



Capacitive Sensors

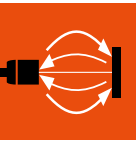
Capacitive sensors for object detection

Balluff capacitive sensors BCS 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 and they do this even with stringent technical requirements. In this way, 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 BCS. BCS sensors are available in different designs, including particularly small versions. As adhesive sensors, they also fit extremely easily in the housing design.

The high-end SmartLevel variant is the ideal level sensor for conductive media. This is because it compensates for humidity, foam and deposits of any kind, even through thick glass and plastic walls. And it guarantees application security in advanced applications.



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Basic information and definitions can be found on page 934.



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. They also measure objects with absolute reliability through glass and plastic walls, without being impeded by external factors. In this way, the capacitive Balluff sensors provide for certainty.



Balluff capacitive sensors BCS provide more potential than others.

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.





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Special Accessories for Capacitive Sensors



SmartLevel sensors take off in the Airbus A380

Airbus is equipping the restrooms 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 temperature with the assistance of an LED indicator. The special attraction: Sensing errors are impossible, since SmartLevel sensors ignore clinging dirt, liquid films and soap foam all on their own. Touching the faucet triggers a switching operation, even if a wet paper towel covers it.



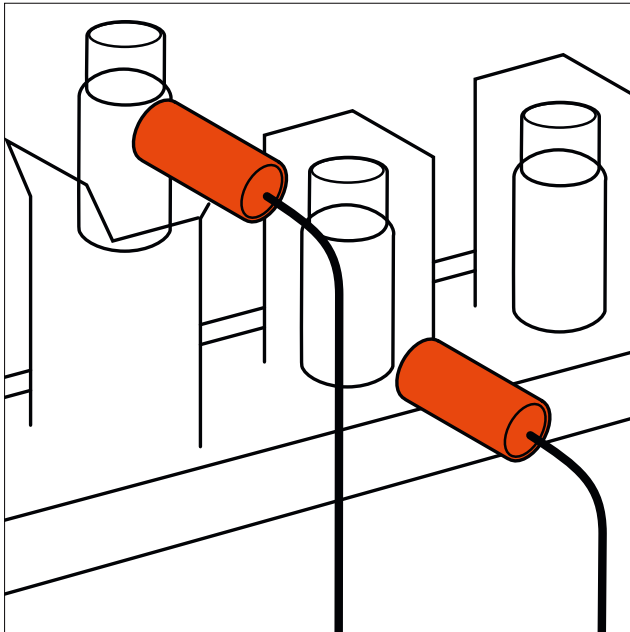
SMARTLEVEL

Capacitive sensors BCS measure metallic or non-metallic objects and levels of granular materials, powdery, viscous or liquid media. In doing so, they can be used as contacting sensors, in other words, in direct contact with the object to be measured, or as contactless sensors. This is because they work extremely reliably, even through container walls.

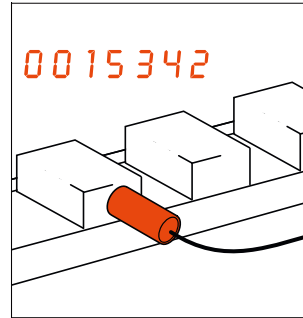
Whether contacting or contactless, the capacitive sensors from Balluff are excellently suited for difficult applications, so that they can also fulfill your special requirements.

Contact us

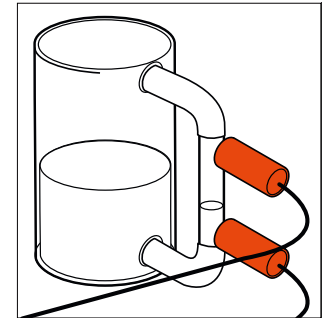
Packaging lines: Checking packaging and volume



Transfer lines: Determining number of pieces

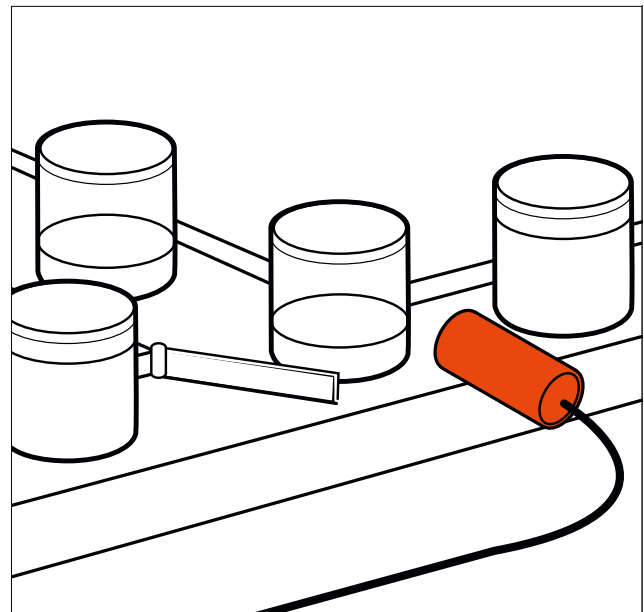


Water tanks: Regulating in-flow and controlling pumps



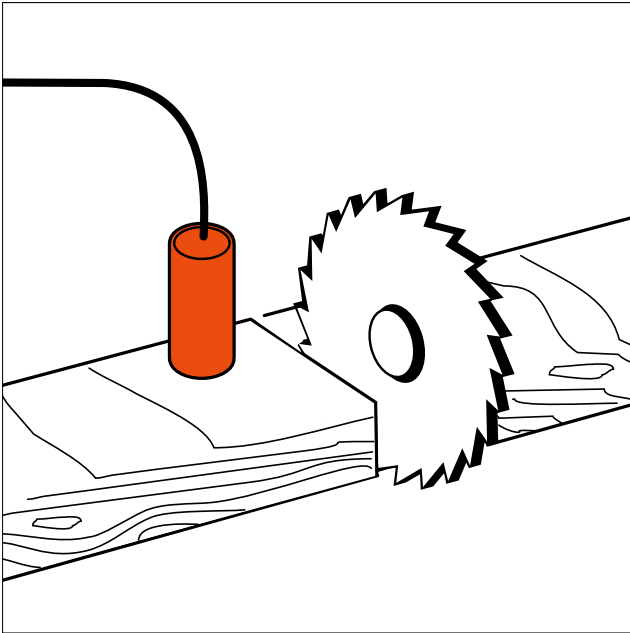
Industries

- 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

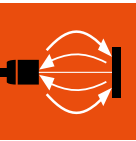
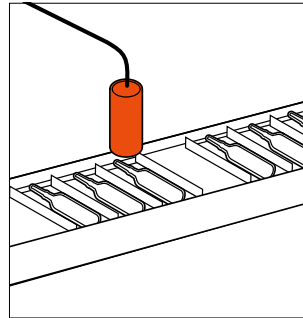


Bottling equipment: Checking fill level and controlling the ejector station

Wood processing: Measuring wood and thickness



Packaging:
Checking completeness



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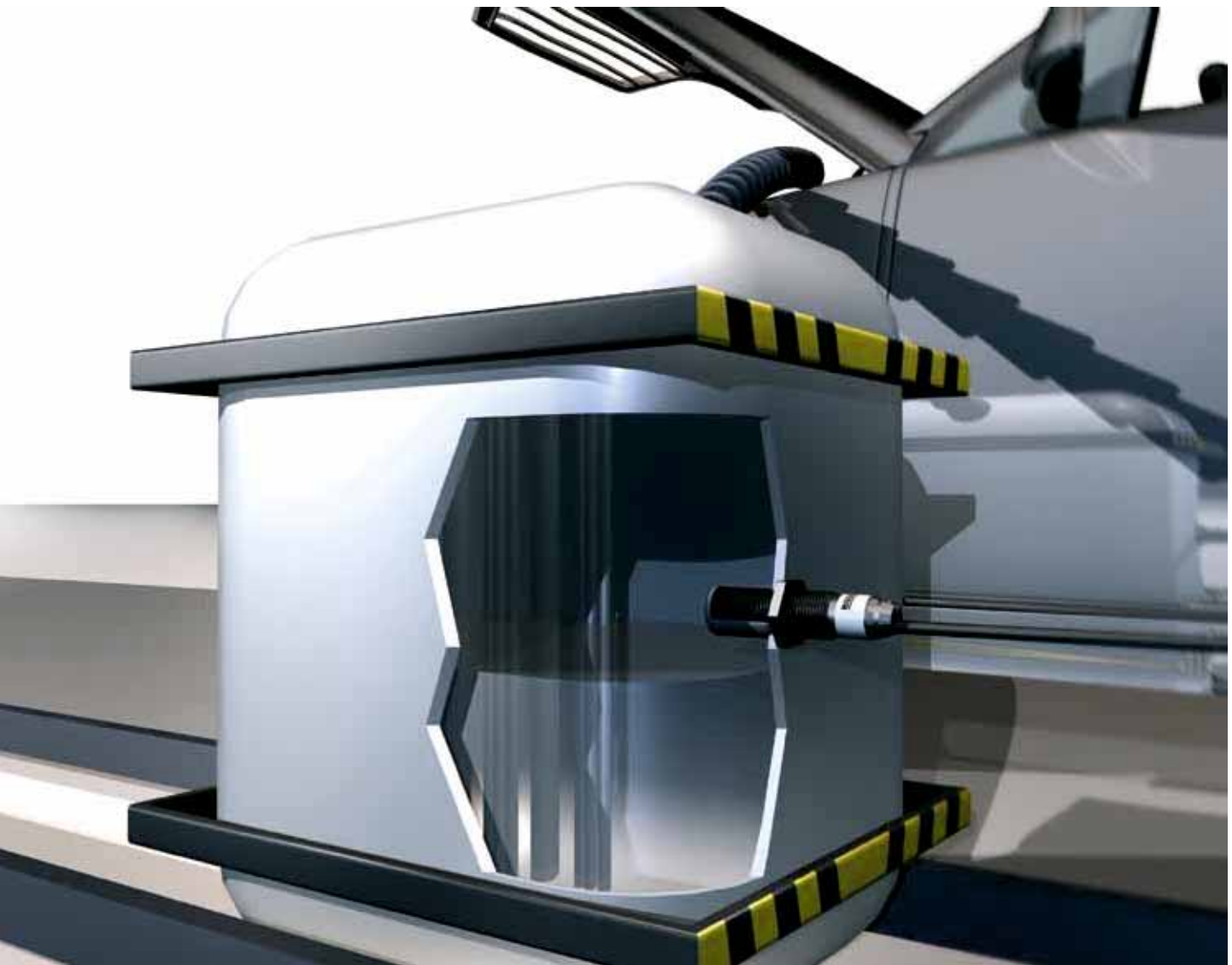
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Accessories for Capacitive Sensors



Product Selection Guide

Detecting objects	Detection of objects (paper, cardboard, glass, plastic, wood, wafers, metal)	Capacitive sensors for object detection (flush standard sensors)	
		With large dielectric constant Glass, ceramics, wafers, metals All sensors for object detection can be used. The sensor depends on the required switching distance and the space conditions of the installation situation. The switching distance decreases by a factor of 0.6 to 1. On page 749	
		With medium dielectric constant Massive plastic parts, dense stacks of paper and cardboard, wires, filled plastic containers, etc. Sensors for object detection as of Ø 6.5 mm and M8 can be used. Sensors with a higher switching distance are preferable; application tests are useful. The switching distance decreases by a factor of 0.3 to 0.5. On page 755	
		With low dielectric constant Small plastic parts, paper, cardboard, electronic components, etc. Large sensors for object detection are required and installation very close to the object is useful. Sensors with an external amplifier are ideal due to their compact designs. Application tests are absolutely necessary. The switching distance decreases by a factor of 0.1 to 0.3. On page 759	
Detecting fill levels	Detecting non-conducting media (plastic granulates, feed pellets, wood pellets and oils)	Capacitive sensors for level detection (non-flush standard sensors)	
		Through the container wall Plastic granulates, wood pellets and feed pellets Sensors for Object Detection on page Cylinder Designs M18...M30 759 Disc types Ø 50 mm 764 Block Design 40x40 mm Uniflat 767	In contact with the media Oils, greases Sensors for Level Detection on page Cylinder Designs M12...M30 771 MicroLevel Probe Design 778 High-temperature Probe Design 794
		Oils, greases, powders Sensors for Object Detection on page Cylinder Designs M18...M30 759 Disc types Ø 50 mm 764 MicroBox Block Design 765 Block Design 40x40 mm Uniflat 767	Plastic granulates, wood pellets and feed pellets Sensors for Level Detection on page Cylinder Designs M18...M30 773 MicroLevel Probe Design 778 High-temperature Probe Design 794
		Objects in outer packaging Sensors for Object Detection on page Cylinder Designs M18...M30 759 Disc types Ø 50 mm 764 MicroBox Block Design 765 Block Design 40x40 mm Uniflat 767	
Detecting conductive media	Detecting conductive media (such as aqueous liquids, acids, bases and conductive powders)	Capacitive SMART^{LEVEL} sensors for level detection	
		Through the container wall Conductivity up to 15 mS/cm SMART^{LEVEL} 15 on page Cylinder Designs M18...M30 784 MicroBox Block Design 790 Block Design 40x40 mm Uniflat 791 Disk Design Ø 50 mm 788	In contact with the media Conductivity up to 15 mS/cm SMART^{LEVEL} 15 on page Cylinder Designs M18...M30 (PBT/PTFE) 785 Cylinder Design Ø 7x52 mm (PTFE) 783 MicroLevel Probe Design 786
		Conductivity up to 50 mS/cm SMART^{LEVEL} 50 on page Disk Design Ø 50 mm Disk 789	Conductivity up to 500 mS/cm SMART^{LEVEL} 500+ on page M30 tubular-style housing 799
		Conductivity up to 500 mS/cm SMART^{LEVEL} 500+ on page M30 tubular-style housing 799	

Quickly and reliably find the right capacitive sensor for your standard application. In case of doubt, we recommend on-site application tests. For specific technical data on the sensors, please refer to the respective data sheet.

The most important selection criteria

- Technology and installation: Sensors for object detection (flush), sensors for level detection (non-flush) or **SMARTLEVEL** sensors
- Housing materials: Plastic, metal/plastic or PTFE
- Connection: Cable, plug or pigtail connection, switching functions

Installation and mounting options

Mounting sensors for object detection



Central mounting in a drilled hole

- M5, M8, M12, M18, M30
- Simple, flexible fastening with two nuts
- Flexible positioning in the sensor axis



Through-holes in the sensor

- Standard mounting for cubical sensors
- Simple mounting through threaded hole
- Clear positioning when replacing



Threaded holes in the sensor

- Central hole with M3 thread
- Very easy installation
- Clear positioning when replacing



Clamping a cylindrical sensor

- Suitable for all cylindrical designs
- Simple, reliable fastening
- Very flexible positioning



Installation as a leak sensor

- Simple to install
- Clear positioning when fastening
- Use of sensors with a fixed switching distance

Installation of fill-level indicators



Flange mounting

- Pressure-tight screw connection
- Can be used in metal containers
- Installation in standard bushings is possible



Hole mounting

- Simple screw connection
- Can be used for every container material
- Not pressure-tight
- Suitable for powders and granules



Installation of cable ties

- Simple, subsequent fastening
- No contact with product necessary
- For non-metallic containers



Wall mounting

- Simple fastening
- For non-metallic containers
- No drilling of container
- No contamination of the medium



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Housing materials for each application

A suitable housing material ensures long-term and reliable use of the sensor in your application.

Plastic housing made of PBT, PP, PVC, PUR, PSU:

They are often made of one piece, and therefore leakproof where they make contact with media (sensing surface). The plastic used has to be chemically resistant to the medium to be detected. Cost-effective.

Stainless steel housing with PTFE cap:

This version combines excellent housing stability with the very good sensor properties of PTFE. It is antistatic and nonstick. Under continuous operation, therefore, only minimal contamination can be expected. The metal housing is good at dissipating static charges.

Full PTFE housing:

These provide the best possible chemical resistance. The housing material is food-grade and FDA-compliant. The connection cable for all capacitive PTFE sensors is also made with PTFE. The LED and the setting potentiometer are also covered with PTFE. The mechanical stability is lower than for other plastics.



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

	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 749	Page 749	Page 749 and page 755	Page 750 and pages 755...756	Page 750 and page 756	Page 750 and page 757
Direct sensing of bulk product and powdery media						
Sensing bulk product and powdery 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)						



Ø 10 mm flush Ø 10 mm non-flush M12x1 flush M12x1 flush M18x1 flush M18x1 non-flush Ø 22 mm flush Ø 30 mm flush

	■	■	■	■	■	■	■	■
	■	■	■	■	■	■	■	■
			■	■	■	■		
			■	■	■	■		
	■	■	■	■	■	■	■	■
	■	■	■	■	■	■	■	■
			Page 758...759	Page 771...772	Page 759	Page 773...774 Page 794		
						Page 784...785		
						Page 784...785 Page 784...785		
	Page 751 and page 757	Page 751	Page 751 and pages 757...759		Page 759		Page 760	Page 760
				Page 771...773		Page 773...775		
					Page 759		Page 760	Page 760
				Page 771...773		Page 773...775		
					Page 759		Page 760	Page 760
						Page 784...785		



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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

	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						
Plug connector	■	■	■		■	
Cable with connector				■		■
Cable	■	■	■	■	■	■
Terminal housing						
Special properties						
Global series	Page 760...761	Page 775...776	Page 761			
High temperature rated		Page 794				
Pressure rated						
Stick-on, flexible						
IP 68 degree of protection						
SmartLevel						
Compensate for moisture, foam and deposits		Page 785			page 789	Page 790
Penetrate glass or plastic walls over 10 mm thick		Page 785			page 789	Page 790 (up to 8 mm)
Detection of aqueous to highly conductive media		Page 785			page 789	Page 790
Virtually no adjustment or cleaning required		Page 785			page 789	Page 790
Areas of application						
Object detection	Page 760...761		Page 761	Pages 752...753 and page 763	Page 764	Page 765
Direct sensing of bulk product and powdery media	Page 760...761 (flush installation)	Page 775...776	Page 761 (flush installation)	Pages 752...753 and page 763 (flush installation)	Page 764 (flush installation)	
Sensing bulk product and powdery media through a container wall up to approx. 4mm	Page 760...761		Page 761	Pages 752...753 and page 763	Page 764	Page 765
Direct sensing of non-conductive liquid and paste-like media		Page 775...776				
Sensing non-conductive liquids and paste-like media through a container wall up to approx. 4mm	Page 760...761		Page 761	Pages 752...753 and page 763	Page 764	Page 765
Direct sensing of conductive liquids (SmartLevel technology)		Page 785				
Detecting conductive liquids through a container wall even over 10mm thick (SmartLevel technology)		Page 785			page 789	Page 790 (up to 8 mm)



Uniflat
40x40x10 mm



90x16x4 mm



Ø 7x52 mm



MicroLevel
M12x1, G¼", NPT¼"



M18x1, R¾", NPTF¾"



M18x1, R¾", NPTF¾"

	■	■	■	■	■	■
	■	■		■		■
			■		■	
	■	■		■		■
	■		■			
				■		



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	Page 797		Pages 778...779 and pages 786...787	Page 780...781 (10 bar)	Page 795 (6 bar)
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Page 791		Page 783	Page 786...787		
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Page 791					



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). The advantage: The straight-line electrical field also enables media having a low dielectric constant to be detected.

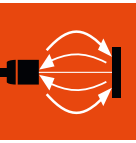


Mini-sensors

Cylinder designs	749
Disk designs	752

Standard Sensors

Cylinder designs	755
Disk designs	763
Block designs	765

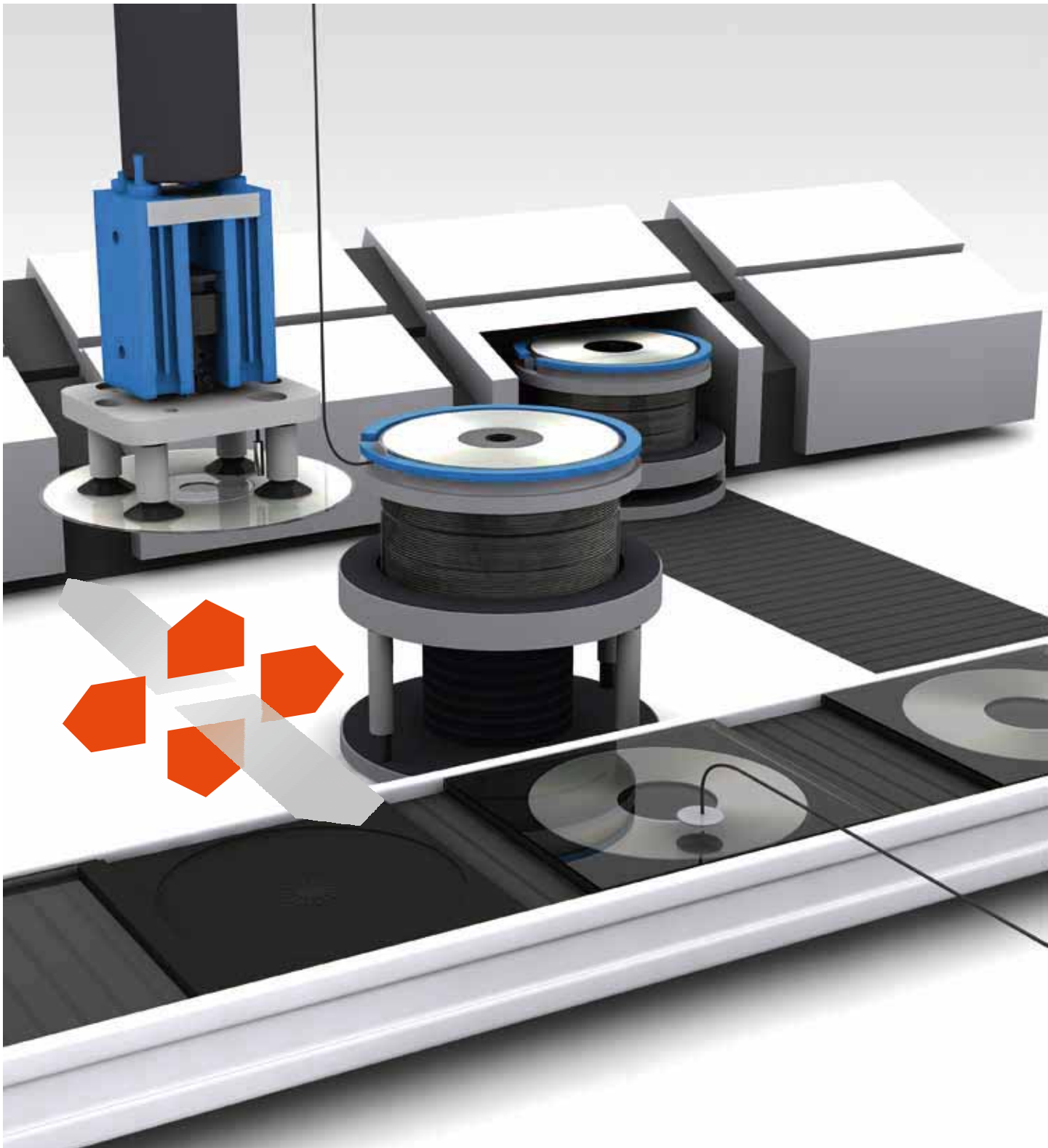


Basic information and definitions can be found on **page 934**.



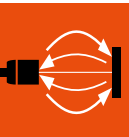
CD/DVD production: Stack height control

During CD/DVD production, BCS 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.





Size	Ø 4 mm	M5x0.5	Ø 6.5 mm
Mounting 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
	Part number	BCS G04T4D-XXS10C-EP02-GZ01-002	BCS M05T4C-XXS10C-EP02-GZ01-002
Supply voltage U_s	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
	Sensing surface	PTFE	PTFE
	Cover	POM	POM
Connection	2 m PUR cable, 3x0.14 mm ²	2 m PUR cable, 3x0.14 mm ²	2 m PUR cable, 3x0.14 mm ²



Capacitive Sensors

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Mini-Sensors
Standard Sensors

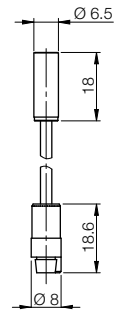
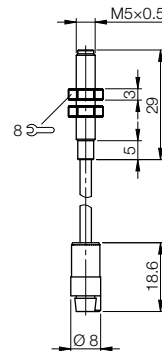
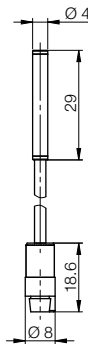
Capacitive Sensors for Level Detection

Capacitive Sensors with Special Properties

Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors

Sensor amplifiers for capacitive mini-sensors can be found on page 806.



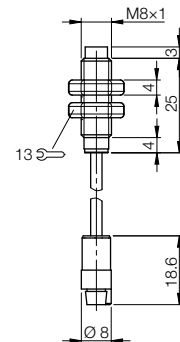
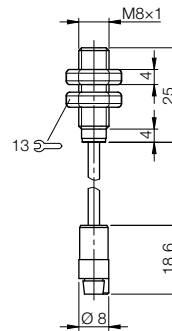
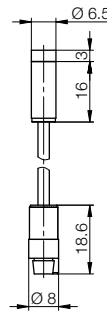
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Mini-sensors, cylinder designs, Ø 6.5 mm, M8x1



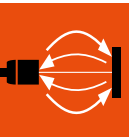
Size		Ø 6.5 mm	M8x1	M8x1	
Mounting type		Not flush	Flush	Not flush	
Rated switching distance s_n		0.1...3 mm	0.1...1.5 mm	0.1...3 mm	
With sensor amplifier	Ordering code	BCS0013	BCS0014	BCS0015	
	Part number	BCS G06T4B-XXS30G-EP02-GZ01-002	BCS M08T4C-XXS15C-EP02-GZ01-002	BCS M08T4C1-XXS30G-EP02-GZ01-002	
Supply voltage U_s		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, 3x0.14 mm ²	2 m PUR cable, 3x0.14 mm ²	2 m PUR cable, 3x0.14 mm ²	

Sensor amplifiers for capacitive mini-sensors can be found on page 806.





Ø 10 mm	Ø 10 mm	M12x1	M12x1	
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, 3x0.14 mm ²	2 m PUR cable, 3x0.14 mm ²	2 m PUR cable, 3x0.14 mm ²	2 m PUR cable, 3x0.14 mm ²	



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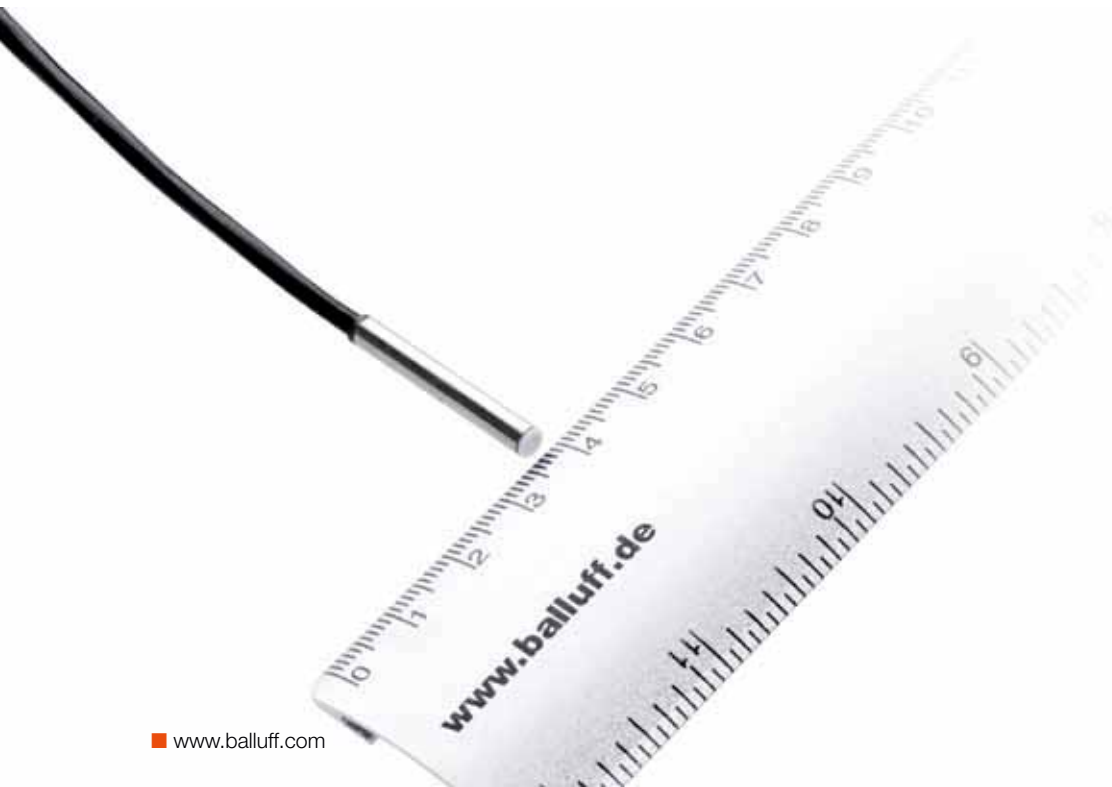
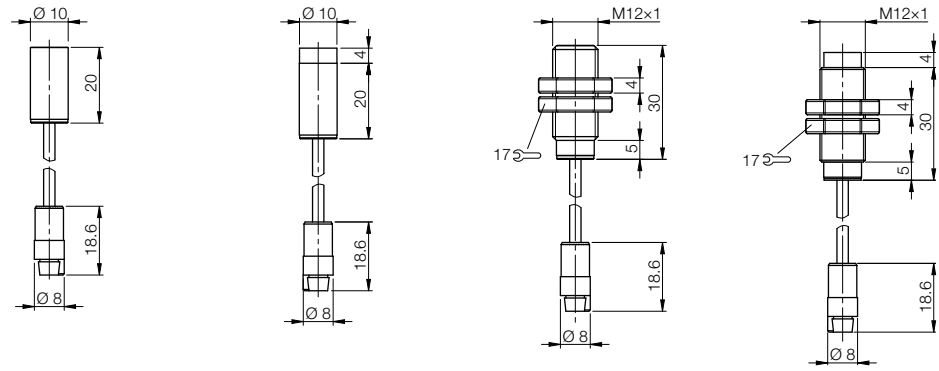
Mini-Sensors Standard Sensors

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Capacitive Sensors with Special Properties

Capacitive Sensors for Analog Distance Measurement

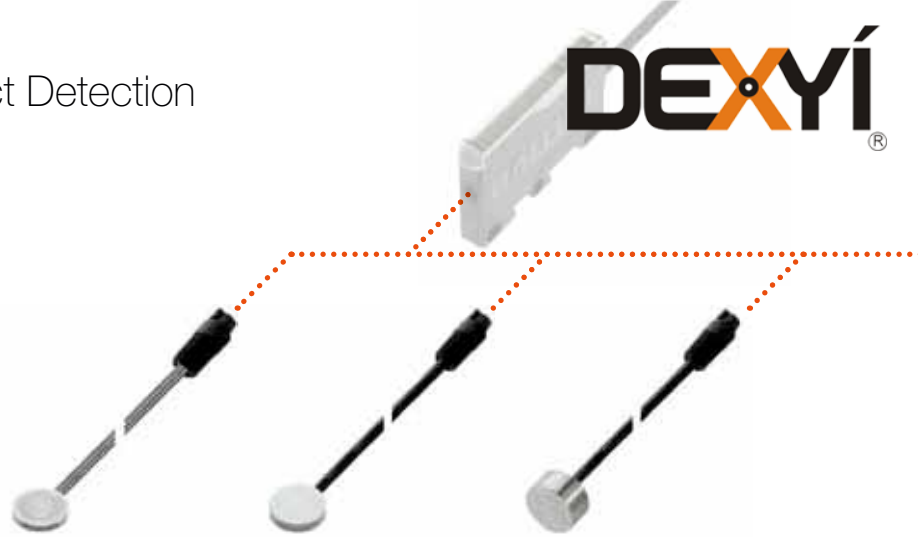
Accessories for Capacitive Sensors



Capacitive Sensors for Object Detection

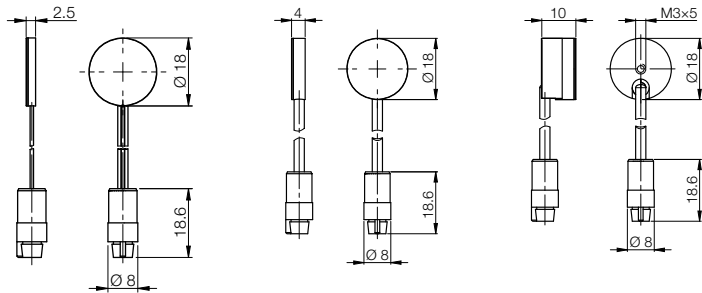
Mini-sensors, disk designs,

Ø 18 mm



Size	Ø 18x2.5 mm	Ø 18x4 mm	Ø 18x10 mm
Mounting type	Flush	Flush	Flush
Rated switching distance s_n	0.1...3 mm	1...5 mm	1...5 mm
With sensor amplifier	Ordering code	Ordering code	Ordering code
	BCS001A	BCS001C	BCS001E
	Part number	Part number	Part number
	BCS D18T403-XXS30C-EP02-GZ01-002	BCS D18T404-XXS50C-EP02-GZ01-002	BCS D18T407-XXS50C-EP02-GZ01-002
Supply voltage U_s	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 Sensing surface: PTFE	Housing: Stainless steel Sensing surface: PTFE	Housing: Stainless steel Sensing surface: PTFE
Connection	2 m PVC cable, 3x0.09 mm ²	2 m PUR cable, 3x0.14 mm ²	2 m PUR cable, 3x0.14 mm ²

Sensor amplifiers for capacitive mini-sensors can be found on page 806.





Ø 22x4 mm	Ø 22x10 mm	Ø 30x4 mm	Ø 30x10 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, 3x0.14 mm ²	2 m PUR cable, 3x0.14 mm ²	2 m PUR cable, 3x0.14 mm ²	2 m PUR cable, 3x0.14 mm ²	



Capacitive Sensors

Capacitive Sensors for Object Detection

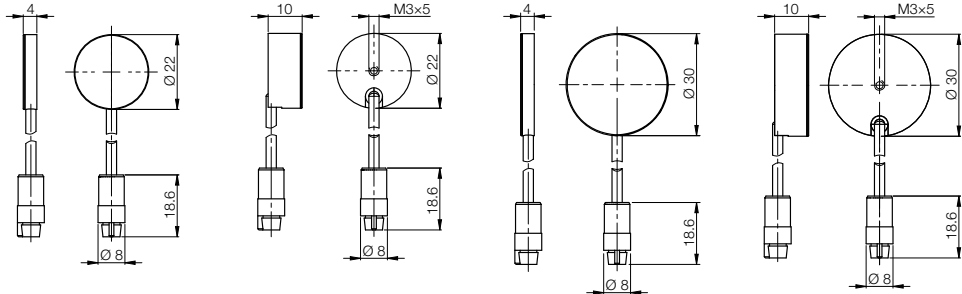
Mini-Sensors
Standard Sensors

Capacitive Sensors for Level Detection

Capacitive Sensors with Special Properties

Capacitive Sensors for Analog Distance Measurement

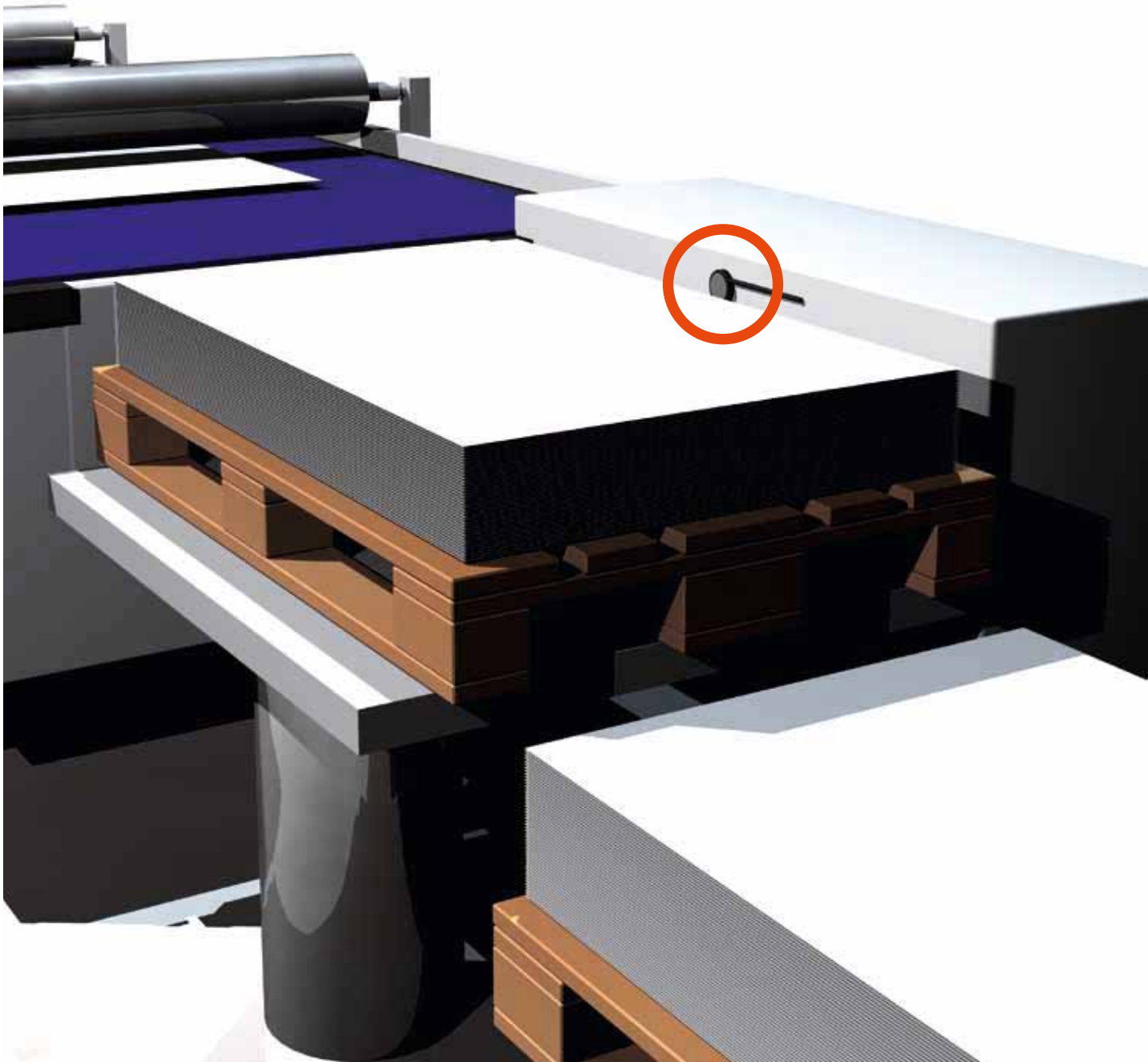
Accessories for Capacitive Sensors



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 produces added value. This is because it 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
Mounting 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	BCS001L
	Part number	BCS G06T4D2-PSM15C-S49G	BCS G06T4E1-PSM15C-EP02
PNP, NC	Ordering code	BCS001T	BCS001M
	Part number	BCS G06T4D2-POM15C-S49G	BCS G06T4E1-POM15C-EP02
NPN, NO	Ordering code	BCS001U	BCS001N
	Part number	BCS G06T4D2-NSM15C-S49G	BCS G06T4E1-NSM15C-EP02
NPN, NC	Ordering code	BCS001W	BCS001P
	Part number	BCS G06T4D2-NOM15C-S49G	BCS G06T4E1-NOM15C-EP02
Supply voltage U_s	11...30 V DC	11...30 V DC	11...30 V DC
Voltage drop U_d at I_o	≤ 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_o max.	≤ 10 mA	≤ 10 mA	≤ 10 mA
Polarity reversal protected/transposition 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
	Sensing surface	PTFE	PTFE
	Cover	PA	POM
Connection	M8 connector,	2 m PUR cable,	M8 connector,
	3-pin	3×0.14 mm ²	3-pin



Capacitive Sensors

Capacitive Sensors for Object Detection

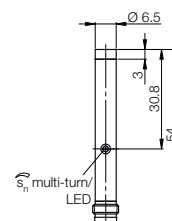
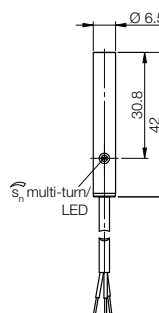
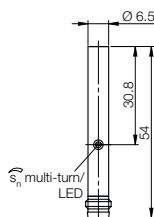
Mini-Sensors
Standard Sensors

Capacitive Sensors for Level Detection

Capacitive Sensors with Special Properties

Wiring diagrams, see page 971.

Additional cable lengths on request.



Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors

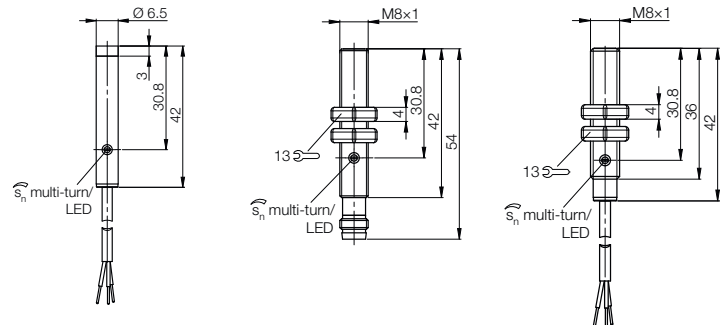
Capacitive Sensors for Object Detection
Standard sensors, cylinder designs, DC 3-wire,
Ø 6.5 mm, M8×1



Size		Ø 6.5 mm	M8×1	M8×1	
Mounting 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	BCS002A	BCS0026	
	Part number	BCS G06T4E1-PSM30G-EP02	BCS M08T4E2-PSM15C-S49G	BCS M08T4E1-PSM15C-EP02	
PNP, NC	Ordering code	BCS001Z	BCS002C	BCS0027	
	Part number	BCS G06T4E1-POM30G-EP02	BCS M08T4E2-POM15C-S49G	BCS M08T4E1-POM15C-EP02	
NPN, NO	Ordering code	BCS0020	BCS002E	BCS0028	
	Part number	BCS G06T4E1-NSM30G-EP02	BCS M08T4E2-NSM15C-S49G	BCS M08T4E1-NSM15C-EP02	
NPN, NC	Ordering code	BCS0021	BCS002F	BCS0029	
	Part number	BCS G06T4E1-NOM30G-EP02	BCS M08T4E2-NOM15C-S49G	BCS M08T4E1-NOM15C-EP02	
Supply voltage U_s		11...30 V DC	11...30 V DC	11...30 V DC	
Voltage drop U_d at I_o		≤ 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_o max.		≤ 10 mA	≤ 10 mA	≤ 10 mA	
Polarity reversal protected/transposition 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, 3×0.14 mm ²	M8 connector, 3-pin	2 m PUR cable, 3×0.14 mm ²	

Wiring diagrams, see page 971.

Additional cable lengths on request.

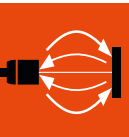


Capacitive Sensors for Object Detection

Standard sensors, cylinder designs, DC 3-wire, M81, Ø 10 mm, M12x1



M8x1	M8x1	Ø 10 mm	M12x1	M12x1
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	BCS002H	BCS002T	BCS0037	BCS002Z
BCS M08T4E2-PSM30G-S49G	BCS M08T4E1-PSM30G-EP02	BCS G10T4H-PSM40C-EP02	BCS M12T4D2-PSM40C-S04G	BCS M12T4G1-PSM40C-EP02
BCS002N	BCS002J	BCS002U	BCS0038	BCS0030
BCS M08T4E2-POM30G-S49G	BCS M08T4E1-POM30G-EP02	BCS G10T4H-POM40C-EP02	BCS M12T4D2-POM40C-S04G	BCS M12T4G1-POM40C-EP02
BCS002P	BCS002K	BCS002W	BCS0039	BCS0031
BCS M08T4E2-NSM30G-S49G	BCS M08T4E1-NSM30G-EP02	BCS G10T4H-NSM40C-EP02	BCS M12T4D2-NSM40C-S04G	BCS M12T4G1-NSM40C-EP02
BCS002R	BCS002L	BCS002Y	BCS00AC	BCS0032
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, 3x0.14 mm ²	2 m PUR cable, 3x0.14 mm ²	M12 connector, 4-pin, A-coded	2 m PUR cable 3x0.14 mm ²



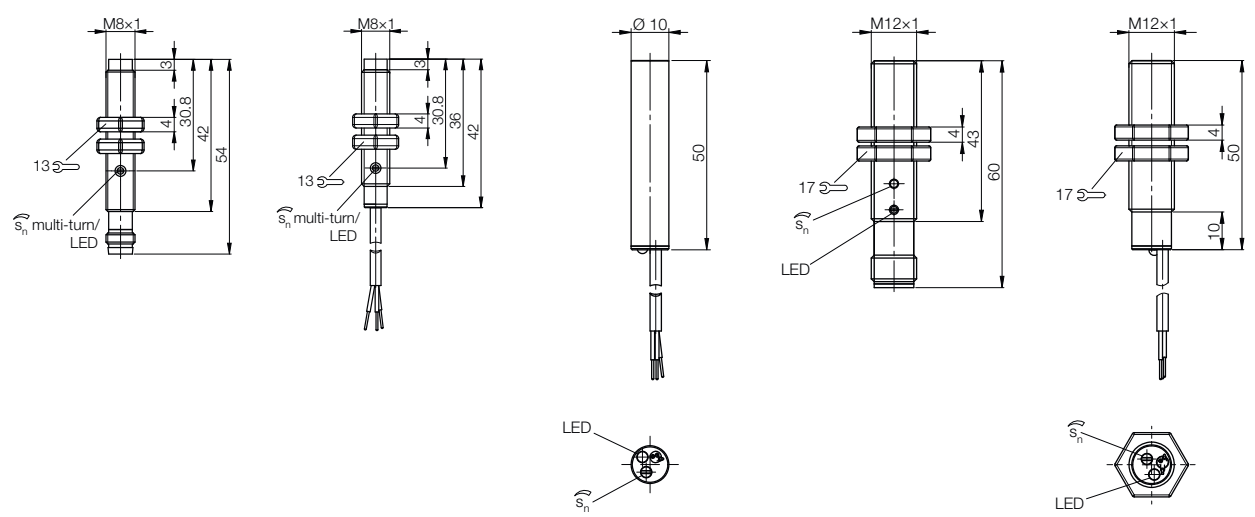
Capacitive Sensors

Capacitive Sensors for Object Detection

Mini-Sensors
Standard Sensors

Capacitive Sensors for Level Detection

Capacitive Sensors with Special Properties



Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors

Capacitive Sensors for Object Detection

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



Global



Global

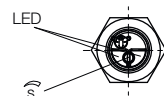
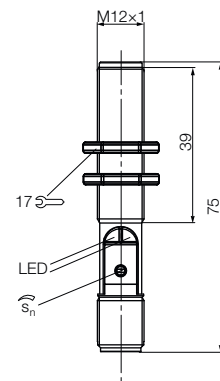
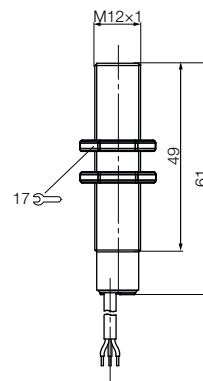
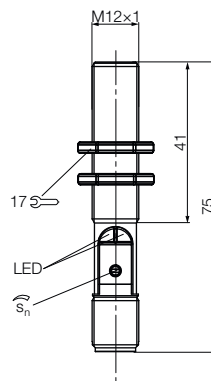


Global

Size		M12x1	M12x1	M12x1
Mounting type		Flush	Flush	Flush
Rated switching distance s_n		1...4 mm	1...4 mm	1...4 mm
PNP, NO	Ordering code	BCS00P0	BCS00R4	BCS00PJ
	Part number	BCS M12B4G2-PSC40D-S04K	BCS M12B4I1-PSC40D-EP02	BCS M12BBG2-PSC40D-S04K
PNP, NC	Ordering code	BCS00P1	BCS00P8	BCS00PK
	Part number	BCS M12B4G2-POC40D-S04K	BCS M12B4I1-POC40D-EP02	BCS M12BBG2-POC40D-S04K
NPN, NO	Ordering code	BCS00P2	BCS00P9	BCS00PL
	Part number	BCS M12B4G2-NSC40D-S04K	BCS M12B4I1-NSaC40D-EP02	BCS M12BBG2-NSC40D-S04K
NPN, NC	Ordering code	BCS00P3	BCS00PA	BCS00PM
	Part number	BCS M12B4G2-NOC40D-S04K	BCS M12B4I1-NOC40D-EP02	BCS M12BBG2-NOC40D-S04K
Supply voltage U_s		10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o		≤ 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_o max.		≤ 15 mA	≤ 15 mA	≤ 15 mA
Polarity reversal protected/transposition 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, A-coded	2 m PUR cable, 3x0.14 mm ²	M12 connector, 4-pin, A-coded

Wiring diagrams, see page 971.

Additional cable lengths on request.



Capacitive Sensors for Object Detection

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



M12x1	M18x1	M18x1	M18x1	M18x1	M18x1
Flush	Flush	Flush	Flush	Flush	Flush
1...4 mm	2...8 mm	2...8 mm	2...8 mm	2...8 mm	2...8 mm
BCS00PU	BCS00MF	BCS00LK	BCS00M8	BCS00NZ	
BCS M12BBI1-PSC40D-EP02	BCS M18B4I3-PSC80D-S04K	BCS M18B4N1-PSC80D-EP02	BCS M18BBI3-PSC80D-S04K	BCS M18BBN1-PSC80D-EP02	
BCS00PW	BCS00M4	BCS00LR	BCS00MH	BCS00M1	
BCS M12BBI1-POC40D-EP02	BCS M18B4I3-POC80D-S04K	BCS M18B4N1-POC80D-EP02	BCS M18BBI3-POC80D-S04K	BCS M18BBN1-POC80D-EP02	
BCS00PY	BCS00M5	BCS00LN	BCS00MJ	BCS00M2	
BCS M12BBI1-NSC40D-EP02	BCS M18B4I3-NSC80D-S04K	BCS M18B4N1-NSC80D-EP02	BCS M18BBI3-NSC80D-S04K	BCS M18BBN1-NSC80D-EP02	
BCS00PZ	BCS00M6	BCS00LP	BCS00MK	BCS00M3	
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, 3x0.14 mm ²	M12 connector, 4-pin, A-coded	2 m PUR cable, 3x0.34 mm ²	M12 connector, 4-pin, A-coded	2 m PUR cable, 3x0.34 mm ²	



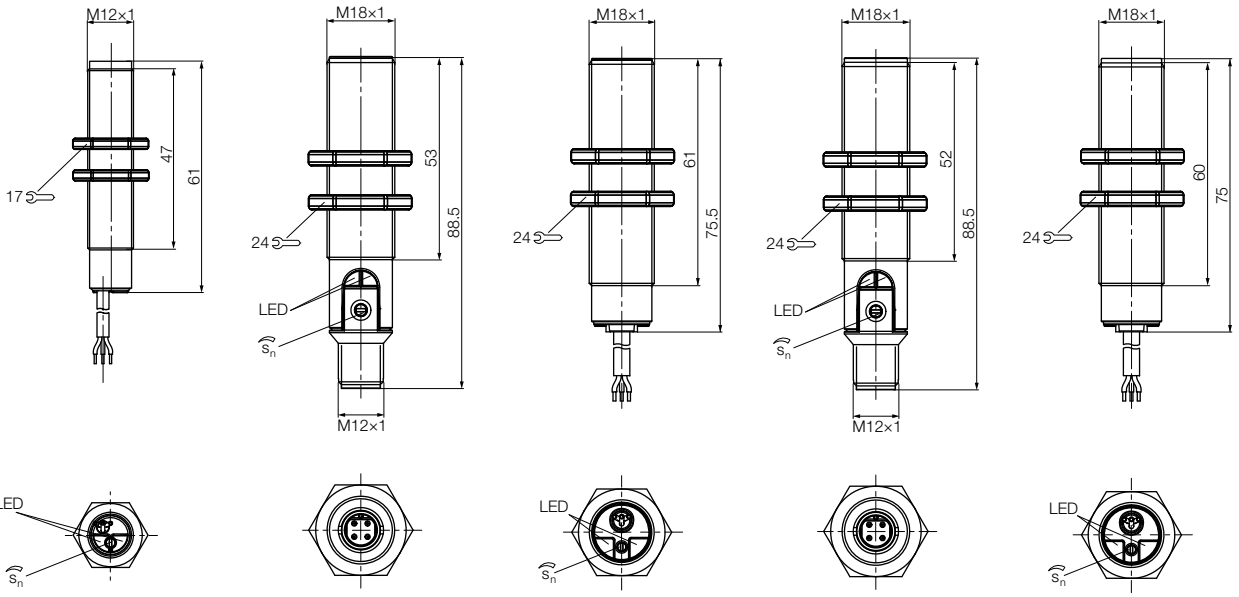
Capacitive Sensors

Capacitive Sensors for Object Detection

Mini-Sensors
Standard Sensors

Capacitive Sensors for Level Detection

Capacitive Sensors with Special Properties



Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors

Capacitive Sensors for Object Detection
Standard sensors, cylinder designs, DC 3-wire,
Ø 22 mm, Ø 30 mm, M30×1.5

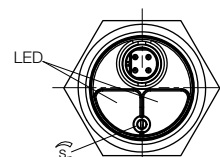
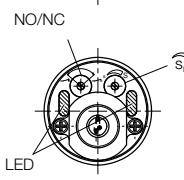
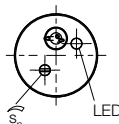
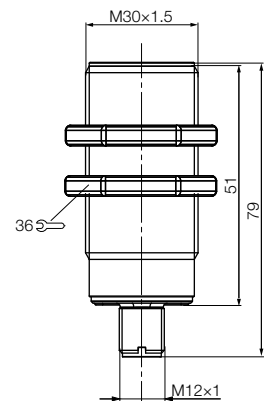
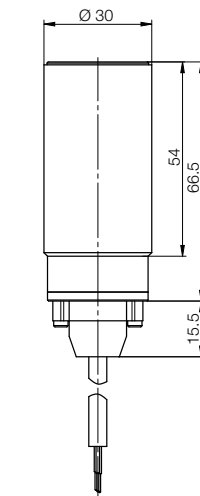
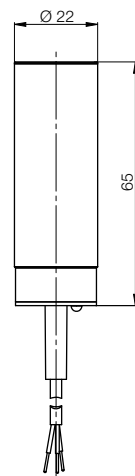


Global

Size	Ø 22 mm	Ø 30 mm	M30×1.5
Mounting type	Flush	Flush	Flush
Rated switching distance s_n	2...10 mm	2...20 mm	2...15 mm
PNP, NO	Ordering code Part number	BCS0033 BCS D22V4M1-PSC10C-EV02	BCS00MR BCS M30B4I2-PSC15D-S04K
PNP, NC	Ordering code Part number	BCS0034 BCS D22V4M1-POC10C-EV02	BCS00MT BCS M30B4I2-POC15D-S04K
PNP, NO/NC, can be coded	Ordering code Part number	BCS004H BCS D30B4M3-PPC20C-EP02	
NPN, NO	Ordering code Part number	BCS0035 BCS D22V4M1-NSC10C-EV02	BCS00MU BCS M30B4I2-NSC15D-S04K
NPN, NC	Ordering code Part number	BCS0036 BCS D22V4M1-NOC10C-EV02	BCS00MW BCS M30B4I2-NOC15D-S04K
NPN, NO/NC, can be coded	Ordering code Part number	BCS004J BCS D30B4M3-NPC20C-EP02	
Supply voltage U_s	10...35 V DC	10...35 V DC	10...30 V DC
Voltage drop U_d at I_o	≤ 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_o max.	≤ 10 mA	≤ 15 mA	≤ 15 mA
Polarity reversal protected/transposition 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, 3×0.25 mm ²	2 m PUR cable, 3×0.34 mm ²	M12 connector, 4-pin, A-coded

Wiring diagrams, see page 971.

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	BCS00NA	BCS00NM	BCS00UJ	BCS00UN
BCS M30B4I1-PSC15D-EP02	BCS M30BBI2-PSC15D-S04K	BCS M30BBI1-PSC15D-EP02	BCS G3400I2-PSC15D-S04K	BCS G3400I1-PSC15D-EP02
BCS00N3	BCS00NC	BCS00NN	BCS00UK	BCS00UF
BCS M30B4I1-POC15D-EP02	BCS M30BBI2-POC15D-S04K	BCS M30BBI1-POC15D-EP02	BCS G3400I2-POC15D-S04K	BCS G3400I1-POC15D-EP02
BCS00N4	BCS00NE	BCS00NP	BCS00UL	BCS00UH
BCS M30B4I1-NSC15D-EP02	BCS M30BBI2-NSC15D-S04K	BCS M30BBI1-NSC15D-EP02	BCS G3400I2-NSC15D-S04K	BCS G3400I1-NSC15D-EP02
BCS00N5	BCS00NF	BCS00NR	BCS00UM	BCS00UP
BCS M30B4I1-NOC15D-EP02	BCS M30BBI2-NOC15D-S04K	BCS M30BBI1-NOC15D-EP02	BCS G3400I2-NOC15D-S04K	BCS G3400I1-NOC15D-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, 3×0.34 mm ²	M12 connector, 4-pin, A-coded	2 m PUR cable, 3×0.34 mm ²	M12 connector, 4-pin, A-coded	2 m PUR cable, 3×0.34 mm ²



Capacitive Sensors

Capacitive Sensors for Object Detection

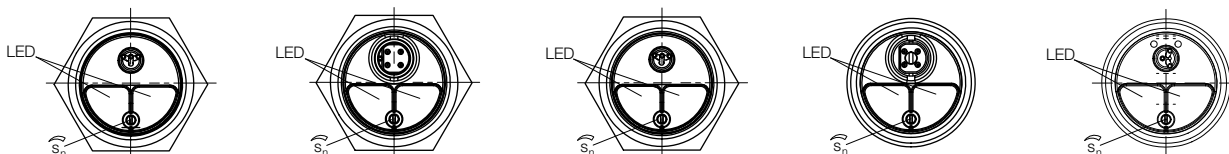
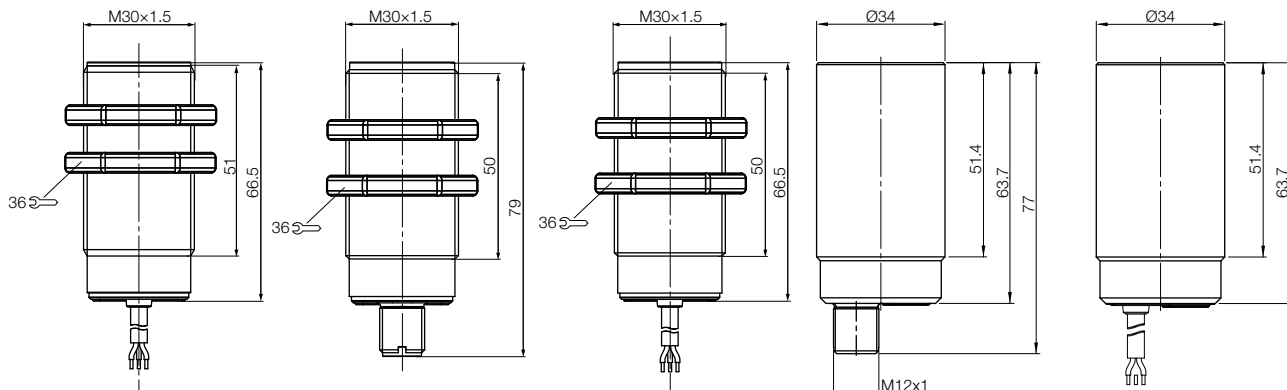
Mini-Sensors
Standard Sensors

Capacitive Sensors for Level Detection

Capacitive Sensors with Special Properties

Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors



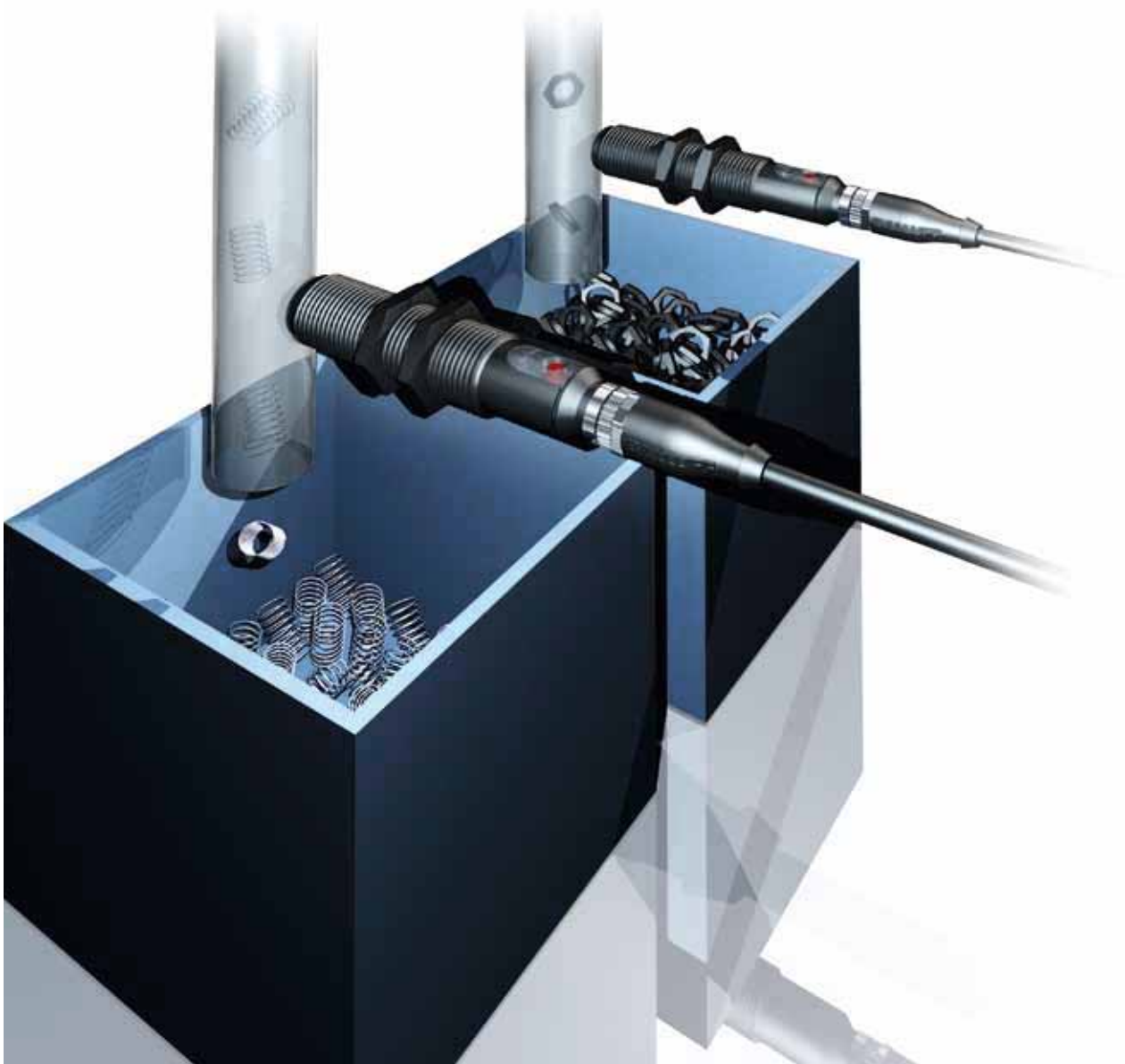
Food and pharmaceutical industry:

Presence check in 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 purpose machine manufacturing: 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 adjusting and without wear or contact through container walls up to 4 mm thick. But if the tube is even thicker, there are other capacitive solutions available from us.



Capacitive Sensors for Object Detection

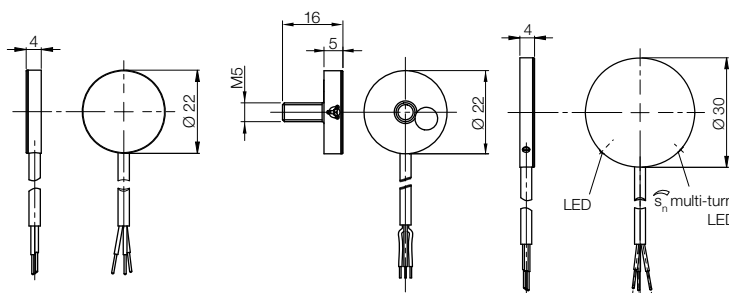
Standard sensors, disk designs, DC 3-wire, Ø 22 mm, Ø 30 mm



Size	Ø 22x4 mm	Ø 22x4 mm	Ø 30x4 mm
Mounting type	Flush	Flush	Flush
Rated switching distance s_n	6 mm ±10 %	6 mm ±10 %	2...15 mm
PNP, NO	Ordering code Part number	BCS003H BCS D22T403-PSM60C-EP02	BCS003A BCS D30T401-PSC15C-EP02
PNP, NC	Ordering code Part number		BCS003C BCS D30T401-POC15C-EP02
NPN, NO	Ordering code Part number	BCS003J BCS D22T403-NSM60C-EP02	BCS003E BCS D30T401-NSC15C-EP02
NPN, NC	Ordering code Part number		BCS003F BCS D30T401-NOC15C-EP02
Supply voltage U_s	12...30 V DC	12...30 V DC	10...35 V DC
Voltage drop U_d at I_o	≤ 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_o max.	≤ 10 mA	≤ 10 mA	≤ 10 mA
Polarity reversal protected/transposition 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 Sensing surface: PTFE	Housing: Stainless steel Sensing surface: PTFE	Housing: Stainless steel Sensing surface: PTFE
Connection	2 m PUR cable, 3x0.14 mm ²	2 m PUR cable, 3x0.14 mm ²	2 m PUR cable, 3x0.14 mm ²

Wiring diagrams, see page 971.

Additional cable lengths on request.



Capacitive Sensors

Capacitive Sensors for Object Detection

Mini-Sensors
Standard Sensors

Capacitive Sensors for Level Detection

Capacitive Sensors with Special Properties

Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors



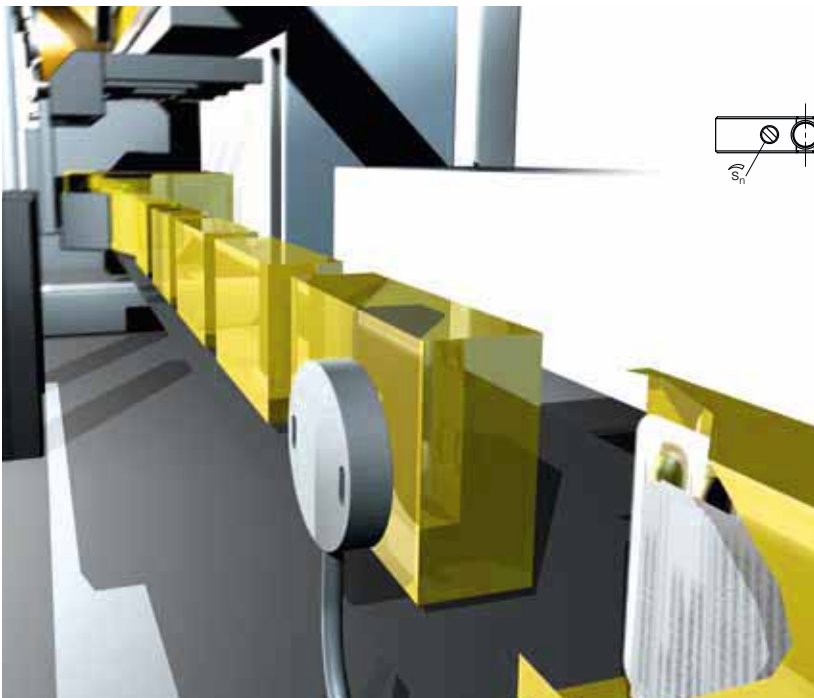
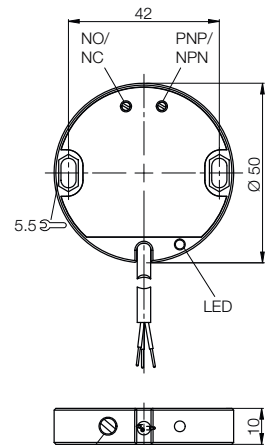
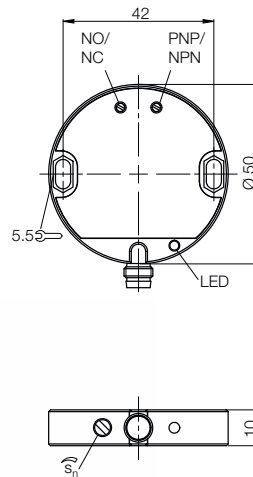
Capacitive Sensors for Object Detection
Standard sensors, disk designs, DC 3-wire,
Ø 50 mm



Size		Ø 50x10 mm	Ø 50x10 mm
Mounting type		Flush	Flush
Rated switching distance s_n		2...25 mm	2...25 mm
PNP/NPN and NO/NC, can be coded		Ordering code BCS003L	BCS003K
Part number		BCS D500003-YPC25C-S49G	BCS D500002-YPC25C-EV02
Supply voltage U_S		10...30 V DC	10...30 V DC
Voltage drop U_d at I_o		≤ 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_o max.		≤ 15 mA	≤ 15 mA
Polarity reversal protected/transposition 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, 3x0.25 mm ²

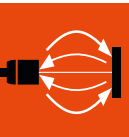
Wiring diagrams, see page 971.

Additional cable lengths on request.



Capacitive Sensors for Object Detection

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



Capacitive Sensors

Capacitive Sensors for Object Detection

Mini-Sensors
Standard Sensors

Capacitive Sensors for Level Detection

Capacitive Sensors with Special Properties

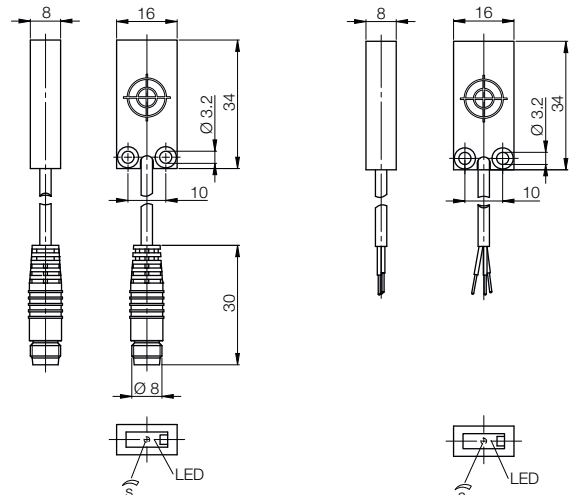
Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors

Size	16×34×8 mm MicroBox		16×34×8 mm MicroBox
Mounting type	Flush		Flush
Rated switching distance s_n	1...8 mm		1...8 mm
PNP, NO	Ordering code	BCS0055	BCS0051
	Part number	BCS R08RR01-PSM80C-EP00,2-GS49	BCS R08RR01-PSM80C-EP02
PNP, NC	Ordering code	BCS0056	BCS0052
	Part number	BCS R08RR01-POM80C-EP00,2-GS49	BCS R08RR01-POM80C-EP02
NPN, NO	Ordering code	BCS0057	BCS0053
	Part number	BCS R08RR01-NSM80C-EP00,2-GS49	BCS R08RR01-NSM80C-EP02
NPN, NC	Ordering code	BCS0058	BCS0054
	Part number	BCS R08RR01-NOM80C-EP00,2-GS49	BCS R08RR01-NOM80C-EP02
Supply voltage U_s	12...30 V DC		12...30 V DC
Voltage drop U_d at I_o	≤ 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_o max.	≤ 10 mA		≤ 10 mA
Polarity reversal protected/transposition 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, 3×0.14 mm ² with M8 connector, 3-pin		2 m PUR cable, 3×0.14 mm ²

Wiring diagrams, see page 971.

Additional cable lengths on request.



Mounting frame included in scope of delivery

Mounting frame included in scope of delivery

Capacitive Sensors for Object Detection

Standard sensors, block designs, DC 3-wire, 40x40x10 mm, Uniflat

The cost-effective global standard segment now also provides capacitive sensors in a very flat design: in a compact plastic housing (40x40x10 mm) with cable or pigtail connection. And there is an LED display for supply voltage and switching status.

Applications

The capacitive sensors BCS Q40 Uniflat detect oil or granular material through up to 6 mm thick non-metallic walls. 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

Its switching distance can be set precisely from 1 to 20 mm. To do so, a 20-turn potentiometer is available.

As a pigtail, the capacitive Q40 Uniflat provides a PNP output, which is available as either normally open or as normally closed.

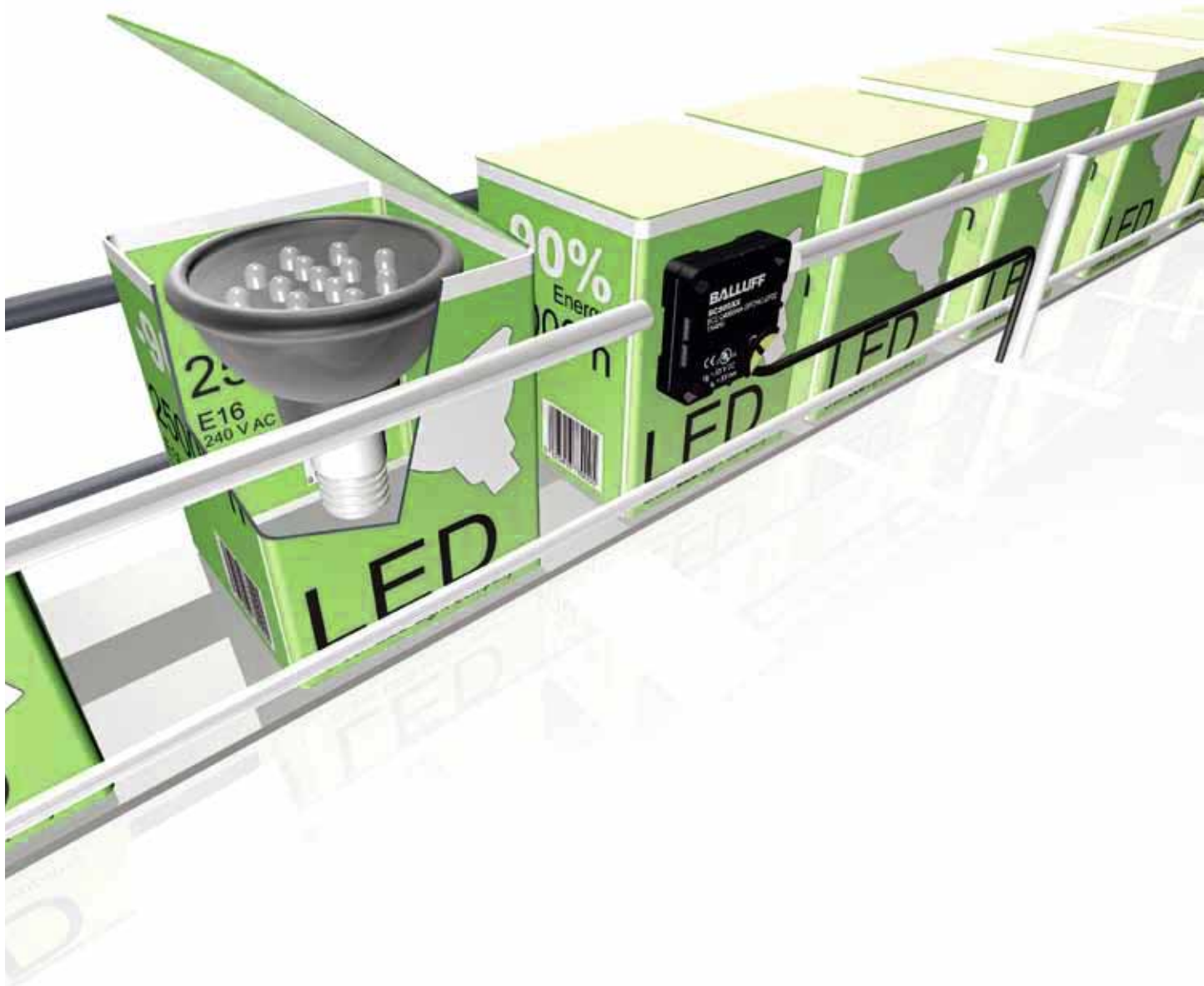
With the cable variant, the output can be coded as PNP or as NPN. Both can be set as normally open or normally closed.

Installation

The capacitive sensors BCS Q40 Uniflat can be installed as 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



Capacitive Sensors for Object Detection

Standard sensors, block designs, DC 3-wire, 40x40x10 mm, Uniflat

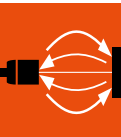


Global



Global

Size	40x40x10 mm Uniflat		40x40x10 mm Uniflat
Mounting type	Flush		Flush
Rated switching distance s_n	1...20 mm		1...20 mm
PNP/NPN and NO/NC, can be coded	Ordering code		BCS00TR
PNP, NO	Part number		BCS Q40BBAA-GPC20C-EP02
PNP, NC	Ordering code	BCS00U6	
	Part number	BCS Q40BBAA-PSC20C-EP00,3-GS49	
	Ordering code	BCS00U5	
	Part number	BCS Q40BBAA-POC20C-EP00,3-GS49	
Supply voltage U_S	10...30 V DC		10...30 V DC
Voltage drop U_d at I_o	≤ 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_o max.	≤ 15 mA		≤ 15 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes		No/No/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	0.3 m PUR cable with M8 plug, 3-pin		2 m PUR cable, 3x0.14 mm ²



Capacitive Sensors

Capacitive Sensors for Object Detection

Mini-Sensors
Standard Sensors

Capacitive Sensors for Level Detection

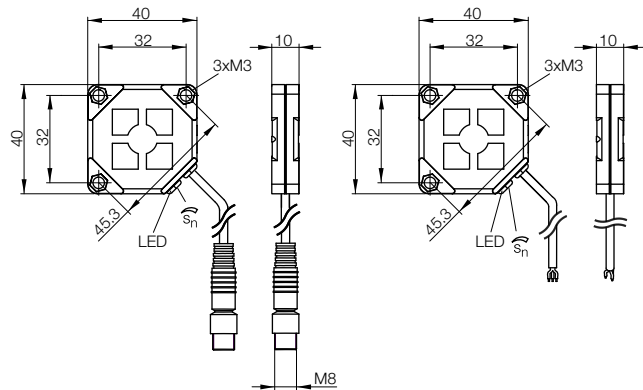
Capacitive Sensors with Special Properties

Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors

Wiring diagrams, see page 971.

Additional cable lengths on request.



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

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.



Standard Sensors

Cylinder designs 771

SmartLevel Sensors

Cylinder designs 782

Disk designs 789

Block designs 790



Basic information and definitions can be found on **page 934**.



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. The sensor provides safety and reliability in leakage monitoring on hydraulic tanks.



Capacitive Sensors for Level Detection

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



Global



Global



Capacitive Sensors

Capacitive Sensors for Object Detection

Capacitive Sensors for Level Detection

Standard Sensors

SmartLevel Sensors

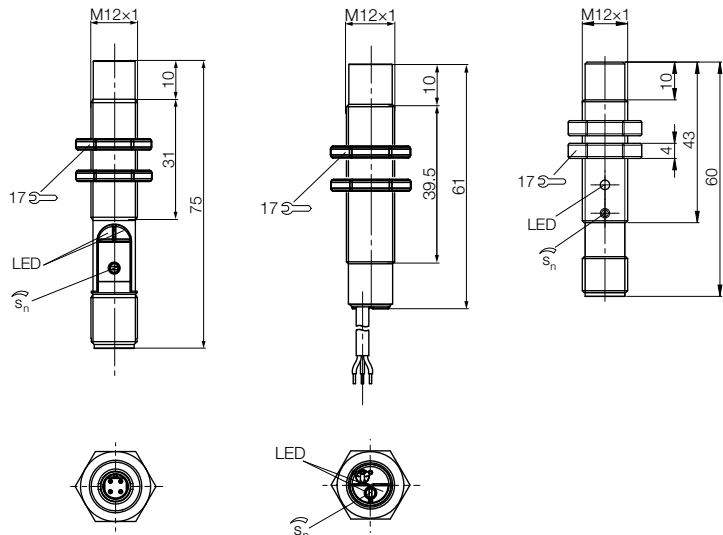
Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors

Size	M12x1	M12x1	M12x1
Mounting 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 Part number	BCS00P4 BCS M12B4E2-PSC80H-S04K	BCS00PC BCS M12B4G1-PSC80H-EP02
PNP, NC	Ordering code Part number	BCS00P5 BCS M12B4E2-POC80H-S04K	BCS00PE BCS M12B4G1-POC80H-EP02
NPN, NO	Ordering code Part number	BCS00P6 BCS M12B4E2-NSC80H-S04K	BCS00PF BCS M12B4G1-NSC80H-EP02
NPN, NC	Ordering code Part number	BCS00P7 BCS M12B4E2-NOC80H-S04K	BCS00PH BCS M12B4G1-NOC80H-EP02
Supply voltage U_s	10...30 V DC	10...30 V DC	12...35 V DC
Voltage drop U_d at I_o	≤ 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_o max.	≤ 15 mA	≤ 15 mA	≤ 10 mA
Polarity reversal protected/transposition 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 Sensing surface: PBT Cover: PA 12, PBT	Housing: Stainless steel Sensing surface: PBT Cover: PA 12	Housing: Stainless steel Sensing surface: PTFE Cover: PA
Connection	M12 connector, 4-pin, A-coded	2 m PUR cable, 3x0.14 mm ²	M12 connector, 4-pin, A-coded

Wiring diagrams, see page 971.

Additional cable lengths on request.



Capacitive Sensors for Level Detection

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



Global

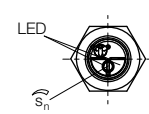
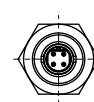
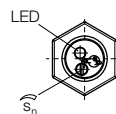
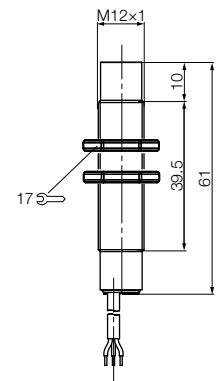
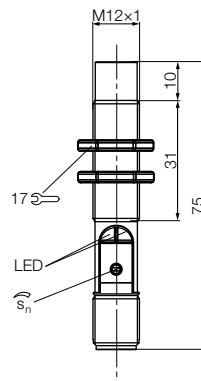
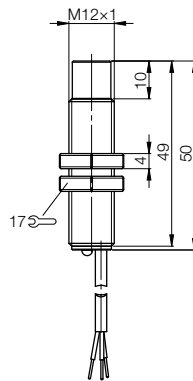


Global

Size		M12x1	M12x1	M12x1
Mounting 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	BCS00PN	BCS00R0
	Part number	BCS M12T4G1-PSM80G-EP02	BCS M12BBE2-PSC80H-S04K	BCS M12BBG1-PSC80H-EP02
PNP, NC	Ordering code	BCS005H	BCS00PP	BCS00R1
	Part number	BCS M12T4G1-POM80G-EP02	BCS M12BBE2-POC80H-S04K	BCS M12BBG1-POC80H-EP02
NPN, NO	Ordering code	BCS005J	BCS00PR	BCS00R2
	Part number	BCS M12T4G1-NSM80G-EP02	BCS M12BBE2-NSC80H-S04K	BCS M12BBG1-NSC80H-EP02
NPN, NC	Ordering code	BCS005K	BCS00PT	BCS00R3
	Part number	BCS M12T4G1-NOM80G-EP02	BCS M12BBE2-NOC80H-S04K	BCS M12BBG1-NOC80H-EP02
Supply voltage U_s		12...35 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o		≤ 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_o max.		≤ 10 mA	≤ 15 mA	≤ 15 mA
Polarity reversal protected/transposition 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, 3x0.14 mm ²	M12 connector, 4-pin, A-coded	2 m PUR cable, 3x0.14 mm ²

Wiring diagrams, see page 971.

Additional cable lengths on request.

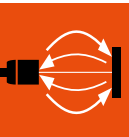


Capacitive Sensors for Level Detection

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



M12x1	M12x1	M18x1	M18x1	M18x1
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	BCS009J	BCS00ME	BCS00M7	BCS006A
BCS M12TTG1-PSM80G-ET02	BCS M12TTI1-PSM60G-ET02-E	BCS M18B4G2-PSC15H-S04K	BCS M18B4H1-PSC15H-EP02	BCS M18T4G2-PSC15G-S04G
BCS0070	BCS009K	BCS00ML	BCS00M9	BCS006C
BCS M12TTG1-POM80G-ET02	BCS M12TTI1-POM60G-ET02-E	BCS M18B4G2-POC15H-S04K	BCS M18B4H1-POC15H-EP02	BCS M18T4G2-POC15G-S04G
BCS0071	BCS009L	BCS00MM	BCS00MA	BCS006E
BCS M12TTG1-NSM80G-ET02	BCS M12TTI1-NSM60G-ET02-E	BCS M18B4G2-NSC15H-S04K	BCS M18B4H1-NSC15H-EP02	BCS M18T4G2-NSC15G-S04G
BCS0072	BCS009M	BCS00MN	BCS00MC	BCS006F
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, 3x0.2 mm ²	2 m PTFE cable, 3x0.2 mm ²	M12 connector, 4-pin, A-coded	2 m PUR cable, 3x0.34 mm ²	M12 connector, 4-pin, A-coded



Capacitive Sensors

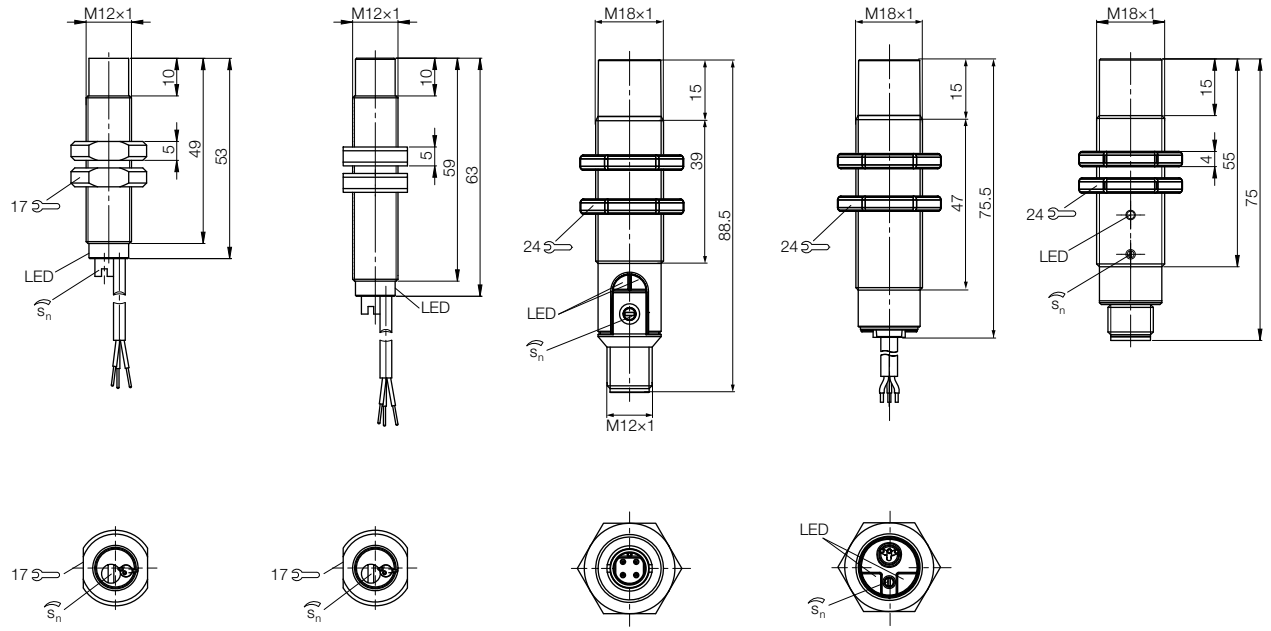
Capacitive Sensors for Object Detection

Capacitive Sensors for Level Detection

Standard Sensors

SmartLevel Sensors

Capacitive Sensors with Special Properties



Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors

Capacitive Sensors for Level Detection

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



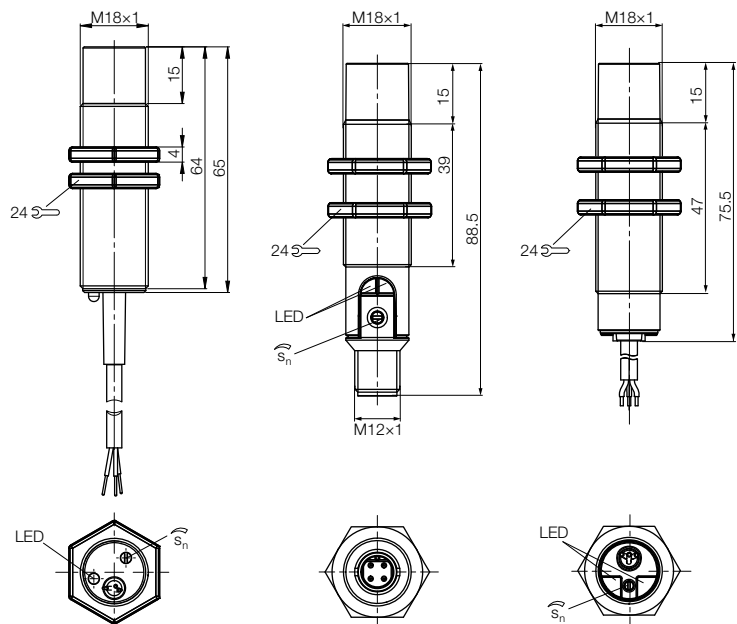
Global

Global

Size		M18x1	M18x1	M18x1
Mounting 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	BCS00LM	BCS00LL
	Part number	BCS M18T4I1-PSC15G-DV02	BCS M18BBG2-PSC15H-S04K	BCS M18BBH1-PSC15H-EP02
PNP, NC	Ordering code	BCS005T	BCS00LT	BCS00LY
	Part number	BCS M18T4I1-POC15G-DV02	BCS M18BBG2-POC15H-S04K	BCS M18BBH1-POC15H-EP02
PNP, NO/NC, can be coded	Ordering code			
NPN, NO	Ordering code	BCS005U	BCS00LU	BCS00LZ
	Part number	BCS M18T4I1-NSC15G-DV02	BCS M18BBG2-NSC15H-S04K	BCS M18BBH1-NSC15H-EP02
NPN, NC	Ordering code	BCS005W	BCS00LW	BCS00M0
	Part number	BCS M18T4I1-NOC15G-DV02	BCS M18BBG2-NOC15H-S04K	BCS M18BBH1-NOC15H-EP02
NPN, NO/NC, can be coded	Ordering code			
Part number				
Supply voltage U_s		10...35 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o		≤ 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_o max.		≤ 10 mA	≤ 15 mA	≤ 15 mA
Polarity reversal protected/transposition 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, 3x0.25 mm ²	M12 connector, 4-pin, A-coded	2 m PUR cable 3x0.34 mm ²

Wiring diagrams, see page 971.

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	BCS00MY	BCS00N6		
BCS M18TTI2-PSC15G-AT02	BCS M30B4E2-PSC25H-S04K	BCS M30B4E1-PSC25H-EP02		
BCS0074	BCS00MZ	BCS00N7		
BCS M18TTI2-POC15G-AT02	BCS M30B4E2-POC25H-S04K	BCS M30B4E1-POC25H-EP02		
			BCS007L	BCS007J
			BCS M30T4M2-PPC30G-S04G	BCS M30T4M3-PPC30G-EP02
BCS0075	BCS00N0	BCS00N8		
BCS M18TTI2-NSC15G-AT02	BCS M30B4E2-NSC25H-S04K	BCS M30B4E1-NSC25H-EP02		
BCS0076	BCS00N1	BCS00N9		
BCS M18TTI2-NOC15G-AT02	BCS M30B4E2-NOC25H-S04K	BCS M30B4E1-NOC25H-EP02		
			BCS007M	BCS007K
			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, 3×0.2 mm ²	M12 connector, 4-pin, A-coded	2 m PUR cable, 3×0.34 mm ²	M12 connector, 4-pin, A-coded	2 m PUR cable 3×0.34 mm ²



Capacitive Sensors

Capacitive Sensors for Object Detection

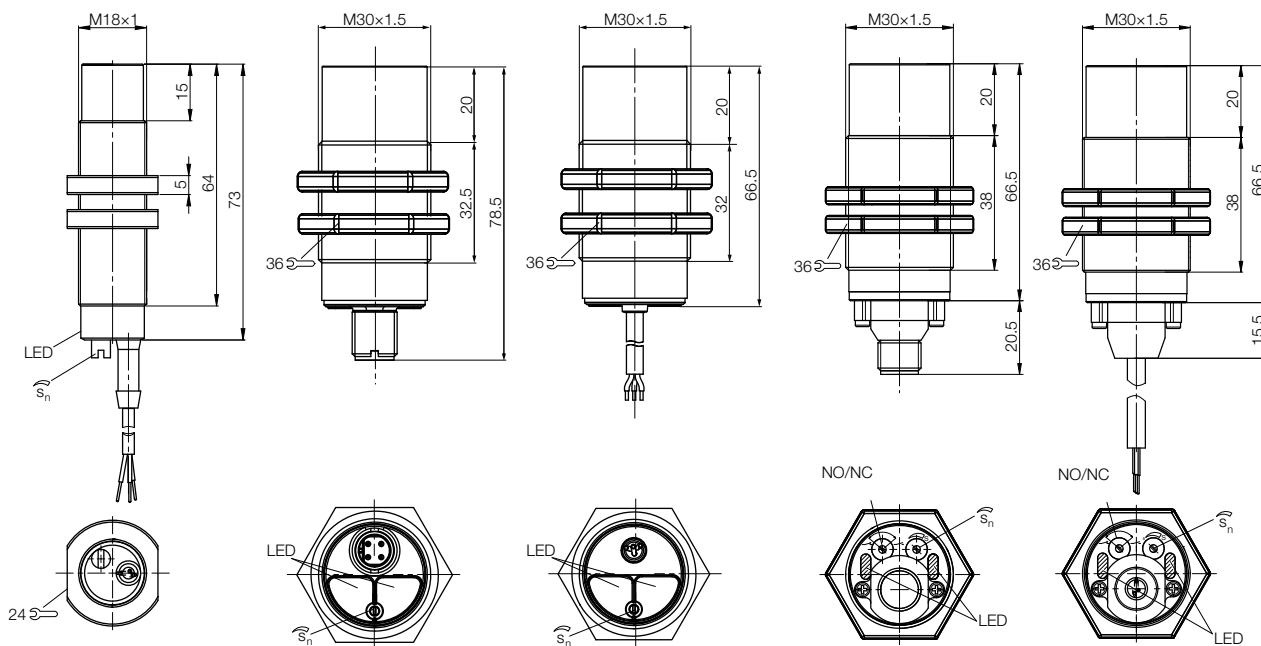
Capacitive Sensors for Level Detection

Standard Sensors
SmartLevel Sensors

Capacitive Sensors with Special Properties

Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors



Capacitive Sensors for Level Detection

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



Global



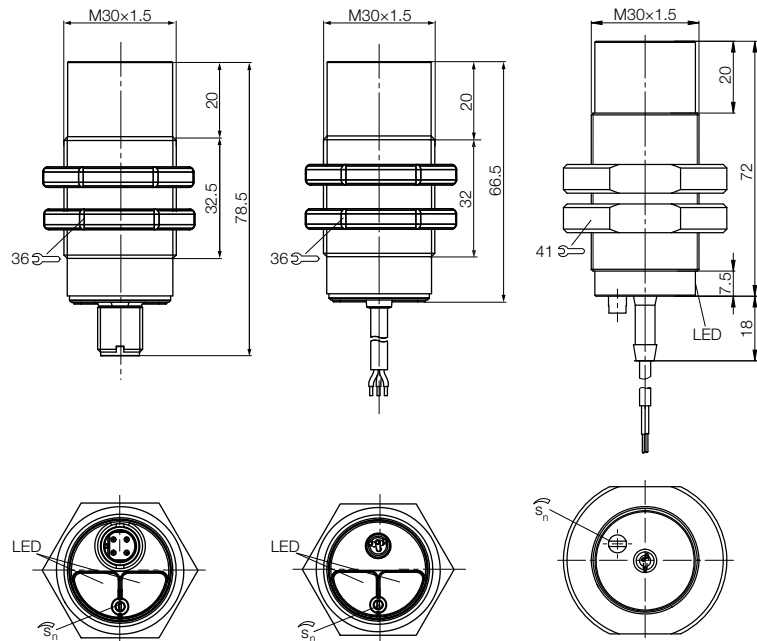
Global



Size	M30×1.5	M30×1.5	M30×1.5
Mounting 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 Part number	Ordering code Part number	Ordering code Part number
	BCS00NH BCS M30BBE2-PSC25H-S04K	BCS00NT BCS M30BBE1-PSC25H-EP02	BCS0077 BCS M30TTH2-PSC30G-AT02
PNP, NC	Ordering code Part number	Ordering code Part number	Ordering code Part number
	BCS00NJ BCS M30BBE2-POC25H-S04K	BCS00NU BCS M30BBE1-POC25H-EP02	BCS0078 BCS M30TTH2-POC30G-AT02
NPN, NO	Ordering code Part number	Ordering code Part number	Ordering code Part number
	BCS00NK BCS M30BBE2-NSC25H-S04K	BCS00NW BCS M30BBE1-NSC25H-EP02	BCS0079 BCS M30TTH2-NSC30G-AT02
NPN, NC	Ordering code Part number	Ordering code Part number	Ordering code Part number
	BCS00NL BCS M30BBE2-NOC25H-S04K	BCS00NY BCS M30BBE1-NOC25H-EP02	BCS007A BCS M30TTH2-NOC30G-AT02
Supply voltage U_s	10...30 V DC	10...30 V DC	10...35 V DC
Voltage drop U_d at I_o	≤ 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_o max.	≤ 15 mA	≤ 15 mA	≤ 10 mA
Polarity reversal protected/transposition 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 Sensing surface: PBT Cover: PA 12, PBT	Housing: PBT Sensing surface: PBT Cover: PA 12, PBT	Housing: PTFE Sensing surface: PTFE Cover: PTFE
Connection	M12 connector, 4-pin, A-coded	2 m PUR cable, 3×0.34 mm ²	2 m PTFE cable, 3×0.2 mm ²

Wiring diagrams, see page 971.

Additional cable lengths on request.

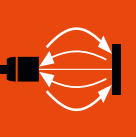
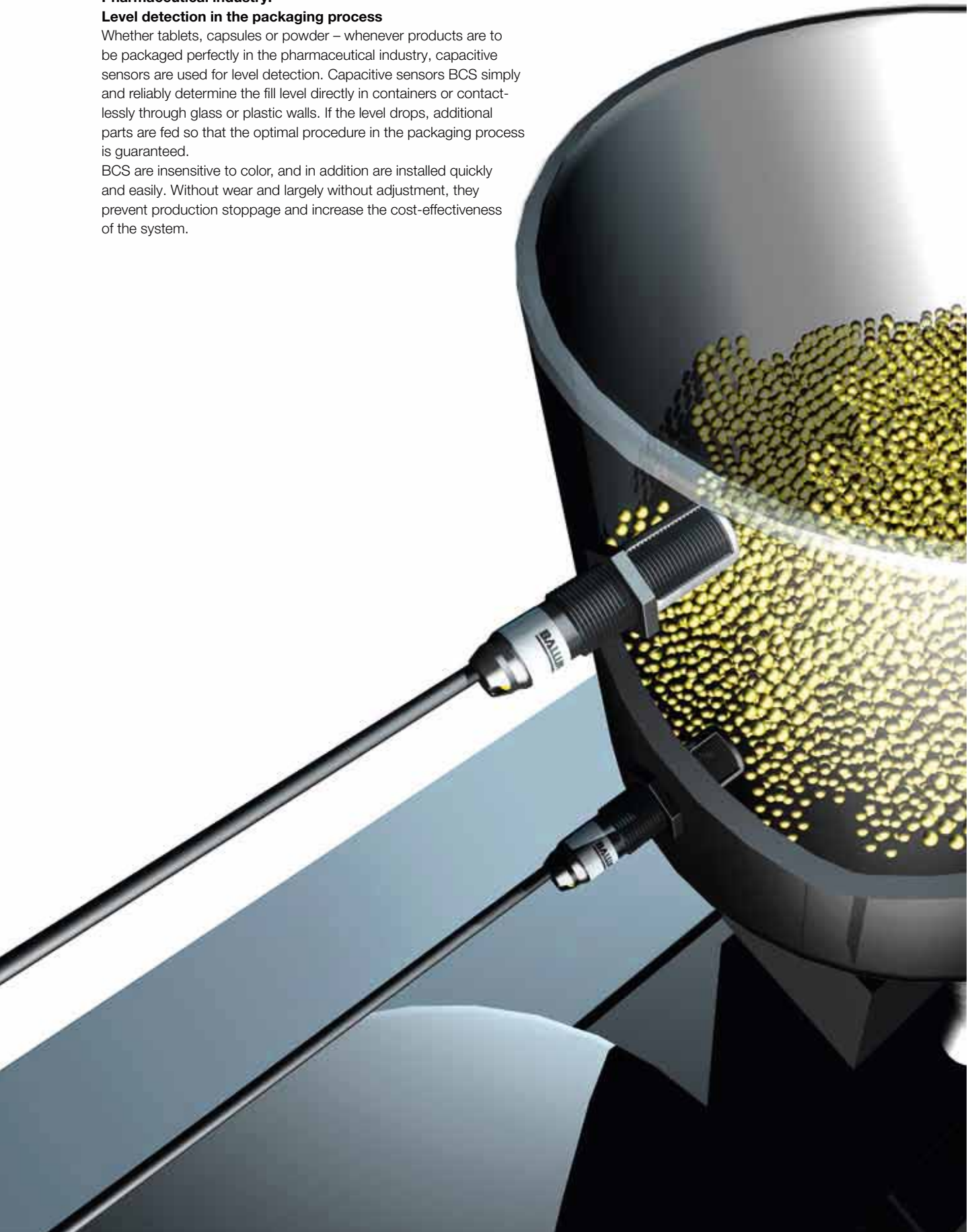


Pharmaceutical industry:

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 BCS 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.

BCS are insensitive to color, and in addition are installed quickly and easily. Without wear and largely without adjustment, they prevent production stoppage and increase the cost-effectiveness of the system.



Capacitive Sensors

Capacitive Sensors for Object Detection

Capacitive Sensors for Level Detection

Standard Sensors
SmartLevel Sensors

Capacitive Sensors with Special Properties

Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors

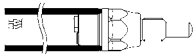
Capacitive Sensors for Level Detection
**Standard sensors, cylinder designs, DC 3-wire,
M12x1, G1/4", NPT1/4" MicroLevel**



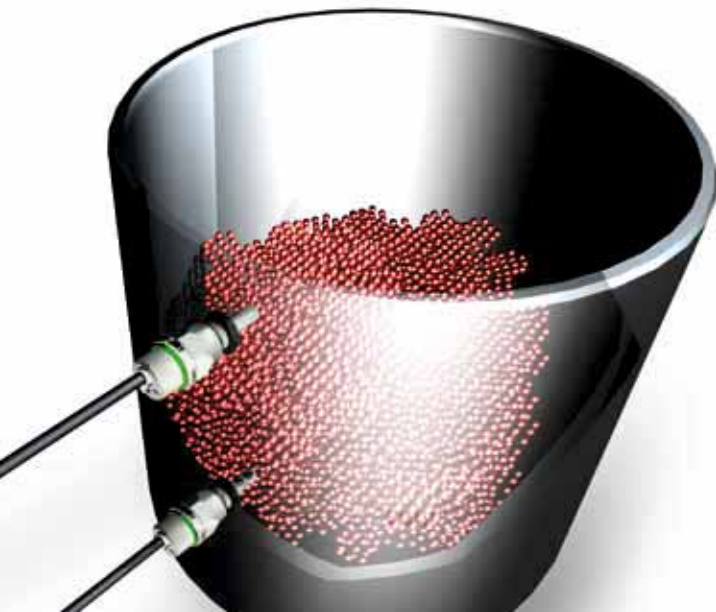
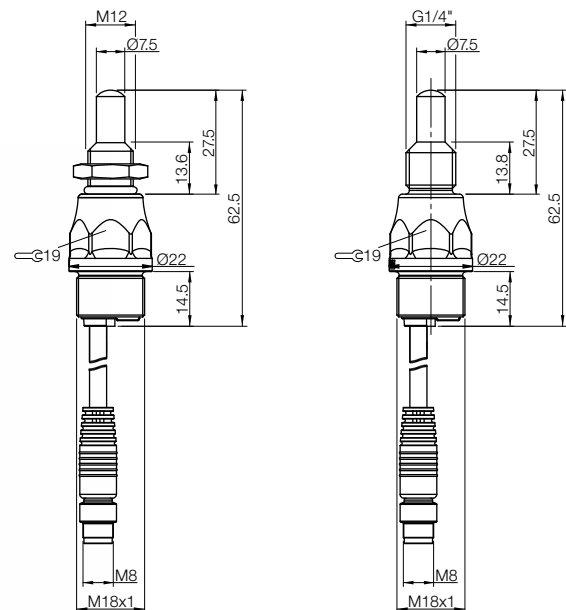
Size		M12x1 MicroLevel	G1/4" MicroLevel
Mounting type		Not flush	Not flush
Rated switching distance s_n		Level adjustable	Level adjustable
PNP/NPN and NO/NC user selectable	Ordering code		
	Part number		
PNP, NO	Ordering code	BCS00ZL	BCS00ZR
	Part number	BCS S44KK01-PSCFNG-EP00,3-GS49	BCS S44KK02-PSCFNG-EP00,3-GS49
PNP, NC	Ordering code	BCS00ZM	BCS00ZT
	Part number	BCS S44KK01-POCFNG-EP00,3-GS49	BCS S44KK02-POCFNG-EP00,3-GS49
NPN, NO	Ordering code	BCS00ZN	BCS00ZU
	Part number	BCS S44KK01-NSCFNG-EP00,3-GS49	BCS S44KK02-NSCFNG-EP00,3-GS49
NPN, NC	Ordering code	BCS00ZP	BCS00ZW
	Part number	BCS S44KK01-NOCFNG-EP00,3-GS49	BCS S44KK02-NOCFNG-EP00,3-GS49
Supply voltage U_s		10...30 V DC	10...30 V DC
Voltage drop U_d at I_o		≤ 2 V	≤ 2 V
Rated insulation voltage U_i		75 V DC	75 V DC
Output current max.		50 mA	50 mA
No-load supply current I_o max.		≤ 11 mA	≤ 11 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-5...+105 °C (sensing surface)	-5...+105 °C (sensing surface)
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 (sensing surface: IP 68)	IP 67 (sensing surface: IP 68)
Material	Housing	PEEK	PEEK
	Sensing surface	PEEK	PEEK
	Cover	PA 12	PA 12
Connection		0.3 m PUR cable with M8 connector, 3-pin	0.3 m PUR cable with M8 connector, 3-pin

Wiring diagrams, see page 971.

Additional cable lengths on request.



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, M12x1, G1/4", NPT1/4" MicroLevel



NPT1/4" MicroLevel	M12x1 MicroLevel	G1/4" MicroLevel	NPT1/4" MicroLevel
Not flush	Not flush	Not flush	Not flush
Level adjustable	Level adjustable	Level adjustable	Level adjustable
	BCS0102	BCS0103	BCS0104
	BCS S44KK01-GPCFNG-EP02	BCS S44KK02-GPCFNG-EP02	BCS S44KK03-GPCFNG-EP02
BCS00ZY			
BCS S44KK03-PSCFNGEP00,3-GS49			
BCS00ZZ			
BCS S44KK03-POCFNG-EP00,3-GS49			
BCS0100			
BCS S44KK03-NSCFNG-EP00,3-GS49			
BCS0101			
BCS S44KK03-NOCFNG-EP00,3-GS49			
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
≤ 2 V	≤ 2 V	≤ 2 V	≤ 2 V
75 V DC	75 V DC	75 V DC	75 V DC
50 mA	50 mA	50 mA	50 mA
≤ 11 mA	≤ 11 mA	≤ 11 mA	≤ 11 mA
Yes/Yes/Yes	No/No/Yes	No/No/Yes	No/No/Yes
-5...+105 °C (sensing surface)	-5...+105 °C (sensing surface)	-5...+105 °C (sensing surface)	-5...+105 °C (sensing surface)
10 Hz	10 Hz	10 Hz	10 Hz
Green LED/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED
IP 67 (sensing surface: IP 68)	IP 67 (sensing surface: IP 68)	IP 67 (sensing surface: IP 68)	IP 67 (sensing surface: IP 68)
PEEK	PEEK	PEEK	PEEK
PEEK	PEEK	PEEK	PEEK
PA 12	PA 12	PA 12	PA 12
0.3 m PUR cable with M8 connector, 3-pin	2 m PUR cable, 3x0.34 mm ²	2 m PUR cable, 3x0.34 mm ²	2 m PUR cable, 3x0.34 mm ²



Capacitive Sensors

Capacitive Sensors for Object Detection

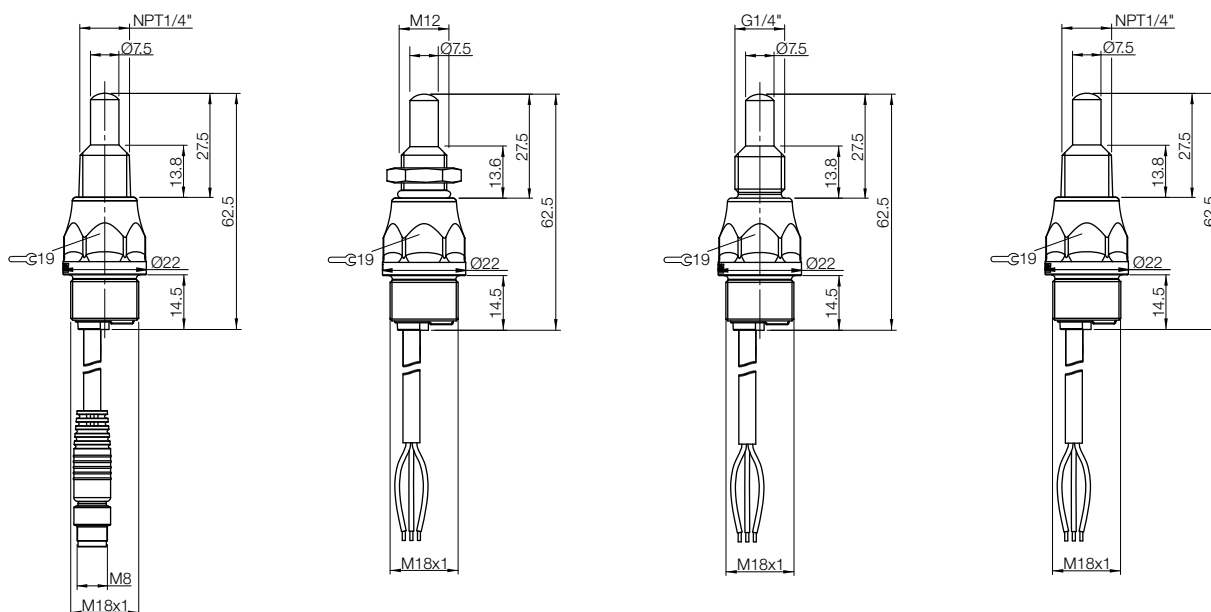
Capacitive Sensors for Level Detection

Standard Sensors
SmartLevel Sensors

Capacitive Sensors with Special Properties

Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors



Capacitive Sensors for Level Detection
**Standard sensors, cylinder designs, DC 3-wire,
M18×1, R 3/8", NPTF 3/8"**

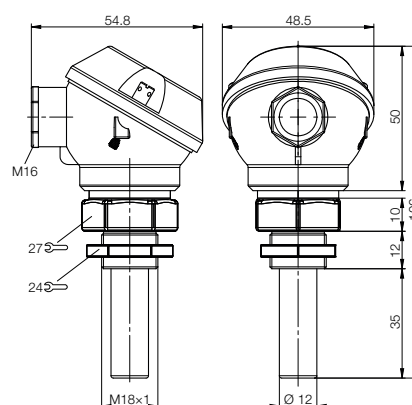


Pressure rated to 10 bar

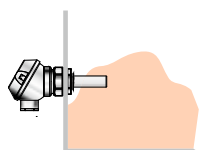
Size	M18×1	
Mounting type	Not flush	
Rated switching distance s_n	Level adjustable	
PNP, NO	Ordering code	BCS006H
	Part number	BCS S01T401-PSCFNG-KM16-T02
PNP, NC	Ordering code	BCS006J
	Part number	BCS S01T401-POCFNG-KM16-T02
NPN, NO	Ordering code	BCS006K
	Part number	BCS S01T401-NSCFNG-KM16-T02
NPN, NC	Ordering code	BCS006L
	Part number	BCS S01T401-NOCFNG-KM16-T02
Supply voltage U_s	10...35 V DC	
Voltage drop U_d at I_o	≤ 2.7 V	
Rated insulation voltage U_i	75 V DC	
Output current max.	100 mA	
No-load supply current I_o max.	≤ 10 mA	
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	
Ambient temperature T_a	-30...+125 °C	
Switching frequency f	5 Hz	
Supply voltage/output function indicator	No/Yellow LED	
Degree of protection as per IEC 60529	IP 67 (sensing surface: IP 68 at a max. of 10 bar)	
Material	Housing	Cast aluminum
	Sensing surface	PTFE
	Cover	Cast aluminum
Connection	Screw terminals	

Wiring diagrams, see page 971.

Additional cable lengths on request.



Gasket not included in the scope of 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.

Capacitive Sensors for Level Detection

Standard sensors, cylinder designs, DC 3-wire,
M18x1, R3/8", NPTF3/8"

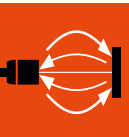


Pressure rated to 10 bar



Pressure rated to 10 bar

R³/₈"	NPTF³/₈"
Not flush	Not flush
Level adjustable	Level adjustable
BCS006M	BCS00A6
BCS S02T401-PSCFNG-KM16-T02	BCS S03T401-PSCFNH-KM16-T02
BCS006N	BCS00A7
BCS S02T401-POCFNG-KM16-T02	BCS S03T401-POCFNH-KM16-T02
BCS006P	BCS00A8
BCS S02T401-NSCFNG-KM16-T02	BCS S03T401-NSCFNH-KM16-T02
BCS006R	BCS00A9
BCS S02T401-NOCFNG-KM16-T02	BCS S03T401-NOCFNH-KM16-T02
10...35 V DC	10...35 V DC
≤ 2.7 V	≤ 2.7 V
75 V DC	75 V DC
100 mA	100 mA
≤ 10 mA	≤ 10 mA
Yes/Yes/Yes	Yes/Yes/Yes
-30...+125 °C	-30...+125 °C
5 Hz	5 Hz
No/Yellow LED	No/Yellow LED
IP 67 (sensing surface: IP 68 at a max. of 10 bar)	IP 67 (sensing surface: IP 68 at a max. of 10 bar)
Cast aluminum	Cast aluminum
PTFE	PTFE
Cast aluminum	Cast aluminum
Screw terminals	Screw terminals



Capacitive Sensors

Capacitive Sensors for Object Detection

Capacitive Sensors for Level Detection

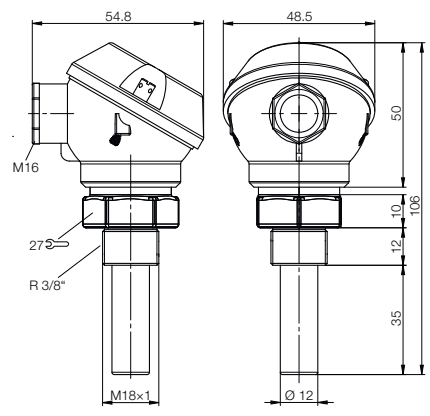
Standard Sensors

SmartLevel Sensors

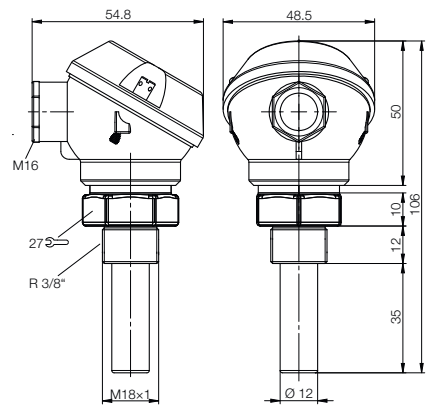
Capacitive Sensors with Special Properties

Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors



Gasket not included in the scope of delivery



Gasket not included in the scope of delivery



SmartLevel sensors exceed limits

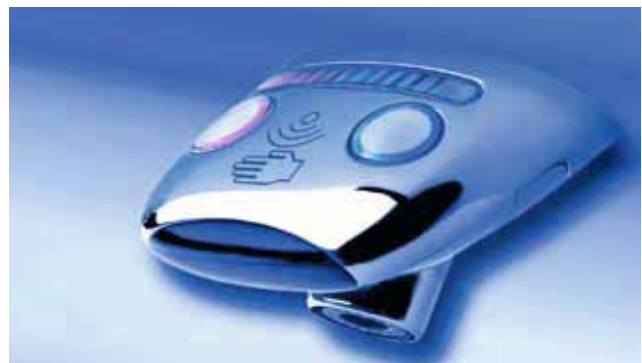
Simply describing the output of SmartLevel sensors as level sensors for reliable sensing of liquids and conductive media does not do its strengths justice. This is because SmartLevel can do much more – exactly when all other capacitive sensors reach their limit: SmartLevel sensors compensate for moisture, foam and deposits, penetrate wall thicknesses of glass and plastic even over 10 mm, detect aqueous to strongly conductive media, and have a chemically resistant housing made of PTFE. In short: SmartLevel sensors transcend boundaries. This is because they are the solution in applications that, until now, were extremely difficult.

SmartLevel sensors also reduce costs, since they can be installed without adjustment, can be used in most applications without cleaning, and require only minimal design effort (for example, omitting bypass tubes).

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

SmartLevel sensors take off

Airbus is equipping the restrooms 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. These enable passengers to conveniently select the desired water temperature with the assistance of an LED indicator. The special attraction: Sensing errors are impossible, since SmartLevel sensors ignore clinging dirt, liquid films and soap foam all on their own. Touching the faucet triggers a switching operation, even if a wet paper towel covers it.

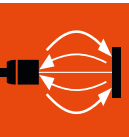


Capacitive Sensors for Level Detection
SMARTLEVEL, cylinder design, DC 3-wire,
 Ø 7 mm, M18x1



SMARTLEVEL 15

Size	Ø 7x52 mm	
Mounting type	Not flush	
Rated switching distance s_n	Fixed adjustment, media-dependent	
PNP, NO	Ordering code	BCS009C
	Part number	BCS S20TT01-PSLFAG-ET02
PNP, NC	Ordering code	BCS009E
	Part number	BCS S20TT01-POLFAG-ET02
NPN, NO	Ordering code	BCS009F
	Part number	BCS S20TT01-NSLFAG-ET02
NPN, NC	Ordering code	BCS009H
	Part number	BCS S20TT01-NOLFAG-ET02
Supply voltage U_s	10...30 V DC	
Voltage drop U_d at I_e	≤ 1.5 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/transposition protected/short-circuit protected	No/No/No	
Ambient temperature T_a	+5...+100 °C	
Switching frequency f	10 Hz	
Output function indicator	No	
Degree of protection as per IEC 60529	IP 66	
Material	Housing	PTFE
	Sensing surface	PTFE
	Cover	PTFE
Connection	2 m PTFE cable, 3x0.2 mm ²	



Capacitive Sensors

Capacitive Sensors for Object Detection

Capacitive Sensors for Level Detection

Standard Sensors

SmartLevel Sensors

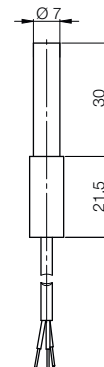
Capacitive Sensors with Special Properties

Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors

Wiring diagrams, see page 971.

Additional cable lengths on request.



Capacitive Sensors for Level Detection
SMARTLEVEL, cylinder design, DC 3-wire,
M18x1



SMARTLEVEL



SMARTLEVEL 15

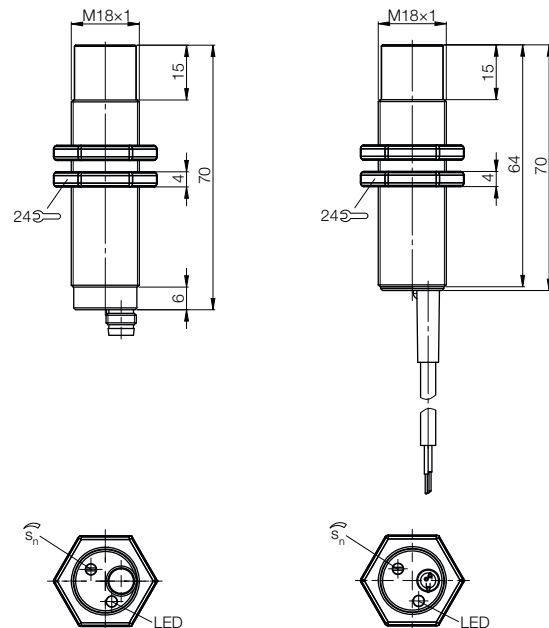


SMARTLEVEL 15

Size		M18x1	M18x1
Mounting type		Not flush	Not flush
Rated switching distance s_n		Media-dependent	Media-dependent
PNP, NO	Ordering code	BCS008T	BCS007N
	Part number	BCS M18VWN-PSCFAG-S49G	BCS M18WV11-PSCFAG-DV02
PNP, NC	Ordering code	BCS008U	BCS007P
	Part number	BCS M18VWN-POCFAG-S49G	BCS M18WV11-POCFAG-DV02
PNP, NO/NC, can be coded	Ordering code		
	Part number		
NPN, NO	Ordering code	BCS008W	BCS007R
	Part number	BCS M18VWN-NSCFAG-S49G	BCS M18WV11-NSCFAG-DV02
NPN, NC	Ordering code	BCS008Y	BCS007T
	Part number	BCS M18VWN-NOCFAG-S49G	BCS M18WV11-NOCFAG-DV02
NPN, NO/NC, can be coded	Ordering code		
	Part number		
Supply voltage U_S		10...35 V DC	10...35 V DC
Voltage drop U_d at I_o		≤ 1.8 V	≤ 1.8 V
Rated insulation voltage U_i		75 V DC	75 V DC
Output current max.		300 mA	300 mA
No-load supply current I_o max.		≤ 20 mA	≤ 20 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-10...+60 °C	-10...+60 °C
Switching frequency f		2 Hz	2 Hz
Output function indicator		Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 64	IP 64
Material	Housing	PVC	PVC
	Sensing surface	PVC	PVC
	Cover	PVC	PVC
Connection		M8 connector, 3-pin	2 m PVC cable, 3x0.25 mm ²

Wiring diagrams, see page 971.

Additional cable lengths on request.



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

Capacitive Sensors for Level Detection

SMARTLEVEL, cylinder designs, DC 3-wire, M18x1, M30x1.5



SMARTLEVEL 15



SMARTLEVEL 15

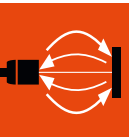


SMARTLEVEL 15



SMARTLEVEL 15

M18x1	M30x1.5	M30x1.5	M30x1.5
Not flush	Not flush	Not flush	Not flush
Media-dependent	Media-dependent	Media-dependent	Media-dependent
BCS008A			BCS0086
BCS M18TTI2-PSCFAG-AT02			BCS M30TTH2-PSCFAG-AT02
BCS008C			BCS0087
BCS M18TTI2-POCFAG-AT02			BCS M30TTH2-POCFAG-AT02
	BCS007Y	BCS007U	
	BCS M30BBM2-PPCFAG-S04G	BCS M30BBM3-PPCFAG-EP02	
BCS008E			BCS0088
BCS M18TTI2-NSCFAG-AT02			BCS M30TTH2-NSCFAG-AT02
BCS008F			BCS0089
BCS M18TTI2-NOCFAG-AT02			BCS M30TTH2-NOCFAG-AT02
	BCS007Z	BCS007W	
	BCS M30BBM2-NPCFAG-S04G	BCS M30BBM3-NPCFAG-EP02	
10...35 V DC	10...35 V DC	10...35 V DC	10...35 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	≤ 20 mA	≤ 20 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
Red LED	Green LED/Yellow LED	Green LED/Yellow LED	No/Red LED
IP 64	IP 64	IP 64	IP 64
PTFE	PBT	PBT	PTFE
PTFE	PBT	PBT	PTFE
PTFE	PBT, PE	PBT, PE	PTFE
2 m PTFE cable, 3x0.2 mm ²	M12 connector, 4-pin, A-coded	2 m PUR cable, 3x0.34 mm ²	2 m PTFE cable, 3x0.2 mm ²



Capacitive Sensors

Capacitive Sensors for Object Detection

Capacitive Sensors for Level Detection

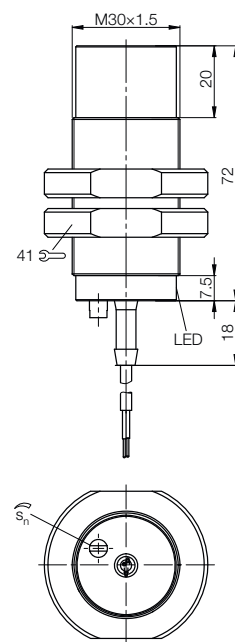
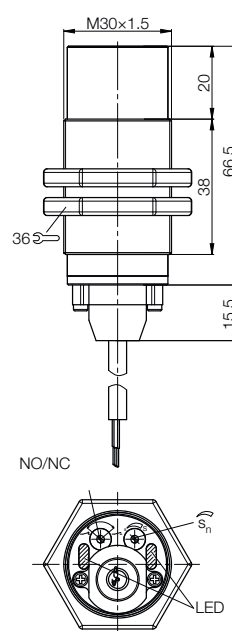
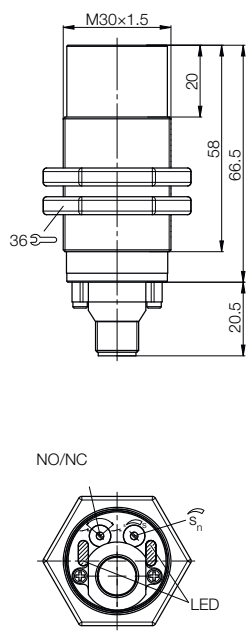
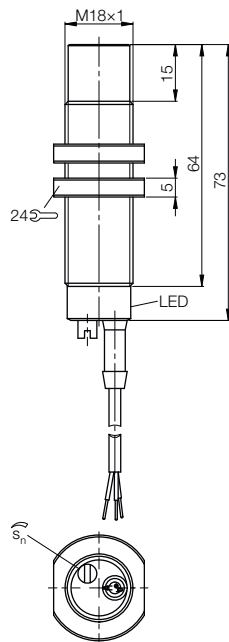
Standard Sensors

SmartLevel Sensors

Capacitive Sensors with Special Properties

Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors



Capacitive Sensors for Level Detection

SMARTLEVEL, cylinder designs, DC 3-wire,
M12x1, G1/4", NPT1/4" MicroLevel



SMARTLEVEL 15

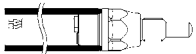


SMARTLEVEL 15

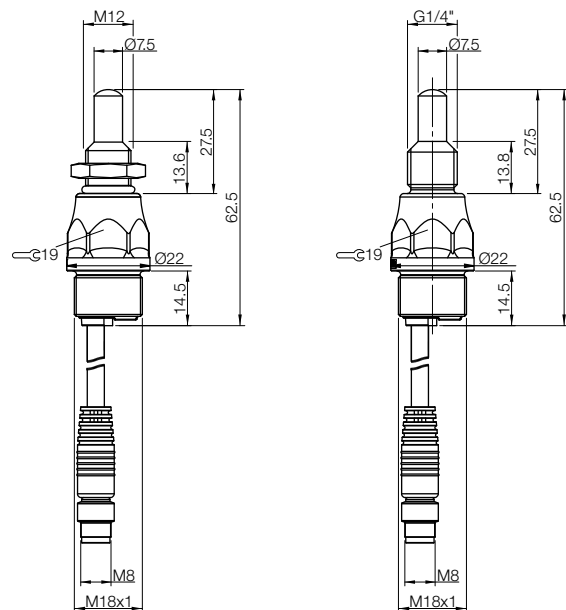
Size	M12x1	G1/4"
Mounting type	Not flush	Not flush
Rated switching distance s_n	Level adjustable	Level adjustable
PNP/NPN and NO/NC user selectable	Ordering code	Ordering code
PNP, NO	Part number	Part number
PNP, NC	Ordering code	Ordering code
NPN, NO	Part number	Part number
NPN, NC	Ordering code	Ordering code
Supply voltage U_s	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o	≤ 2 V	≤ 2 V
Rated insulation voltage U_i	75 V DC	75 V DC
Output current max.	50 mA	50 mA
No-load supply current I_o max.	≤ 11 mA	≤ 11 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-5...+105 °C (sensing surface)	-5...+105 °C (sensing surface)
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 (sensing surface: IP 68)	IP 67 (sensing surface: IP 68)
Material	Housing: PEEK Sensing surface: PEEK Cover: PA 12	Housing: PEEK Sensing surface: PEEK Cover: PA 12
Connection	0.3 m PUR cable with M8 connector, 3-pin	0.3 m PUR cable with M8 connector, 3-pin

Wiring diagrams, see page 971.

Additional cable lengths on request.



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.

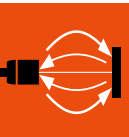


Capacitive Sensors for Level Detection

SMARTLEVEL, cylinder designs, DC 3-wire, M12x1, G1/4", NPT1/4" MicroLevel



NPT1/4"	M12x1	G1/4"	NPT1/4"
Not flush	Not flush	Not flush	Not flush
Level adjustable	Level adjustable	Level adjustable	Level adjustable
	BCS010L	BCS010M	BCS010N
	BCS S44KK01-GPCFAG-EP02	BCS S44KK02-GPCFAG-EP02	BCS S44KK03-GPCFAG-EP02
BCS010F			
BCS S44KK03-PSCFAG-EP00,3-GS49			
BCS010H			
BCS S44KK03-POCFAG-EP00,3-GS49			
BCS010J			
BCS S44KK03-NSCFAG-EP00,3-GS49			
BCS010K			
BCS S44KK03-NOCFAG-EP00,3-GS49			
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
≤ 2 V	≤ 2 V	≤ 2 V	≤ 2 V
75 V DC	75 V DC	75 V DC	75 V DC
50 mA	50 mA	50 mA	50 mA
≤ 11 mA	≤ 11 mA	≤ 11 mA	≤ 11 mA
Yes/Yes/Yes	No/No/Yes	No/No/Yes	No/No/Yes
-5...+105 °C (sensing surface)	-5...+105 °C (sensing surface)	-5...+105 °C (sensing surface)	-5...+105 °C (sensing surface)
10 Hz	10 Hz	10 Hz	10 Hz
Green LED/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED
IP 67 (sensing surface: IP 68)	IP 67 (sensing surface: IP 68)	IP 67 (sensing surface: IP 68)	IP 67 (sensing surface: IP 68)
PEEK	PEEK	PEEK	PEEK
PEEK	PEEK	PEEK	PEEK
PA 12	PA 12	PA 12	PA 12
0.3 m PUR cable with M8 connector, 3-pin	2 m PUR cable, 3x0.34 mm ²	2 m PUR cable, 3x0.34 mm ²	2 m PUR cable, 3x0.34 mm ²



Capacitive Sensors

Capacitive Sensors for Object Detection

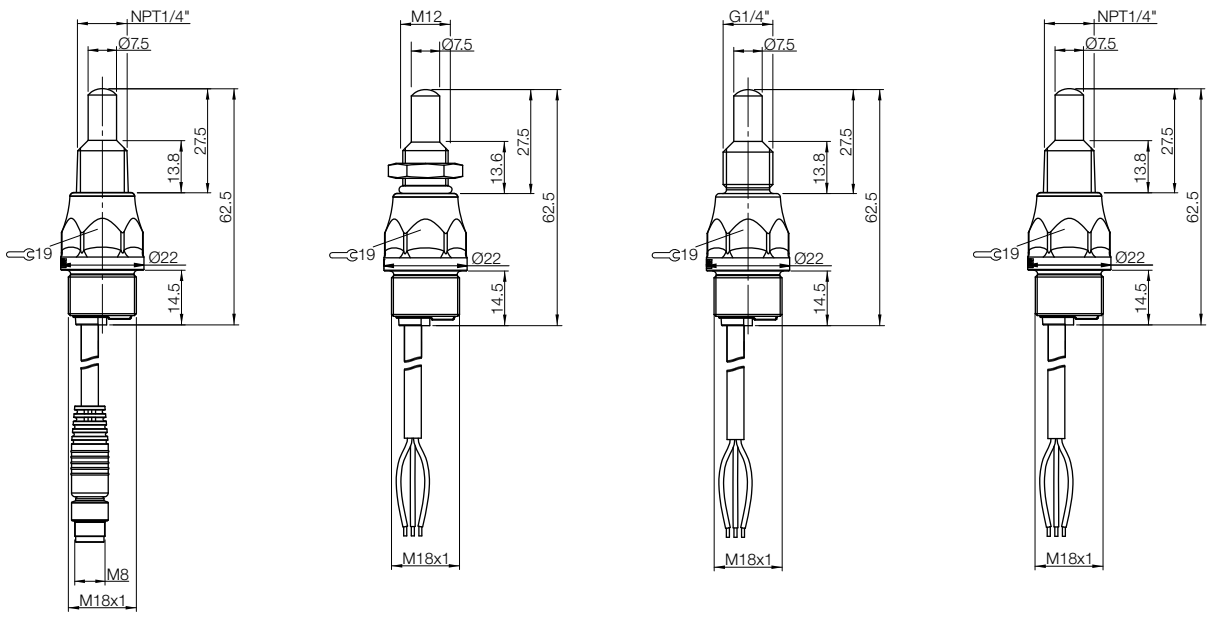
Capacitive Sensors for Level Detection

Standard Sensors
SmartLevel Sensors

Capacitive Sensors with Special Properties

Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors



Capacitive Sensors for Level Detection

SMARTLEVEL, disk designs, DC 3-wire,

Ø 50 mm



SMARTLEVEL

The ideal SmartLevel fill-level indicator is always put to good use when finding solutions for applications is more difficult, whether in the semiconductor industry, in special purpose machine manufacturing, in the food and packaging industries, or in industrial cleaning technology.

SmartLevel 15 is suitable for conductive media. SmartLevel 50 is best used for highly conductive media.

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 querying 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 swarf. Water spray and temperatures up to 105 °C do not impede it. In addition, its PTFE sleeve protects it from aggressive media.



Size		
Mounting type		
Rated switching distance s_n		
PNP, NO	Ordering code	
	Part number	
PNP, NC	Ordering code	
	Part number	
PNP, NO/NC, can be coded	Ordering code	
	Part number	
NPN, NO	Ordering code	
	Part number	
NPN, NC	Ordering code	
	Part number	
NPN, NO/NC, can be coded	Ordering code	
	Part number	
Supply voltage U_S		
Voltage drop U_d at I_o		
Rated insulation voltage U_i		
Output current max.		
No-load supply current I_o max.		
Polarity reversal protected/transposition 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		

Wiring diagrams, see page 971.

Additional cable lengths on request.

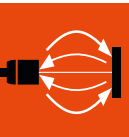


Capacitive Sensors for Level Detection

SMARTLEVEL, disk designs, DC 3-wire,
Ø 50 mm



Ø 50x10 mm	Ø 50x10 mm	Ø 50x10 mm	Ø 50x10 mm
Flush	Flush	Flush	Flush
Media-dependent	Media-dependent	Media-dependent	Media-dependent
	BCS0080	BCS00CK	BCS00UW
	BCS D50TT05-PSCFAC-ET02	BCS D50OO06-PSFSC-EV02	BCS D50TT06-PSCFSC-ET02
	BCS0081	BCS00CM	BCS00UY
	BCS D50TT05-POCFAC-ET02	BCS D50OO06-POFSC-EV02	BCS D50TT06-POCFSC-ET02
BCS0084			
BCS D50OO04-PPCFAC-EV02			
	BCS0082	BCS00HE	BCS00W0
	BCS D50TT05-NSCFAC-ET02	BCS D50OO06-NSFSC-EV02	BCS D50TT06-NSCFSC-ET02
	BCS0083	BCS00C1	BCS00UZ
	BCS D50TT05-NOCFAC-ET02	BCS D50OO06-NOFSC-EV02	BCS D50TT06-NOCFSC-ET02
BCS0085			
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, 3x0.25 mm ²	2 m PTFE cable, 3x0.2 mm ²	2 m PVC cable, 3x0.25 mm ²	2 m PTFE cable, 3x0.2 mm ²



Capacitive Sensors

Capacitive Sensors for Object Detection

Capacitive Sensors for Level Detection

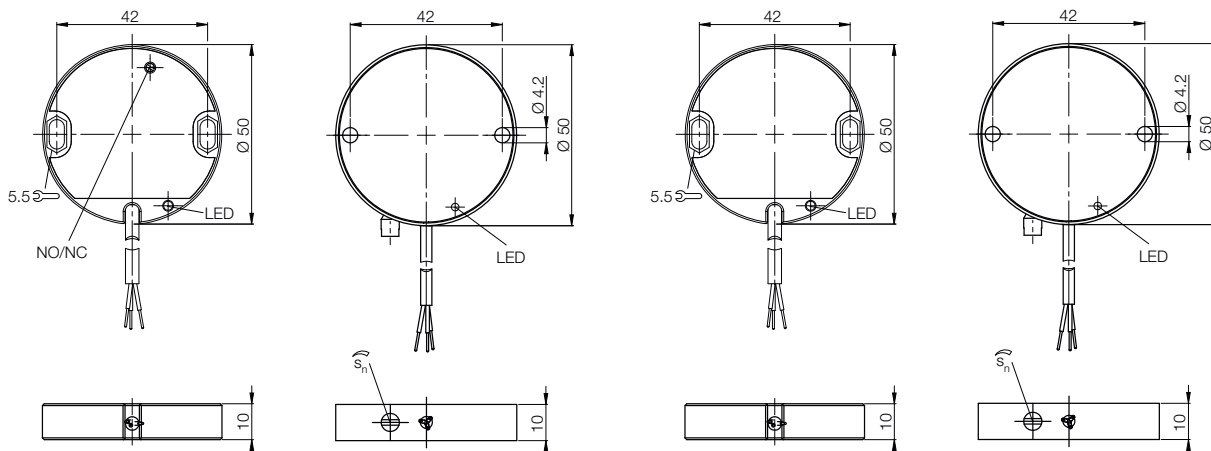
Standard Sensors

SmartLevel Sensors

Capacitive Sensors with Special Properties

Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors



Capacitive Sensors for Level Detection
SMARTLEVEL, block design, DC 3-wire,
 16x34x8 mm Micro-Box



SMARTLEVEL



SMARTLEVEL 15

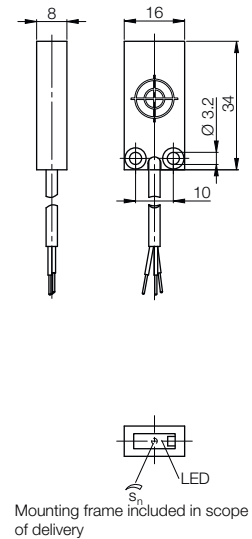
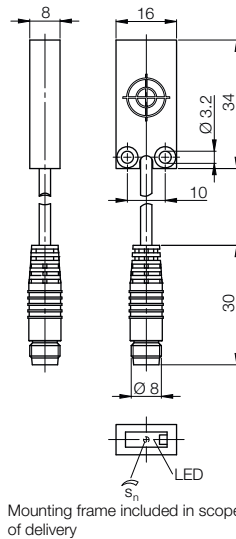


SMARTLEVEL 15

Size	16x34x8 mm MicroBox		16x34x8 mm MicroBox
Mounting type	Flush		Flush
Rated switching distance s_n	Media-dependent		Media-dependent
PNP, NO	Ordering code	BCS008M	BCS008H
	Part number	BCS R08RR01-PSMFAC-EP00,2-GS49	BCS R08RR01-PSMFAC-EP02
PNP, NC	Ordering code	BCS008N	BCS008J
	Part number	BCS R08RR01-POMFAC-EP00,2-GS49	BCS R08RR01-POMFAC-EP02
NPN, NO	Ordering code	BCS008P	BCS008K
	Part number	BCS R08RR01-NSMFAC-EP00,2-GS49	BCS R08RR01-NSMFAC-EP02
NPN, NC	Ordering code	BCS008R	BCS008L
	Part number	BCS R08RR01-NOMFAC-EP00,2-GS49	BCS R08RR01-NOMFAC-EP02
Supply voltage U_s	12...30 V DC		12...30 V DC
Voltage drop U_d at I_o	≤ 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_o max.	≤ 10 mA		≤ 10 mA
Polarity reversal protected/transposition 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, 3x0.14 mm ² with M8 connector, 3-pin		2 m PUR cable, 3x0.14 mm ²

Wiring diagrams, see page 971.

Additional cable lengths on request.



Capacitive Sensors for Level Detection

SMARTLEVEL, block design, DC 3-wire, 40x40x10 mm Uniflat



SMARTLEVEL 15



SMARTLEVEL 15

Size	40x40x10 mm Uniflat		40x40x10 mm Uniflat
Mounting type	Flush		Flush
Rated switching distance s_n	Media-dependent		Media-dependent
PNP/NPN and NO/NC, can be coded	Ordering code		BCS00TP
	Part number		BCS Q40BBAA-GPCFAC-EP02
PNP, NO	Ordering code	BCS00U8	
	Part number	BCS Q40BBAA-PSCFAC-EP00,3-GS49	
PNP, NC	Ordering code	BCS00U7	
	Part number	BCS Q40BBAA-POCFAC-EP00,3-GS49	
Supply voltage U_s	10...30 V DC		10...30 V DC
Voltage drop U_d at I_o	≤ 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_o max.	≤ 11 mA		≤ 11 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes		No/No/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	0.3 m PUR cable with M8 connector, 3-pin		2 m PUR cable, 3x0.14 mm ²



Capacitive Sensors

Capacitive Sensors for Object Detection

Capacitive Sensors for Level Detection

Standard Sensors

SmartLevel Sensors

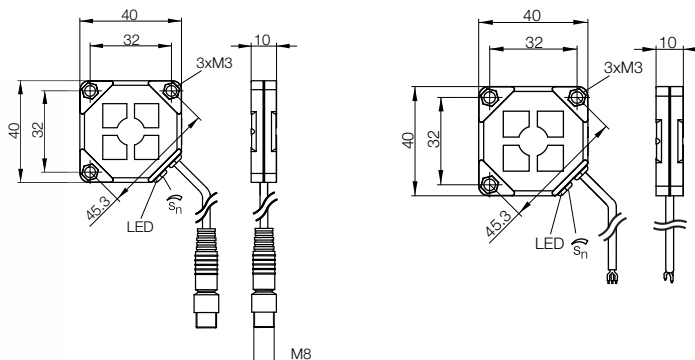
Capacitive Sensors with Special Properties

Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors

Wiring diagrams, see page 971.

Additional cable lengths on request.



The new capacitive SmartLevel sensors in the Uniflat design detect conductive media through non-metallic container walls with a thickness up to 10 mm extremely reliably.

Their installation is quick and easy. This is because they can be screwed on or attached to bypass tubes with cable ties. Their connection is made using a 2 m cable or a short pigtail line and an M8 plug.

The codable output function provides PNP or NPN and normally open or normally closed functionality.

SmartLevel

- Suppress foam and deposits
- Adjustment-free installation
- Are easy to install on tubes with cable ties
- Regular cleaning can be omitted



Capacitive Sensors

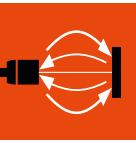
Capacitive sensors with special properties

Balluff capacitive sensors BCS are not only masters of object and level detection. They put the competition to shame when stringent technical requirements are involved. This is because 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

High temperature rated sensors	794
High-temperature and pressure-resistant sensor	796
Flexible adhesive sensor	797
AC/DC 2-wire sensors	798
SmartLevel 500+	799



Basic information
and definitions
can be found
on **page 934**.

Capacitive Sensors with Special Properties

High temperature rated sensors, cylinder designs, DC 3-wire

DEXYI[®]

+250 °C

Balluff high-temperature 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	
Mounting type	
Rated switching distance s_n	
With sensor amplifier	Ordering code
	Part number
Supply voltage U_S	
Ambient temperature T_a	
Degree of protection as per IEC 60529	
Material	Housing
	Sensing surface
	Cover
Connection	

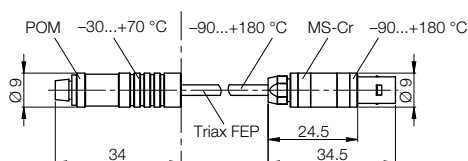
Sensor amplifiers for capacitive high-temperature resistant sensors can be found on page 806.

Wiring diagrams, see page 971.

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

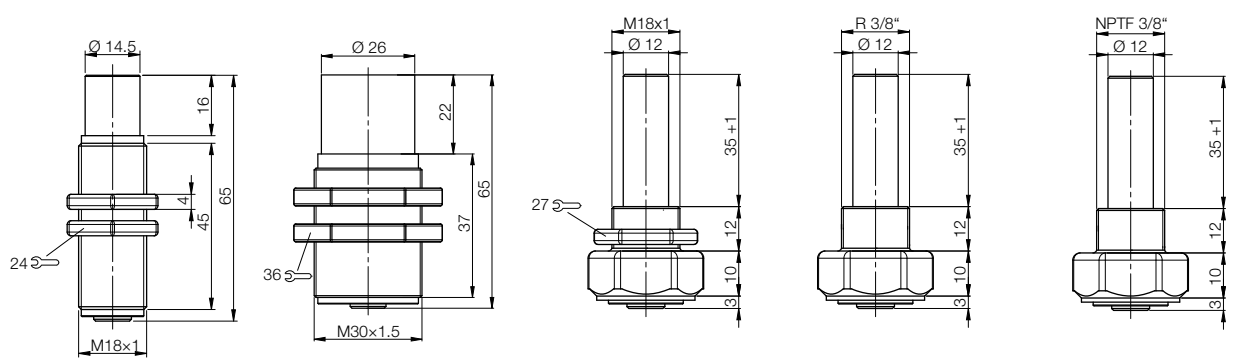


Capacitive Sensors with Special Properties

High-temperature resistant sensors, cylinder designs, DC 3-wire, M18x1, M30x1.5, R3/8", NPTF3/8"



M18x1	M30x1.5	M18x1	R3/8"	NPTF3/8"
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 a max. of 6 bar)	IP 54 (sensing surface: IP 68 at a max. of 6 bar)	IP 54 (sensing surface: IP 68 at a max. of 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

Capacitive Sensors for Object Detection

Capacitive Sensors for Level Detection

Capacitive Sensors with Special Properties

High pressure-resistant Sensors

High Temperature Rated Sensors

Adhesive Sensors

AC/DC

2-wire Sensors

SmartLevel 500+

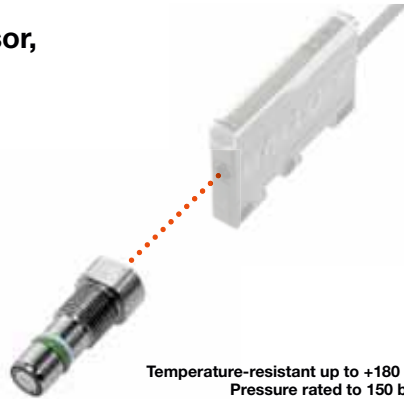
Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors

Capacitive Sensors with Special Properties

High-temperature and pressure-resistant sensor, cylinder design, DC 3-wire, M12x1

up to 150 bar



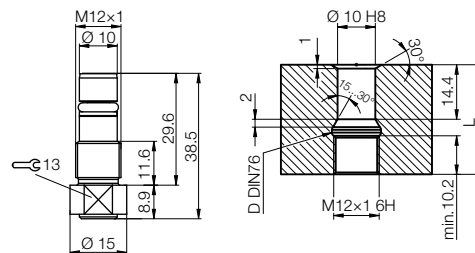
Temperature-resistant up to +180 °C
Pressure rated to 150 bar

Size	M12x1
Mounting type	Flush
Rated switching distance s_n	0...2 mm
With sensor amplifier	Ordering code
	Part number
	BCS00TC BCS S104407-XXS20D-SZ02-T09
Supply voltage U_S	4...8 V DC
Ambient temperature T_a	0...+180 °C
Degree of protection as per IEC 60529	IP 68/IP 54 at the plug socket
Material	Stainless steel
	Housing
	Sensing surface
	Stainless steel, EP
Connection	Triax sensor cable
Pressure rating	150 bar

Sensor amplifiers for capacitive high-temperature resistant sensors can be found on page 806.

Wiring diagrams, see page 971.

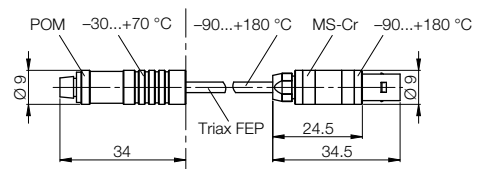
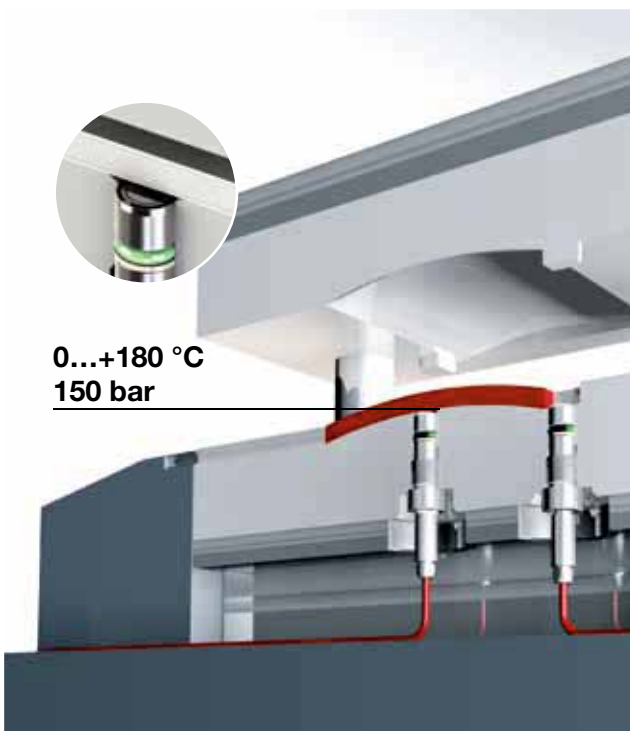
Additional cable lengths on request.



Description	Plug connectors for high temperature-resistant and pressure-resistant 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



0...+180 °C
150 bar



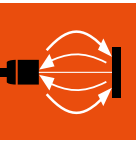
Capacitive Sensors with Special Properties

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

DEXYI®



Size	90×16×4 mm	
Mounting type	Flush	
Rated switching distance s_n	0...10 mm	
With sensor amplifier	Ordering code	BCS000Y
	Part number	BCS F01 CP01-XXS10C-EP02-GZ01-002
Supply voltage U_s	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, 3×0.14 mm ²	

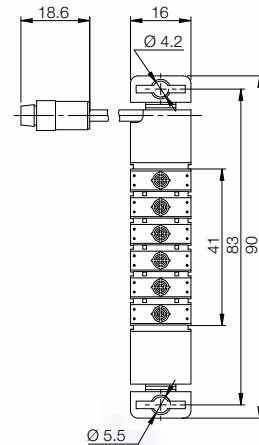


Capacitive Sensors

Sensor amplifiers for capacitive adhesive sensors can be found on page 806.

Wiring diagrams, see page 971.

Additional cable lengths on request.



Capacitive Sensors for Object Detection

Capacitive Sensors for Level Detection

Capacitive Sensors with Special Properties

High pressure-resistant Sensors

High Temperature Rated Sensors

Adhesive Sensors

AC/DC 2-wire Sensors

SmartLevel 500+

Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors



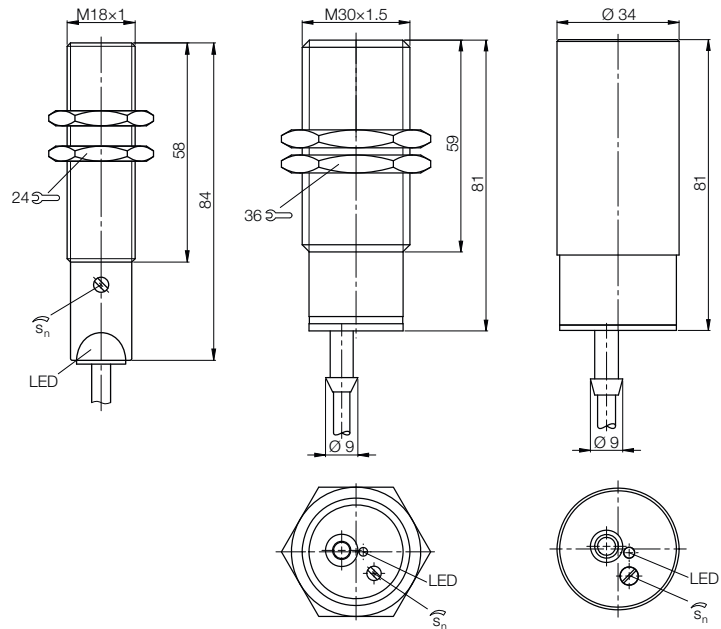
Capacitive Sensors with
Special Properties
**AC/DC, cylinder designs, 2-wire,
M18, M30, Ø 34 mm**



Size	M18x1	M30x1.5	Ø 34 mm
Mounting type	Not flush	Not flush	Not flush
Rated switching distance s_n	8 mm	15 mm	20 mm
NO	Ordering code Part number	Ordering code Part number	Ordering code Part number
	BCS000K BCS M18KM3-UST80G-BV02	BCS000W BCS M30KN2-UST15G-AV02	BCS0007 BCS G34KN2-UST20G-AV02
NC	Ordering code Part number	Ordering code Part number	Ordering code Part number
	BCS000J BCS M18KM3-UOT80G-BV02	BCS000U BCS M30KN2-UOT15G-AV02	BCS0006 BCS G34KN2-UOT20G-AV02
Supply voltage U_s	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 Sensing surface: PBT Cover: PBT	Housing: PBT Sensing surface: PBT Cover: PBT	Housing: PBT Sensing surface: PBT Cover: PBT
Connection	2 m PVC cable, 2x0.34 mm ²	2 m PVC cable, 2x0.34 mm ²	2 m PVC cable, 2x0.5 mm ²

Wiring diagrams, see page 971.

Additional cable lengths on request.



Mounting cuff included in scope of delivery

Capacitive Sensors with Special Properties

SMART LEVEL 500+, cylinder designs, DC 3-wire, M30x1.5, 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



SMART LEVEL 500+



SMART LEVEL 500+

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

Size	M30x1.5	M30x1.5
Mounting type	Not flush	Not flush
Rated switching distance s_n	Media-dependent	Media-dependent
PNP/NPN and NO/NC, can be coded	Ordering code BCS00HJ	Ordering code BCS00TZ
Supply voltage U_s	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o	≤ 2 V	≤ 2 V
Rated insulation voltage U_i	75 V DC	75 V DC
Output current max.	100 mA	100 mA
No-load supply current I_o max.	< 15 mA	< 15 mA
Polarity reversal protected/transposition protected/short-circuit protected	No/No/Yes	No/No/Yes
Ambient temperature T_a	$-10...+60$ °C	$-10...+60$ °C
Switching frequency f	5 Hz	5 Hz
Supply voltage/output function indicator	Green LED/Yellow LED	No/Red LED
Degree of protection as per IEC 60529	IP 64, connection side IP 67	IP 67
Material	Housing: Stainless steel Sensing surface: PTFE Cover: PBT, PE	PTFE PTFE PTFE
Connection	M12 connector, 4-pin, A-coded	2 m PTFE cable, 3x0.2 mm ²



Capacitive Sensors

Capacitive Sensors for Object Detection

Capacitive Sensors for Level Detection

Capacitive Sensors with Special Properties

High pressure-resistant Sensors

High Temperature Rated Sensors

Adhesive Sensors

AC/DC 2-wire Sensors

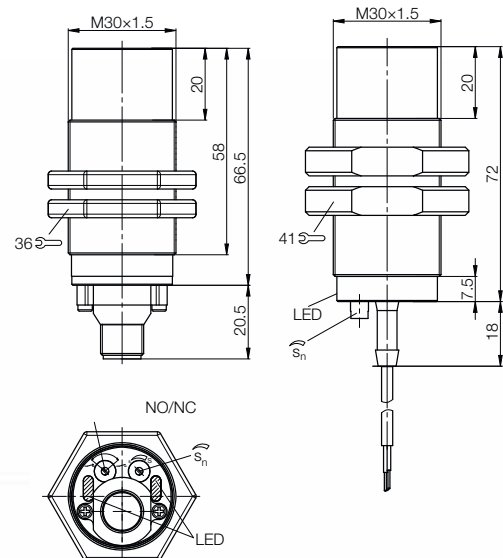
SmartLevel 500+

Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors

Wiring diagrams, see page 971.

Additional cable lengths on request.





Capacitive Sensors

Capacitive sensors for analog distance measurement

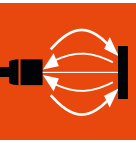
Capacitive sensors for analog distance measurement have a measuring range of 0 to 8 mm. Their current output signal is 4 to 20 mA. They are installed flush and are available in an M18 housing.



Capacitive Sensor for
Analog Distance Measurement
Contents

Standard Sensor
Cylinder design

803



Basic information
and definitions
can be found
on **page 934**.



Capacitive Sensor for Analog Distance Measurement

The capacitive analog sensor detects objects without contact, so that the detected object is not worn down mechanically. Object color and surface properties do not influence its measurement results.

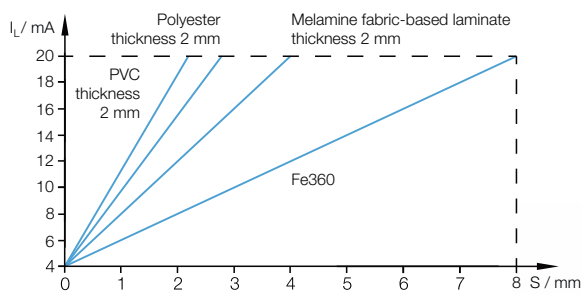
Technical details

- Adjustable measuring range of 0...8 mm
- Flush installation
- Output signal, current 4...20 mA
- Housing M8

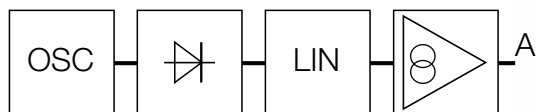
Function

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.



A further benefit: A flashing LED signals to the user an excessively high-impedance load.

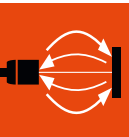


Capacitive Sensor for Analog Distance Measurement

Standard sensor, cylinder design, DC 3-wire, M18x1



Size	M18x1
Mounting type	Flush
Measuring range	0...8 mm
Output current	4...20 mA
PNP/NPN and NO/NC user selectable	Ordering code Part number
	BCW0001 BCW M18B4M1-ICM80C-DV02
Supply voltage U_s	12...35 V DC
Rated insulation voltage U_i	75 V DC
No-load supply current I_0 max.	< 17 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes, with load monitoring
Ambient temperature T_a	-10...+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 0.25 mm ²



Capacitive Sensors

Capacitive Sensors for Object Detection

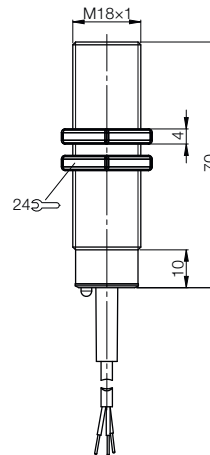
Capacitive Sensors for Level Detection

Capacitive Sensors with Special Properties

Capacitive Sensors for Analog Distance Measurement

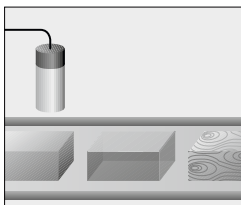
Cylinder Designs

Accessories for Capacitive Sensors

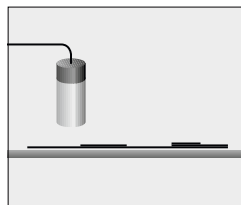


Applications

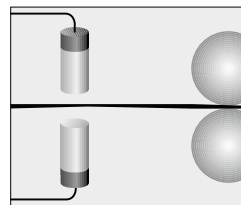
The capacitive analog sensor makes linear evaluation of a position possible for the first time; as soon as an object is located within the sensor's measuring range, a precise output current is produced. The uses shown represent only a fraction of the multifaceted application options provided by the capacitive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



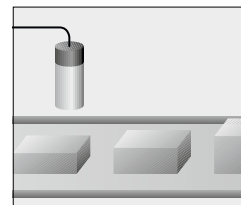
Material selection



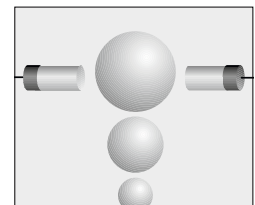
Measuring nonmetallic coating thicknesses



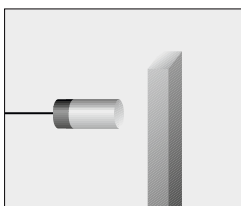
Product thickness monitoring



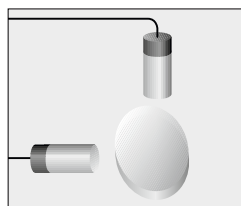
Height measurement



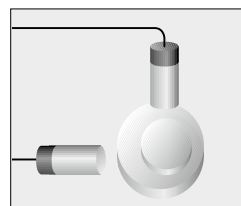
Determining diameters



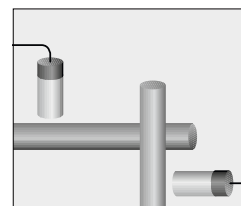
Static/Dynamic movement



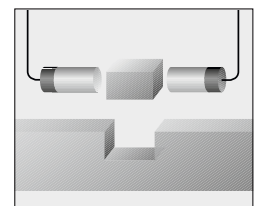
Registering radial runout



Concentricity and eccentricity



Axial and radial concentricity deviation



Monitoring fit



Capacitive Sensors

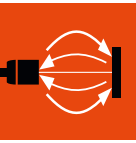
Accessories for capacitive sensors

The numerous varieties of capacitive sensors for individual solutions are enhanced by custom matched accessories. Thus there are downstream switching amplifiers for particular flexibility when there is different voltage, so that the sensors can be optimally connected: for 24 V and—if users do not have their own low voltage supply—for 230 V (115 V AC). Precisely matched mounting elements ensure exact positioning right away.



Accessories for Capacitive Sensors

Sensor amplifier	807
Downstream sensor devices	814
Adapters	816



Basic information and definitions can be found on **page 934**.





Accessories for Capacitive Sensors
**Sensor amplifier for capacitive sensors
 without an internal amplifier (mini-sensors)**



Size	45x30x15 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_S	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 3x0.14 mm ²	



Capacitive Sensors

Capacitive Sensors for Object Detection

Capacitive Sensors for Level Detection

Capacitive Sensors with Special Properties

Capacitive Sensors for Analog Distance Measurement

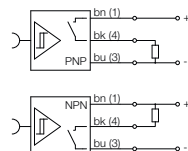
Accessories for Capacitive Sensors

Sensor Amplifiers

Sensor Downstream Switching Devices

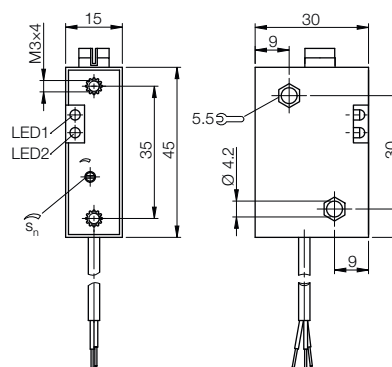
Adapter

Pin assignments



Function overview

- LED 1: Switching state indicator
- LED 2: Indicates supply voltage
- Pos. 1: Through-hole \varnothing 4.2 mm, hexagonal on both sides for inserting an M3 nut

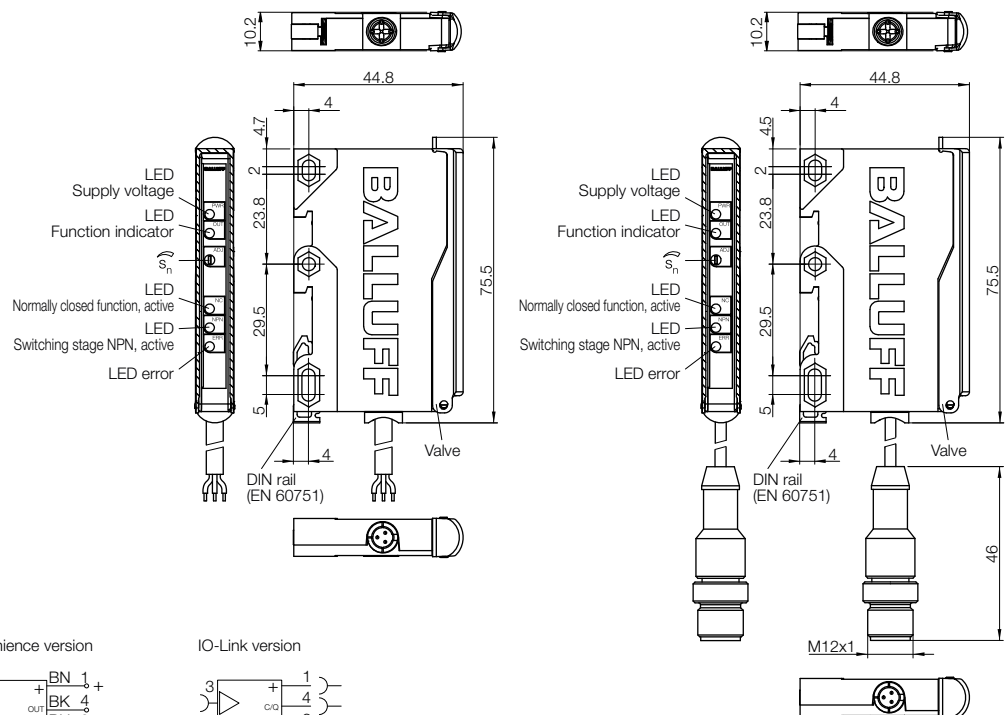


Accessories for Capacitive Sensors

Sensor amplifier for capacitive sensors without an internal amplifier (mini-sensors)

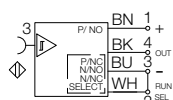


Size	76×45×11 mm	76×45×11 mm
Installation	Spring or standard rail mounting	Spring or standard rail mounting
PNP/NPN and NO/NC, can be coded	Ordering code BAE00KH	BAE00L9
	Part number	
	BAE SA-CS-025-YP-BF02	BAE SA-CS-025-YP-BF00,3-GS04
Supply voltage U_S	12...30 V DC	12...30 V DC
Voltage drop U_d at I_e	< 2 V	< 2 V
Rated insulation voltage U_i	75 V DC	75 V DC
Output current max.	100 mA	100 mA
No-load supply current I_0 max.	25 mA	25 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-5...+70 °C	-5...+70 °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 40	IP 40
Material	Housing	
	PBT, PA	PBT, PA
Connection	2 m PUR cable, 4×0.25 mm ²	0.3 m PUR cable with M12 connector, 4-pin

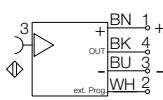


Wiring diagrams

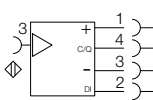
Standard version



Convenience version



IO-Link version



The sensor has a fourth programming cable (white) that can be used to configure the switching stage. The cable is open in configuration mode. This status is displayed by the "ERR" LED by flashing.

After each potential transition of the programming cable from open to U_{Bat} , the switching output configuration is switched forward one variant each time: PNP, NO → PNP, NC → NPN, NO → NPN, NC → PNP, NO, etc.

Accessories for Capacitive Sensors

Sensor amplifier for capacitive sensors without an internal amplifier (mini-sensors)



Available as of May 2014
Convenience version

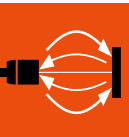


Available as of May 2014
Convenience version



Available as of May 2014
IO-Link

76x45x11 mm	76x45x11 mm	76x45x11 mm
Spring or standard rail mounting	Spring or standard rail mounting	Spring or standard rail mounting
BAE00KJ	BAE00LA	BAE00LC
BAE SA-CS-026-YP-BP02	BAE SA-CS-026-YP-BP00,3-GS04	BAE SA-CS-027-YI-BP00,3-GS04
15...30 V DC	15...30 V DC	18...30 V DC
< 2 V	< 2 V	< 2 V
75 V DC	75 V DC	75 V DC
100 mA	100 mA	100 mA
25 mA	25 mA	25 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-5...+70 °C	-5...+70 °C	-5...+70 °C
100 Hz	100 Hz	
Green LED/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED
IP 40	IP 40	IP 40
PBT, PA	PBT, PA	PBT, PA
2 m PUR cable, 4x0.25 mm ²	0.3 m PUR cable with M12 connector, 4-pin	0.3 m PUR cable with M12 connector, 4-pin



Capacitive Sensors

Capacitive Sensors for Object Detection

Capacitive Sensors for Level Detection

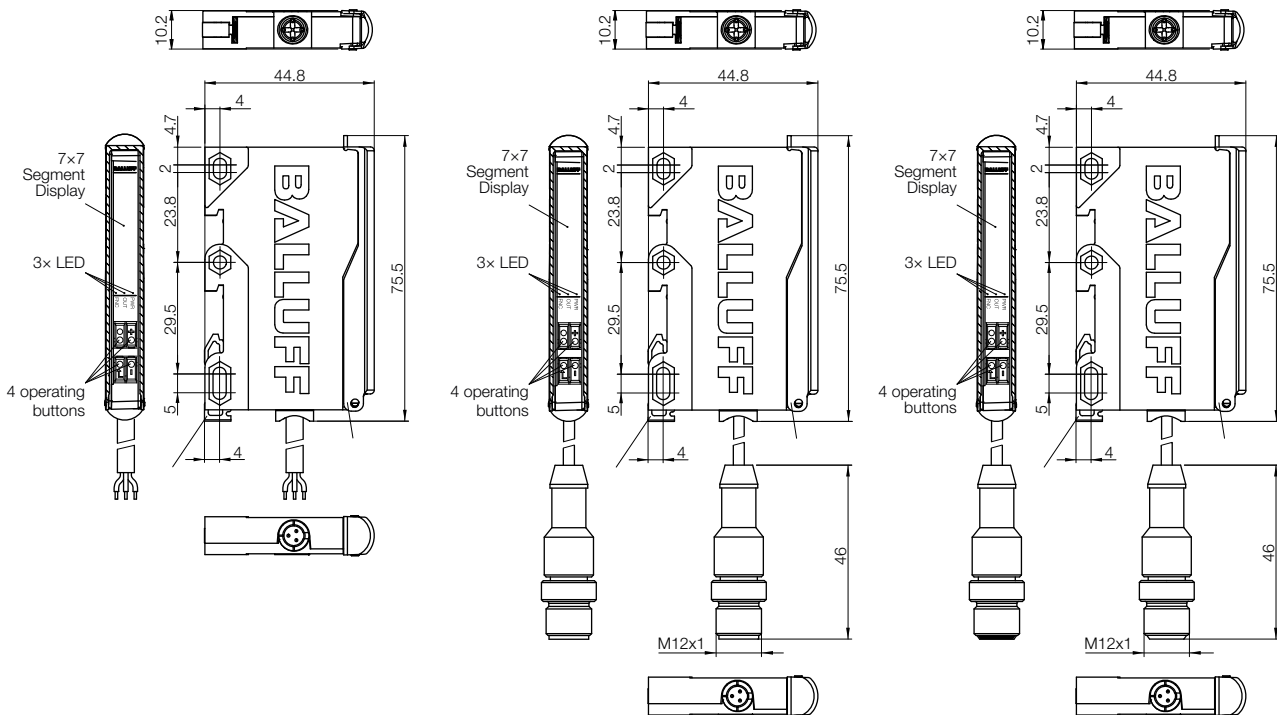
Capacitive Sensors with Special Properties

Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors

Sensor Amplifiers

Sensor Downstream Switching Devices
Adapter



Accessories for Capacitive Sensors

Sensor amplifier for two capacitive sensors without internal amplifier

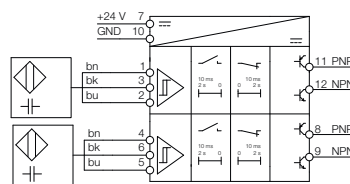
Technical details

- 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

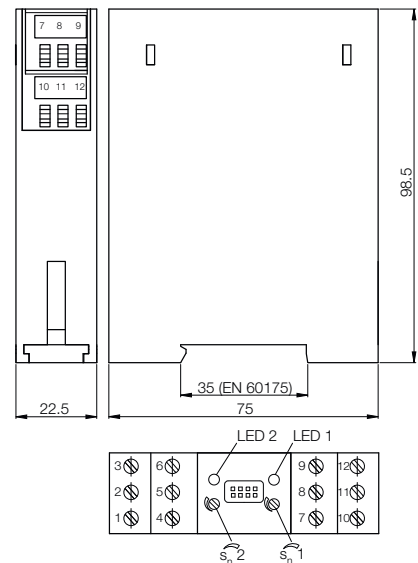
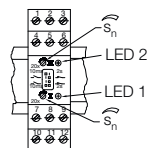


Size	98.5x75x22.5 mm
Mounting type	DIN rail (EN 60751)
PNP/NPN and NO/NC, can be coded	Ordering code BAE009P
	Part number BAE SA-CS-002-YP
Supply voltage U_S	10...35 V DC
Voltage drop U_d at I_o	0.8 V
Rated insulation voltage U_i	75 V DC
Output current max.	300 mA
No-load supply current I_o max.	15 mA
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. 2.5 mm ² AWG 14

Pin assignments



Display



Accessories for Capacitive Sensors

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.

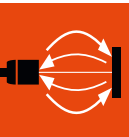
RS-FF function

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	98.5x75x22.5 mm
Mounting type	DIN rail (EN 60751)
PNP/NPN and NO/NC, can be coded	Ordering code BAE009R
	Part number BAE SA-CS-003-YP
Supply voltage U_S	10...35 V DC
Voltage drop U_d at I_o	0.8 V
Rated insulation voltage U_i	75 V DC
Output current max.	300 mA
No-load supply current I_o 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. 2.5 mm ² AWG 14



Capacitive Sensors

Capacitive Sensors for Object Detection

Capacitive Sensors for Level Detection

Capacitive Sensors with Special Properties

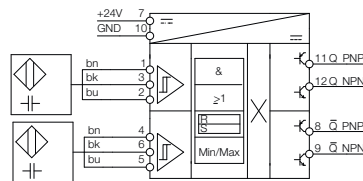
Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors

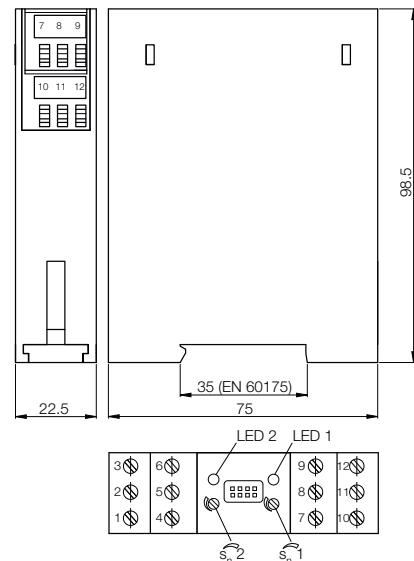
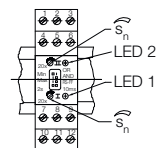
Sensor Amplifiers

Sensor Downstream Switching Devices Adapter

Pin assignments



Display



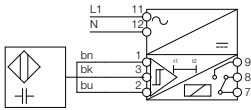
Accessories for Capacitive Sensors

Sensor amplifier for one capacitive sensor without internal amplifier

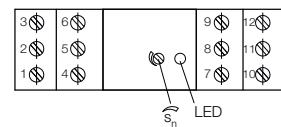
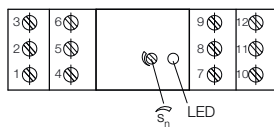
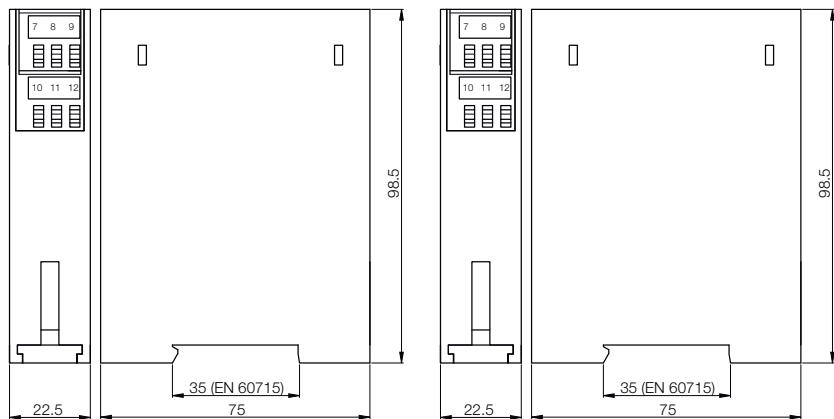
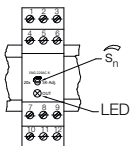


Size	98.5x75x22.5 mm	98.5x75x22.5 mm
Mounting type	DIN rail (EN 60751)	DIN rail (EN 60751)
PNP/NPN and NO/NC, can be coded	Ordering code Part number	Ordering code Part number
	BAE009K BAE SA-CS-006-XR	BAE009L BAE SA-CS-007-XR
Supply voltage U_s	230 V AC	115 V AC
Rated insulation voltage U_i (protection class)	250 V AC (II)	250 V AC (II)
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	Housing
	PC	PC
Connection	Max. 2.5 mm ² AWG 14	Max. 2.5 mm ² AWG 14

Pin assignments

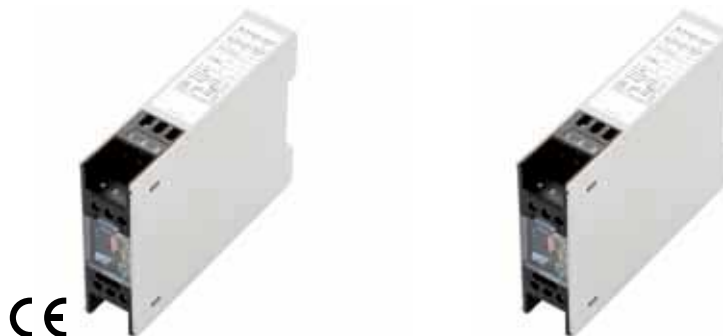


Display



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
Mounting type	DIN rail (EN 60751)	DIN rail (EN 60751)
PNP/NPN and NO/NC, can be coded	Ordering code Part number	Ordering code Part number
	BAE009T BAE SA-CS-004-XR	BAE009U BAE SA-CS-005-XR
Supply voltage U_s	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 at terminal box)	IP 40 (IP 20 at terminal box)
Material	Housing PC	PC
Connection	Max. 2.5 mm ² AWG 14	Max. 2.5 mm ² AWG 14



Capacitive Sensors

Capacitive Sensors for Object Detection

Capacitive Sensors for Level Detection

Capacitive Sensors with Special Properties

Capacitive Sensors for Analog Distance Measurement

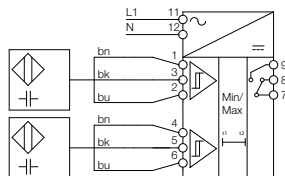
Accessories for Capacitive Sensors

Sensor Amplifiers

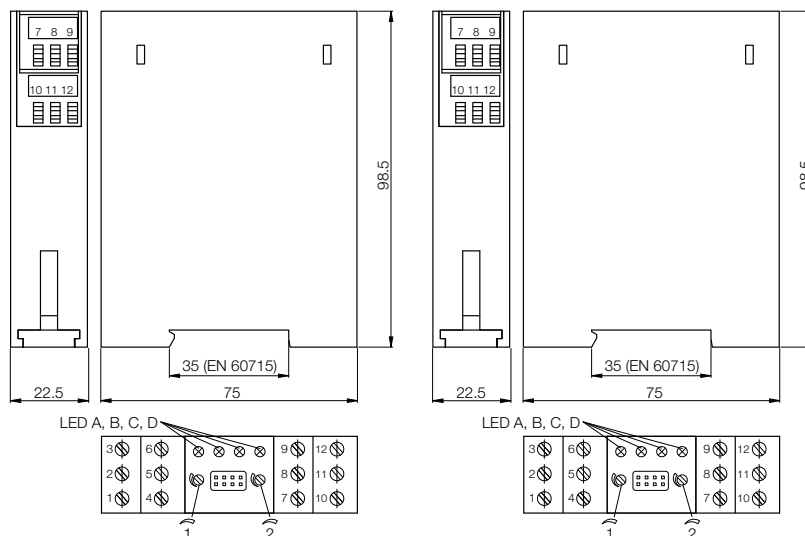
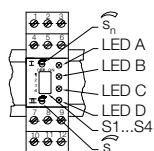
Sensor Downstream Switching Devices

Adapter

Pin assignments



Display



Function

When both sensors are undamped, the relay turns on—the "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—the "full" LED lights up (contacts 7/9 are opened). If the Max sensor is undamped, 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

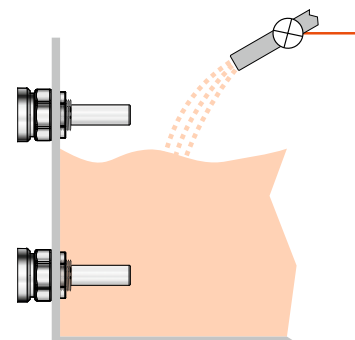
- S1 – Time delay Max sensor (off: approx. 0.2 s; on: approx. 5 s)
- S2 – Time delay Min sensor (off: approx. 0.2 s; on: approx. 5 s)
- S3 – Power-on setup (off: fill; on: empty)
- S4 – Output (inverse relay)

Function indicators

- A – Full
- B – Fill
- C – Empty
- D – Empty

Sensor adjustment

- Max sensor: Potentiometer I
- Min sensor: Potentiometer 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

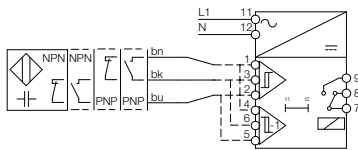
Accessories for Capacitive Sensors

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

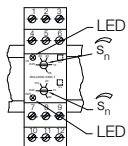


Size	98.5×75×22.5 mm	98.5×75×22.5 mm
Mounting type	DIN rail (EN 60751)	DIN rail (EN 60751)
Potential-free changeover contact	Ordering code Part number	Ordering code Part number
	BAE009W BAE SA-XE-010-XR	BAE009Y BAE SA-XE-011-XR
Supply voltage U_s	230 V AC	115 V AC
Rated insulation voltage U_i (protection 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	Housing
	PC	PC
Connection	Screw terminals	Screw terminals

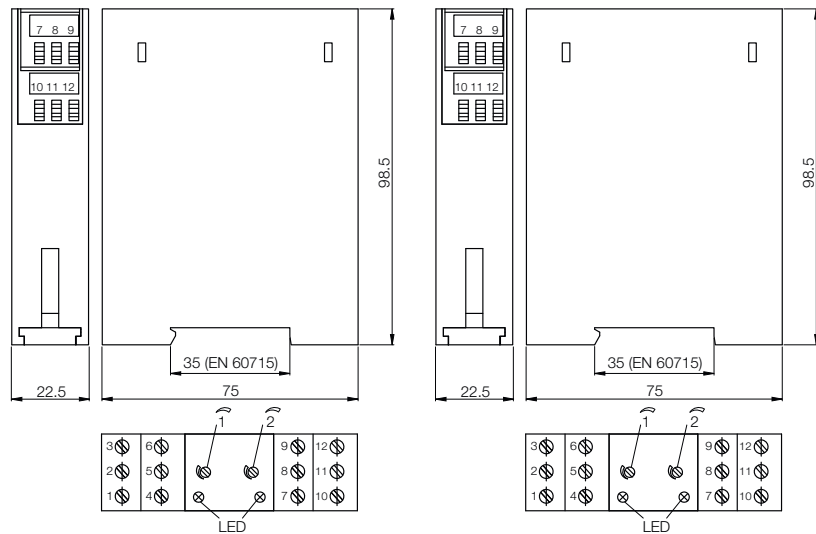
Pin assignments



Display



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

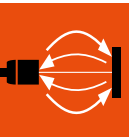


Accessories for Capacitive Sensors

Downstream 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
Mounting type	DIN rail (EN 60751)	DIN rail (EN 60751)
Potential-free changeover contact	Ordering code Part number BAE009Z BAE SA-XE-012-XR	BAE00A0 BAE SA-XE-013-XR
Supply voltage U_s	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



Capacitive Sensors

Capacitive Sensors for Object Detection

Capacitive Sensors for Level Detection

Capacitive Sensors with Special Properties

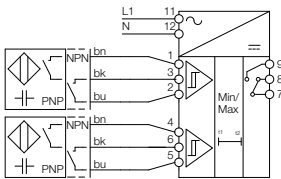
Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors

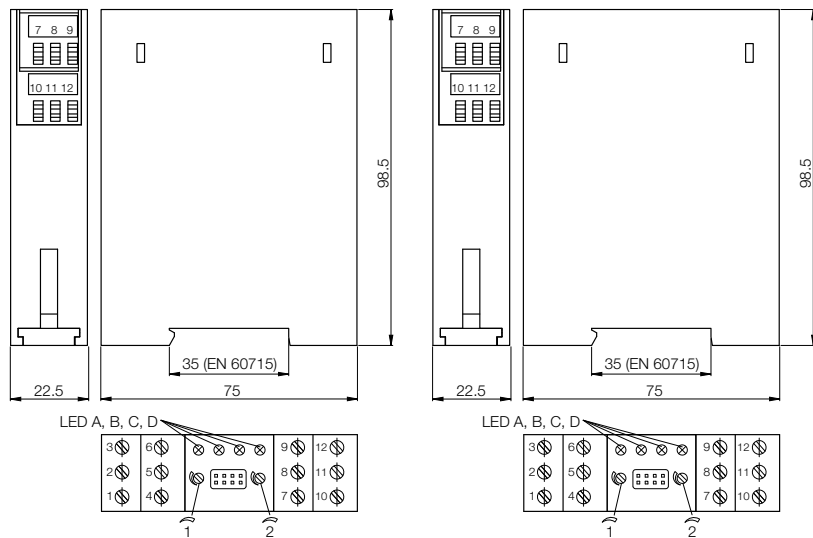
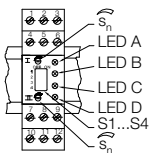
Sensor Amplifiers

Sensor Downstream Switching Devices Adapter

Pin assignments



Display



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

Function

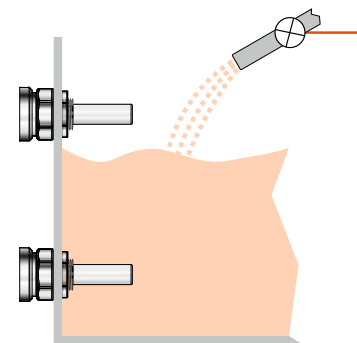
When both sensors are undamped, the relay turns on—the "empty" LED lights up (contacts 7/9 are closed). If the Min sensor is damped, the "fill" LED lights up. When both sensors are damped, the relay turns off—the "full" LED lights up (contacts 7/9 are opened). If the Max sensor is undamped, the "empty"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

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
- Switch-on delay for Min and Max sensor can be selected separately

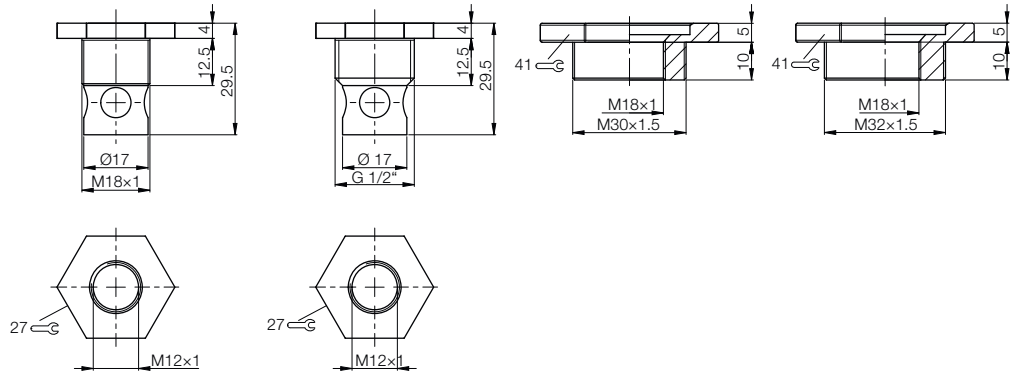


Dip switch functions

- 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)



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					





**Adapter
for BCS S01/2/3
M18 to R 1"**

BAM018H

BAM AD-XA-001-M18/R1"-4

Stainless steel

**Adapter
for BCS S01/2/3
M16 to M12**

BCC04JT

BCC M454-0000-2A-RM004-020

MS-Ni/PA

-30...+70 °C

0.2 m PVC cable,
3x0.25 mm²

**Cable adapter
for capacitive
mini-sensors**

BCC04JU

BCC Z001-002

0.2 m PUR cable

**Cable adapter
for capacitive
mini-sensors**

BCC04JY

BCC Z002-030

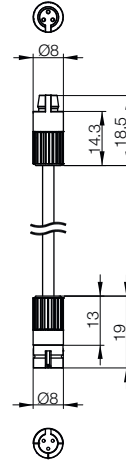
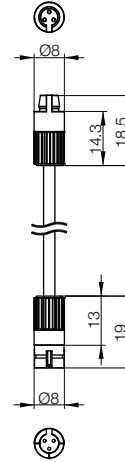
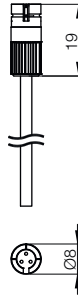
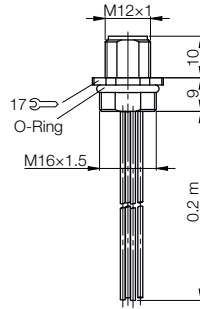
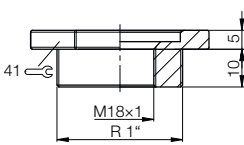
3 m PUR cable

**Cable adapter
for capacitive
mini-sensors**

BCC04JZ

BCC Z002-080

8 m PUR cable



Capacitive
Sensors

Capacitive
Sensors for
Object
Detection

Capacitive
Sensors for
Level
Detection

Capacitive
Sensors with
Special
Properties

Capacitive Sen-
sors for Analog
Distance
Measurement

Accessories
for Capacitive
Sensors

Sensor
Amplifiers

Sensor
Downstream
Switching
Devices

Adapter