiometers
- Switch-on delay for min and max sensor can be selected separately

Accessories for Capacitive Sensors

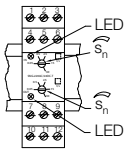
Sensor amplifiers with timer function and potential-free changeover contact for one capacitive sensor

Size		**98.5×75×22.5 mm**	**98.5×75×22.5 mm**
Installation type		DIN rail (EN 60751)	DIN rail (EN 60751)
Potential-free changeover contact	**Ordering code**	**BAE009W**	**BAE009Y**
	Part number	BAE SA-XE-010-XR	BAE SA-XE-011-XR
Supply voltage U_B		230 V AC	115 V AC
Rated insulation voltage U_i (protection class)		250 V AC (⧈)	250 V AC (⧈)
Output current max.		8 A	8 A
No-load supply current I_0 max.		20 mA	40 mA
Ambient temperature T_a		–30…+70 °C	–30…+70 °C
Switching frequency f		10 Hz	10 Hz
Pick-up delay		0.05...30 s	0.05...30 s
Release delay		0.05...30 s	0.05...30 s
Output function indicator		Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 20	IP 20
Material	Housing	PC	PC
Connection		Screw terminals	Screw terminals

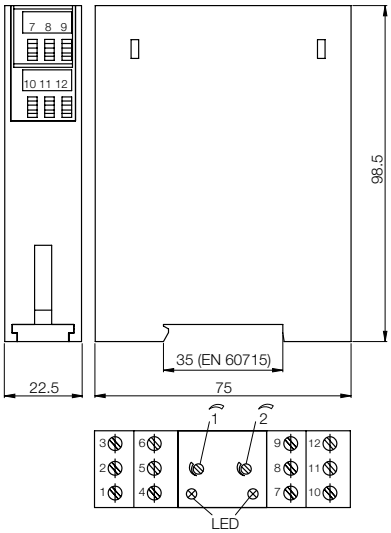
Pin assignments

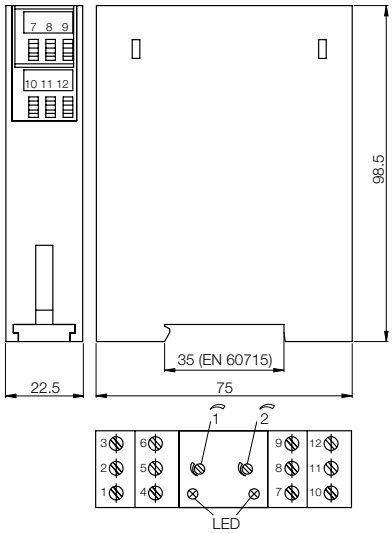


Display



Not suitable for devices with a output stage that can be coded (e.g. BCS S4...)



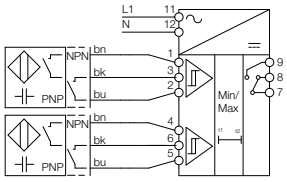


Accessories for Capacitive Sensors

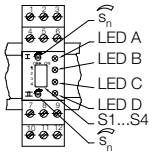
Sensor amplifiers with Min/Max level control and potential-free changeover contact for two capacitive sensors

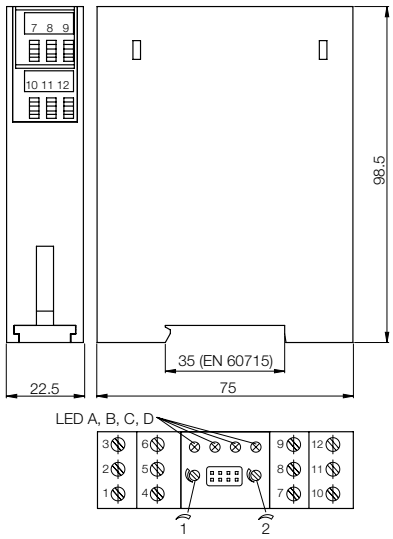
Size		**98.5×75×22.5 mm**	**98.5×75×22.5 mm**
Installation type		DIN rail (EN 60751)	DIN rail (EN 60751)
Potential-free changeover contact	**Ordering code**	**BAE009Z**	**BAE00A0**
	Part number	BAE SA-XE-012-XR	BAE SA-XE-013-XR
Supply voltage U_B		230 V AC	115 V AC
Rated insulation voltage U_i (protection class)		250 V AC (⧈)	250 V AC (⧈)
Output current max.		8 A	8 A
No-load supply current I_0 max.		20 mA	40 mA
Ambient temperature T_a		–30…+70 °C	–30…+70 °C
Switching frequency f		5 Hz	5 Hz
Output function indicator		Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 20	IP 20
Material	Housing	PC	PC
Connection		Screw terminals	Screw terminals

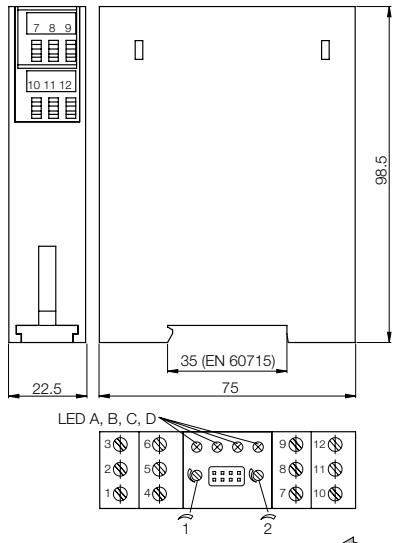
Pin assignments



Display







Not suitable for devices with codable final stage (e.g. BCS S4...)

Function

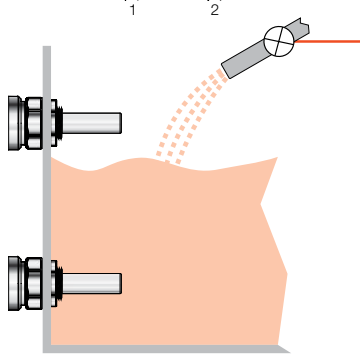
When both sensors are undamped, the relay turns on - "empty" LED lights up (contacts 7/9 are closed). If the Min sensor is damped, the "fill" LED lights up. When both sensors are damped, the relay turns off - "full" LED lights up (contacts 7/9 are open). If the Max sensor is damped, the "empty" LED lights up. The relay does not turn on until both sensors are again undamped.
Other functions are selectable using the mini dip switches.

Dip switch functions

S1 – Time delay max-sensor (off: approx. 0.2 s; on: approx. 5 s)
S2 – Time delay min-sensor (off: approx. 0.2 s; on: approx. 5 s)
S3 – Power-on setup (off: fill; on: empty)
S4 – Output (inverse relay)

Function indicators

A – Full
B – Fill
C – Empty
D – Empty



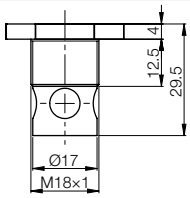
Applications

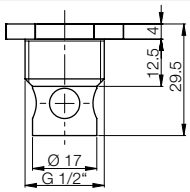
- Min and Max level control
- Automatic PNP and NPN input voltage for connecting two normally open sensors
- DC short-circuit protected
- Turn-on delay for Min and Max sensor selectable independently

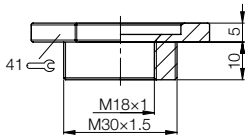
Adapters

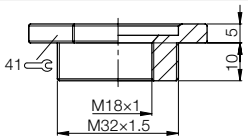


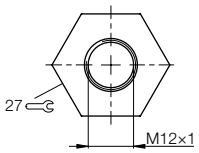

Description	Adapter for Micro-Level M12 to M18	Adapter for Micro-Level M12 to G 1/2"	Adapter for BCS S01/2/3 M18 to M30	Adapter for BCS S01/2/3 M18 to M32
Ordering code	**BAM018J**	**BAM018K**	**BAM018E**	**BAM018F**
Part number	BAM AD-XA-002-M12/M18-4	BAM AD-XA-002-M12/G1/2"-4	BAM AD-XA-001-M18/M30-4	BAM AD-XA-001-M18/M32x1,5-4
Material	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Ambient temperature T_a				
Connection				

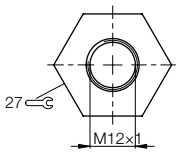








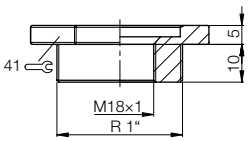


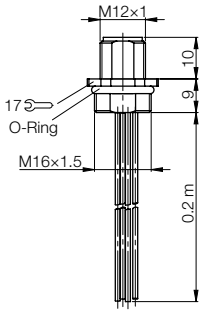


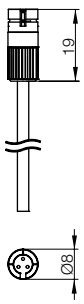


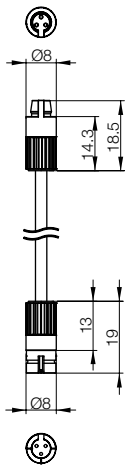


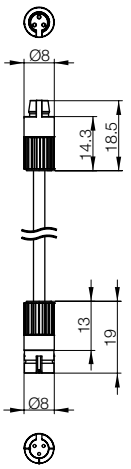
Description	Adapter for BCS S01/2/3 M18 to R 1"	Adapter for BCS S01/2/3 M16 to M12	Cable adapter for capacitive mini-sensors	Cable adapter for capacitive mini-sensors	Cable adapter for capacitive mini-sensors
Ordering code	**BAM018H**	**BCC04JT**	**BCC04JU**	**BCC04JY**	**BCC04JZ**
Part number	BAM AD-XA-001-M18/R1"-4	BCC M454-0000-2A-RM004-020	BCC Z001-002	BCC Z002-030	BCC Z002-080
Material	Stainless steel	MS-Ni/PA			
Ambient temperature T_a		–30...+70 °C			
Connection		0.2 m PVC cable, 3×0.25 mm²	0.2 m PUR cable	3 m PUR cable	8 m PUR cable







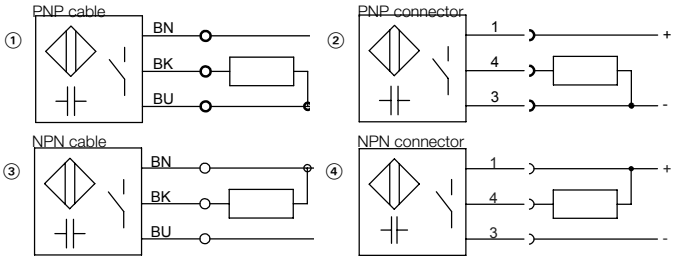




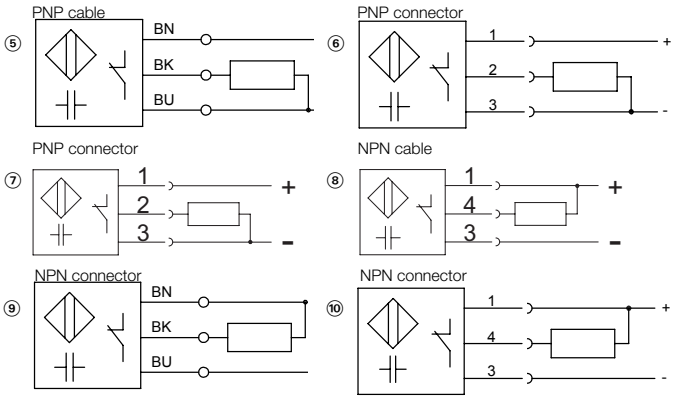
Capacitive Sensors wiring diagrams
Connection-Switching diagrams

Wiring diagrams

NO



NC



PNP/NPN selectable