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.

BALLUFF

Capacitive Sensors for Object Detection
Contents
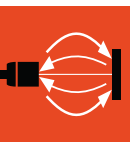
CD/DVD production: Stack height control
During CD/DVD production, BCS monitor the stacks of CDs and
DVDs on a spindle. As soon as the maximum stack height is
reached, the sensor sends a message that allows the finished stack
to be transported further to end packaging and the next empty
spindle to be prepared. And it does this with absolute reliability,
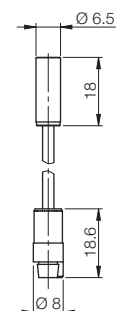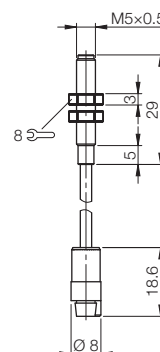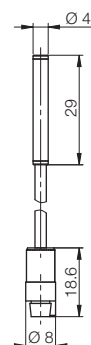without allowing itself to be influenced by the reflective surface.
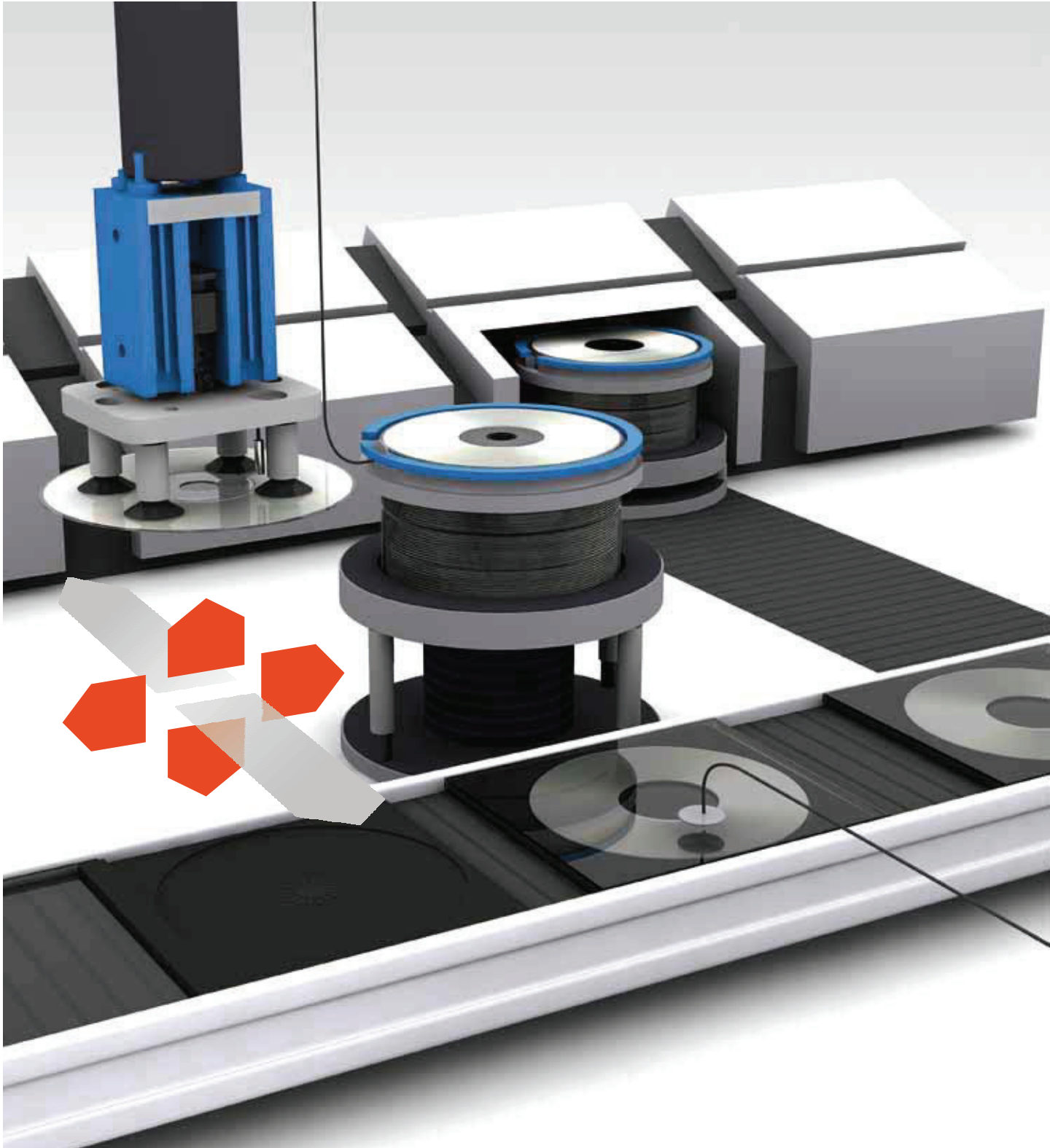
Capacitive Sensors for Object Detection
Mini-sensors, cylinder designs, Ø 4 mm, M5×0.5, Ø 6.5 mm
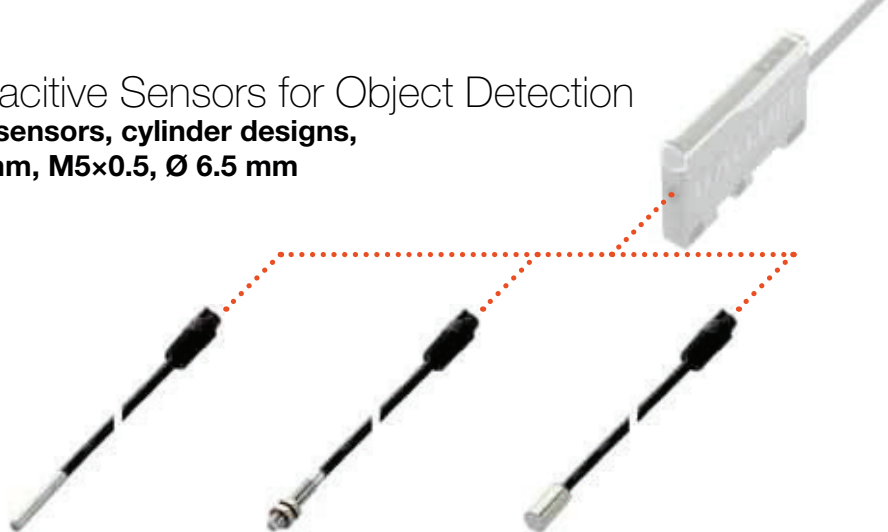
Size		Ø 4 mm	M5×0.5	Ø 6.5 mm
Mounting type		Flush	Flush	Flush
Rated switching distance s_n		0.1…1 mm	0.1…1 mm	0.1…1.5 mm
With sensor amplifier	Ordering code	BCS0010	BCS0011	BCS0012
	Part number	BCS G04T4D-XXS10C-EP02-GZ01-002	BCS M05T4C-XXS10C-EP02-GZ01-002	BCS G06T4B-XXS15C-EP02-GZ01-002
Supply voltage 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, 3×0.14 mm²	2 m PUR cable, 3×0.14 mm²	2 m PUR cable, 3×0.14 mm²

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

Capacitive Sensors

Capacitive Sensors for Object Detection

Mini-Sensors

Standard Sensors

Capacitive Sensors for Level Detection

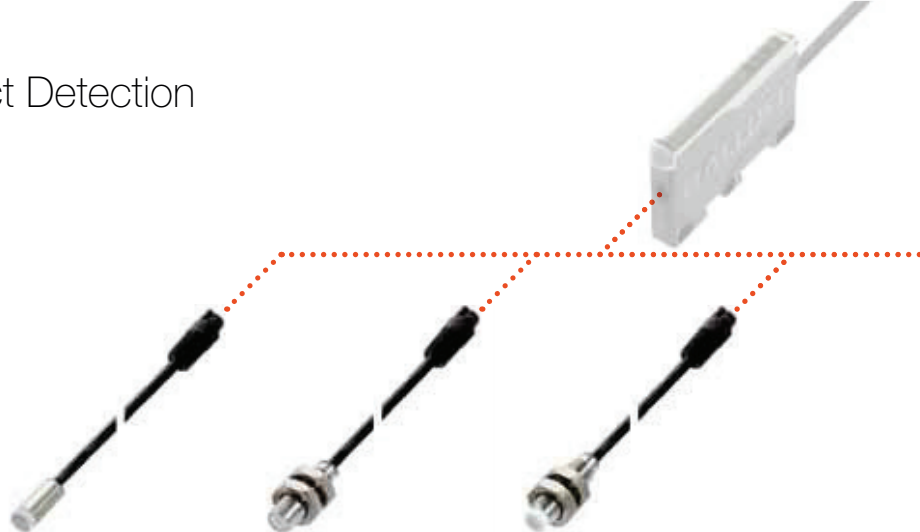Capacitive Sensors with Special Properties

Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors
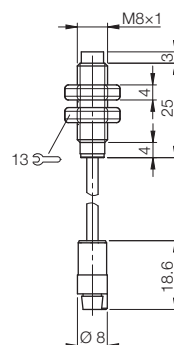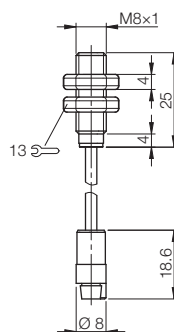
Capacitive Sensors for Object Detection

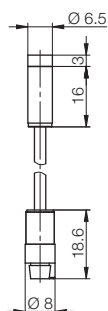**Mini-sensors, cylinder designs,**
Ø 6.5 mm, M8×1

UL LISTED   CE

Size		Ø 6.5 mm	M8×1	M8×1	
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, 3×0.14 mm²	2 m PUR cable, 3×0.14 mm²	2 m PUR cable, 3×0.14 mm²	

mini.s

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

Capacitive Sensors

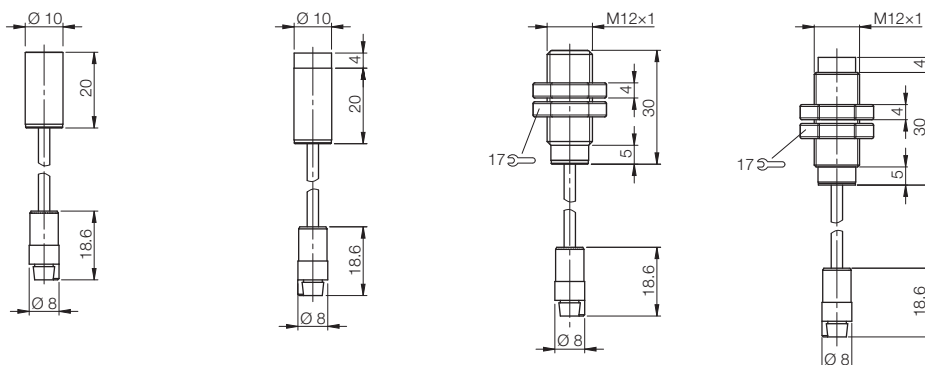Capacitive Sensors for Object Detection

Mini-Sensors

Standard Sensors

Capacitive Sensors for Level Detection

Capacitive Sensors with Special Properties

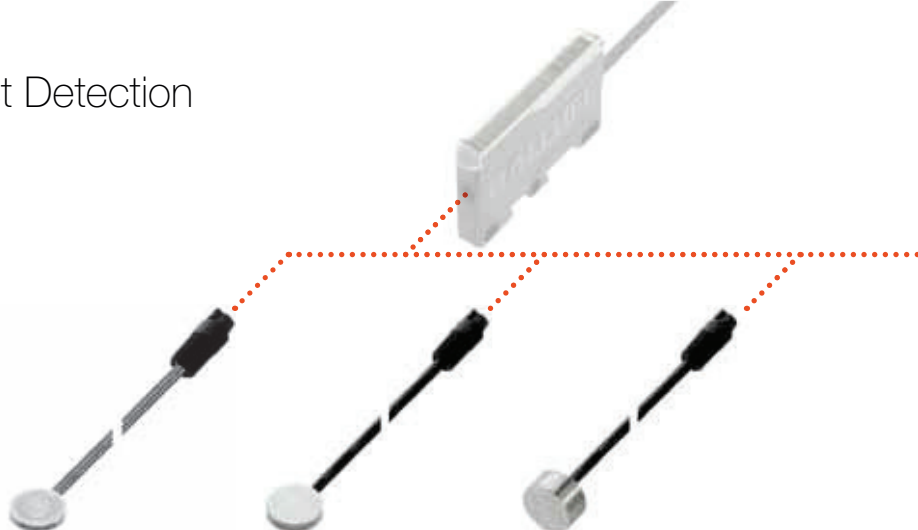Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors
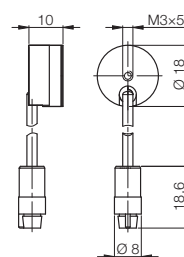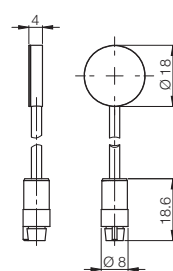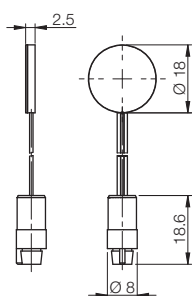
Capacitive Sensors for Object Detection
Mini-sensors, disk designs, Ø 18 mm

Size		Ø 18×2.5 mm	Ø 18×4 mm	Ø 18×10 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	BCS001A	BCS001C	BCS001E	
	Part number	BCS D18T403-XXS30C-EP02-GZ01-002	BCS D18T404-XXS50C-EP02-GZ01-002	BCS D18T407-XXS50C-EP02-GZ01-002	
Supply voltage U_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	Stainless steel	Stainless steel	
	Sensing surface	PTFE	PTFE	PTFE	
Connection		2 m PVC cable, 3×0.09 mm²	2 m PUR cable, 3×0.14 mm²	2 m PUR cable, 3×0.14 mm²	

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

mini.s

Capacitive Sensors for Object Detection
**Mini-sensors, disk designs,
Ø 22 mm, Ø 30 mm**

	Ø 22×4 mm	Ø 22×10 mm	Ø 30×4 mm	Ø 30×10 mm	
	Flush	Flush	Flush	Flush	
	1…10 mm	**1…10 mm**	**1...15 mm**	**1...15 mm**	
	BCS001F	**BCS001H**	**BCS001J**	**BCS001K**	
	BCS D22T405-XXS10C-EP02-GZ01-002	BCS D22T408-XXS10C-EP02-GZ01-002	BCS D30T406-XXS15C-EP02-GZ01-002	BCS D30T409-XXS15C-EP02-GZ01-002	
	4…8 V DC	4…8 V DC	4…8 V DC	4…8 V DC	
	75 V DC	75 V DC	75 V DC	75 V DC	
	−30…+80 °C	−30…+80 °C	−30…+80 °C	−30…+80 °C	
	100 Hz	100 Hz	100 Hz	100 Hz	
	IP 66	IP 66	IP 66	IP 66	
	Stainless steel	Stainless steel	Stainless steel	Stainless steel	
	PTFE	PTFE	PTFE	PTFE	
	2 m PUR cable, 3×0.14 mm²	2 m PUR cable, 3×0.14 mm²	2 m PUR cable, 3×0.14 mm²	2 m PUR cable, 3×0.14 mm²	
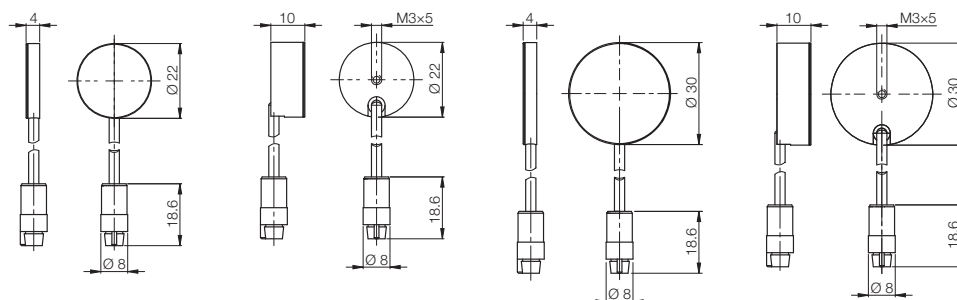
Paper and printing industry:
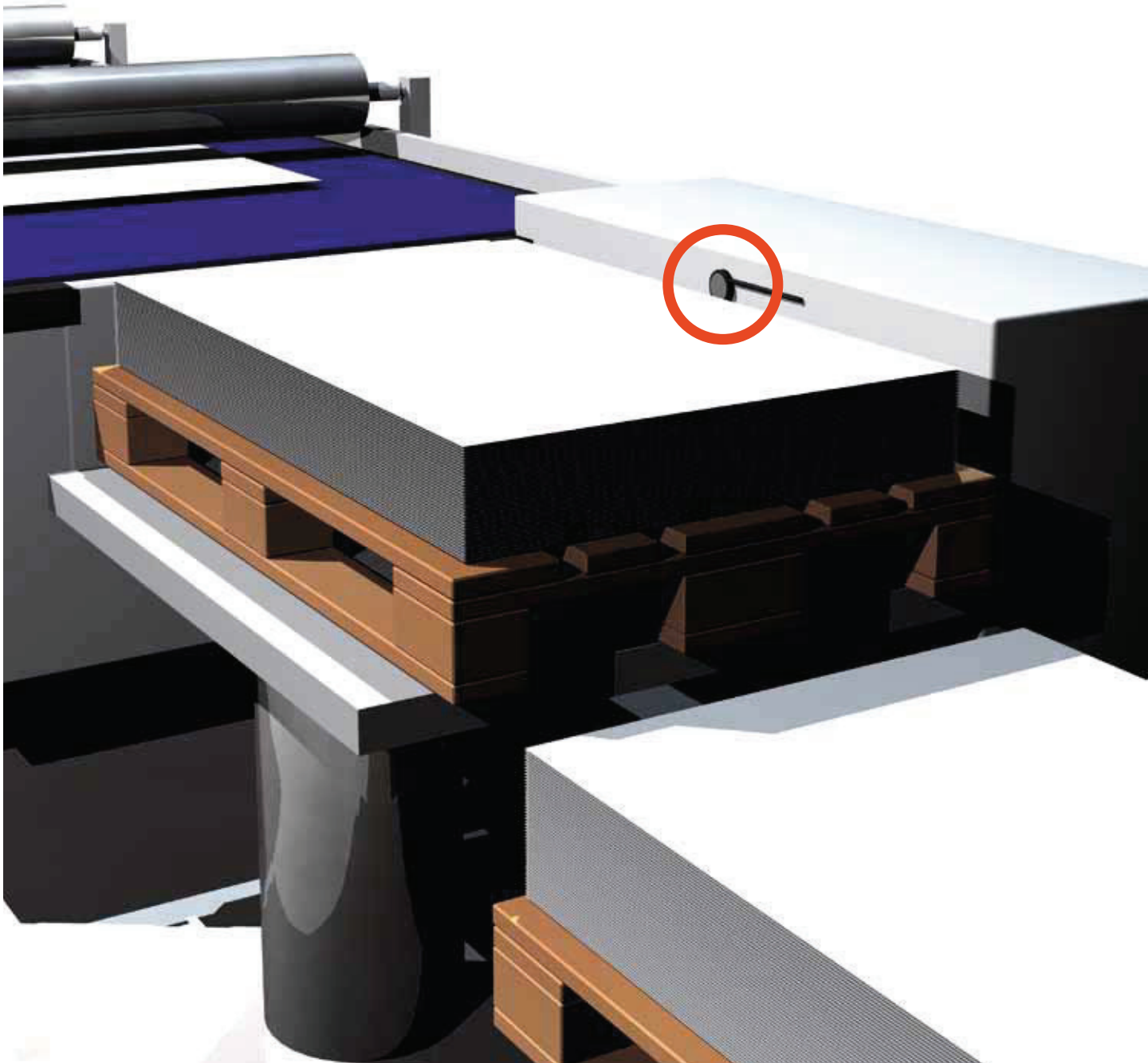**Stack height control in sheet-fed offset printing**

Integrated in printing, folding and bookbinding machines, capacitive sensors not only check
stack height, but also provide for perfect stacking of the papers, so that there is as little waste as possible during further processing. Despite a dirty environment (due to paper dust and anti-set-off spray powder), the sensor works perfectly. Laterally or from above, it measures stack heights even in small increments, and raises and lowers the stack as soon as it recognizes its height.

In the **paper cutting machine**, the capacitive sensor also 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.

c(UL)us LISTED CE

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**	**BCS0022**
	Part number	BCS G06T4D2-PSM15C-S49G	BCS G06T4E1-PSM15C-EP02	BCS G06T4D2-PSM30G-S49G
PNP, NC	**Ordering code**	**BCS001T**	**BCS001M**	**BCS0023**
	Part number	BCS G06T4D2-POM15C-S49G	BCS G06T4E1-POM15C-EP02	BCS G06T4D2-POM30G-S49G
NPN, NO	**Ordering code**	**BCS001U**	**BCS001N**	**BCS0024**
	Part number	BCS G06T4D2-NSM15C-S49G	BCS G06T4E1-NSM15C-EP02	BCS G06T4D2-NSM30G-S49G
NPN, NC	**Ordering code**	**BCS001W**	**BCS001P**	**BCS0025**
	Part number	BCS G06T4D2-NOM15C-S49G	BCS G06T4E1-NOM15C-EP02	BCS G06T4D2-NOM30G-S49G
Supply voltage U_S		11…30 V DC	11…30 V DC	11…30 V DC
Voltage drop U_d at I_e		≤ 2 V	≤ 2 V	≤ 2 V
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC
Output current max.		50 mA	50 mA	50 mA
No-load supply current I_0 max.		≤ 10 mA	≤ 10 mA	≤ 10 mA
Polarity reversal protected/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	PA	POM	PA
Connection		M8 connector, 3-pin	2 m PUR cable, 3×0.14 mm²	M8 connector, 3-pin

Wiring diagrams, see page 971.

Additional cable lengths on request.

Ø 6.5   30.8   54
$\widehat{s_n}$ multi-turn/ LED

Ø 6.5   30.8   42
$\widehat{s_n}$ multi-turn/ LED

Ø 6.5   3   30.8   54
$\widehat{s_n}$ multi-turn/ LED

Capacitive Sensors

Capacitive Sensors for Object Detection

Mini-Sensors

Standard Sensors

Capacitive Sensors for Level Detection
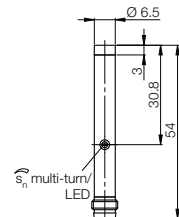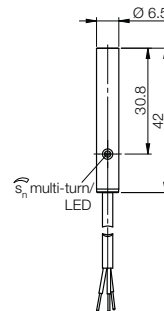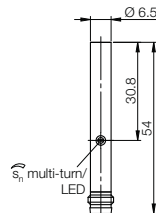
Capacitive Sensors with Special Properties

Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors

Capacitive Sensors for Object Detection

**Standard sensors, cylinder designs, DC 3-wire,
Ø 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_e		≤ 2 V	≤ 2 V	≤ 2 V	
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC	
Output current max.		50 mA	50 mA	50 mA	
No-load supply current I_0 max.		≤ 10 mA	≤ 10 mA	≤ 10 mA	
Polarity reversal protected/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 mm²	M8 connector, 3-pin	2 m PUR cable, 3×0.14 mm²	

Additional cable lengths on request.
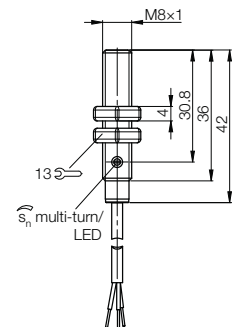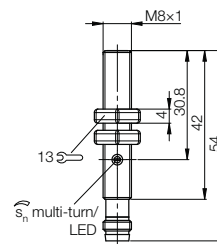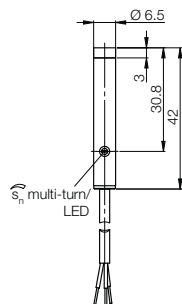
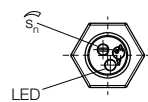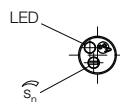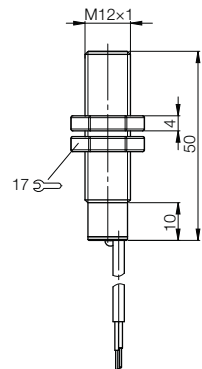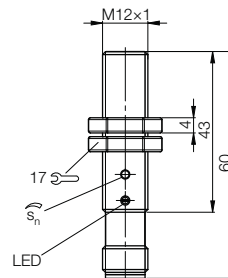|				
M8×1	**M8×1**	**Ø 10 mm**	**M12×1**	**M12×1**
Not flush	Not flush	Flush	Flush	Flush
0.1…3 mm	**0.1…3 mm**	**1…4 mm**	**1…4 mm**	**1…4 mm**
BCS002M	**BCS002H**	**BCS002T**	**BCS0037**	**BCS002Z**
BCS M08T4E2-PSM30G-S49G	BCS M08T4E1-PSM30G-EP02	BCS G10T4H-PSM40C-EP02	BCS M12T4D2-PSM40C-S04G	BCS M12T4G1-PSM40C-EP02
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, 3×0.14 mm²	2 m PUR cable, 3×0.14 mm²	M12 connector, 4-pin, A-coded	2 m PUR cable 3×0.14 mm²

Capacitive Sensors for Object Detection

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

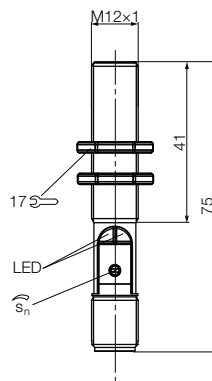|				
Size		**M12×1**	**M12×1**	**M12×1**
Mounting type		Flush	Flush	Flush
Rated switching distance s_n		**1…4 mm**	**1…4 mm**	**1…4 mm**
PNP, NO	**Ordering code**	**BCS00P0**	**BCS00R4**	**BCS00PJ**
	Part number	BCS M12B4G2-PSC40D-S04K	BCS M12B4I1-PSC40D-EP02	BCS M12BBG2-PSC40D-S04K
PNP, NC	**Ordering 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_e		≤ 1.5 V	≤ 1.5 V	≤ 1.5 V
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC
Output current max.		100 mA	100 mA	100 mA
No-load supply current I_0 max.		≤ 15 mA	≤ 15 mA	≤ 15 mA
Polarity reversal protected/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, 3×0.14 mm²	M12 connector, 4-pin, A-coded

Wiring diagrams, see page 971.

Additional cable lengths on request.

|				
M12×1	M18×1	M18×1	M18×1	M18×1
Flush	Flush	Flush	Flush	Flush
1…4 mm	2…8 mm	2…8 mm	2…8 mm	2…8 mm
BCS00PU	**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, 3×0.14 mm²	M12 connector, 4-pin, A-coded	2 m PUR cable, 3×0.34 mm²	M12 connector, 4-pin, A-coded	2 m PUR cable, 3×0.34 mm²

Capacitive Sensors

Capacitive Sensors for Object Detection

Mini-Sensors

Standard Sensors

Capacitive Sensors for Level Detection

Capacitive Sensors with Special Properties
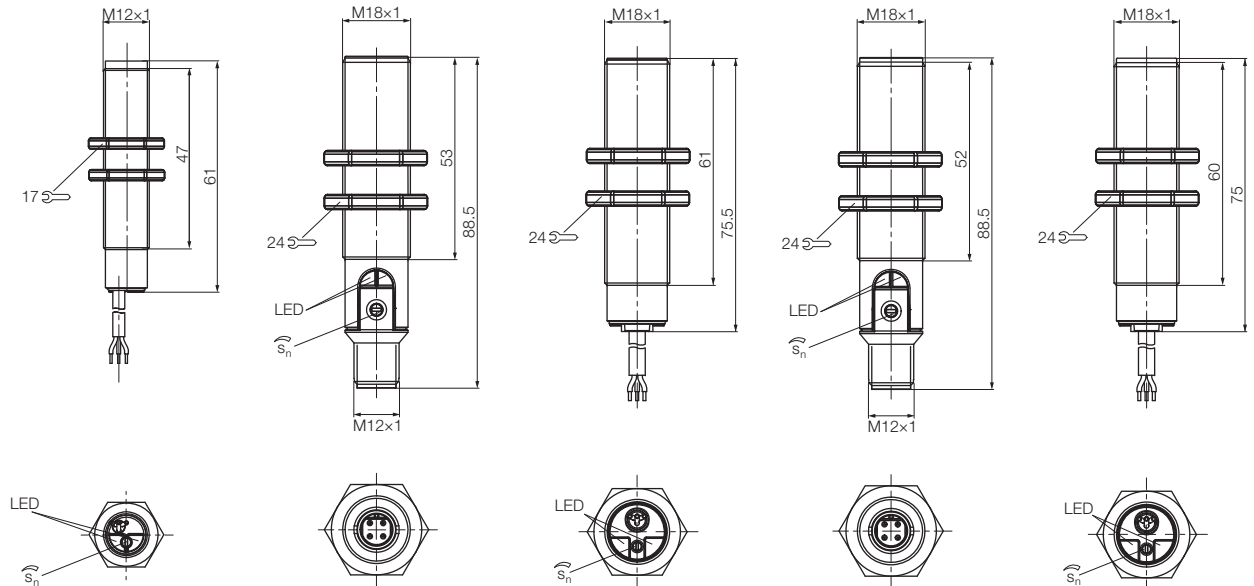
Capacitive Sensors for Analog Distance Measurement

Accessories for Capacitive Sensors

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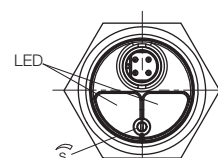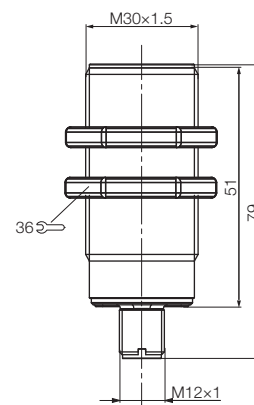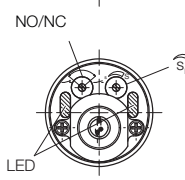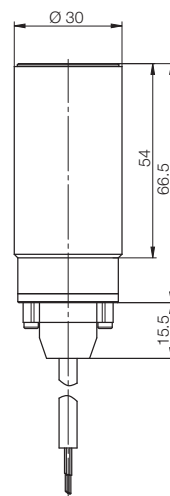**Standard sensors, cylinder designs, DC 3-wire,
Ø 22 mm, Ø 30 mm, M30×1.5**

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**	**BCS0033**		**BCS00MR**	
	Part number	BCS D22V4M1-PSC10C-EV02		BCS M30B4I2-PSC15D-S04K	
PNP, NC	**Ordering code**	**BCS0034**		**BCS00MT**	
	Part number	BCS D22V4M1-POC10C-EV02		BCS M30B4I2-POC15D-S04K	
PNP, NO/NC, can be coded	**Ordering code**		**BCS004H**		
	Part number		BCS D30B4M3-PPC20C-EP02		
NPN, NO	**Ordering code**	**BCS0035**		**BCS00MU**	
	Part number	BCS D22V4M1-NSC10C-EV02		BCS M30B4I2-NSC15D-S04K	
NPN, NC	**Ordering code**	**BCS0036**		**BCS00MW**	
	Part number	BCS D22V4M1-NOC10C-EV02		BCS M30B4I2-NOC15D-S04K	
NPN, NO/NC, can be coded	**Ordering code**		**BCS004J**		
	Part number		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_e		≤ 1.5 V	≤ 1.8 V	≤ 1.5 V	
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC	
Output current max.		300 mA	300 mA	100 mA	
No-load supply current I_0 max.		≤ 10 mA	≤ 15 mA	≤ 15 mA	
Polarity reversal protected/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 mm²	2 m PUR cable, 3×0.34 mm²	M12 connector, 4-pin, A-coded	

Wiring diagrams, see page 971.

Additional cable lengths on request.
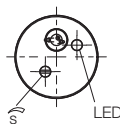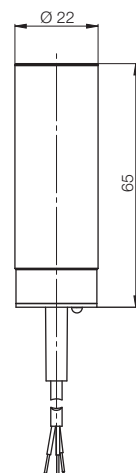
Capacitive Sensors for Object Detection
**Standard sensors, cylinder designs, DC 3-wire,
M30×1.5, Ø 34 mm**

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 G34OOl2-PSC15D-S04K	BCS G34OOl1-PSC15D-EP02
BCS00N3	**BCS00NC**	**BCS00NN**	**BCS00UK**	**BCS00UF**
BCS M30B4I1-POC15D-EP02	BCS M30BBI2-POC15D-S04K	BCS M30BBI1-POC15D-EP02	BCS G34OOl2-POC15D-S04K	BCS G34OOl1-POC15D-EP02
BCS00N4	**BCS00NE**	**BCS00NP**	**BCS00UL**	**BCS00UH**
BCS M30B4I1-NSC15D-EP02	BCS M30BBI2-NSC15D-S04K	BCS M30BBI1-NSC15D-EP02	BCS G34OOl2-NSC15D-S04K	BCS G34OOl1-NSC15D-EP02
BCS00N5	**BCS00NF**	**BCS00NR**	**BCS00UM**	**BCS00UP**
BCS M30B4I1-NOC15D-EP02	BCS M30BBI2-NOC15D-S04K	BCS M30BBI1-NOC15D-EP02	BCS G34OOl2-NOC15D-S04K	BCS G34OOl1-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 mm²	M12 connector, 4-pin, A-coded	2 m PUR cable, 3×0.34 mm²	M12 connector, 4-pin, A-coded	2 m PUR cable, 3×0.34 mm²

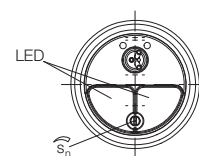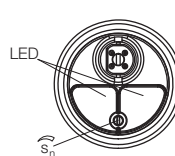Capacitive Sensors

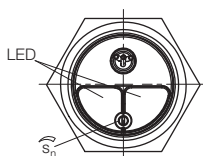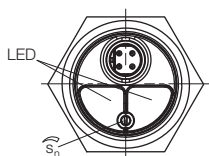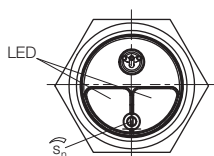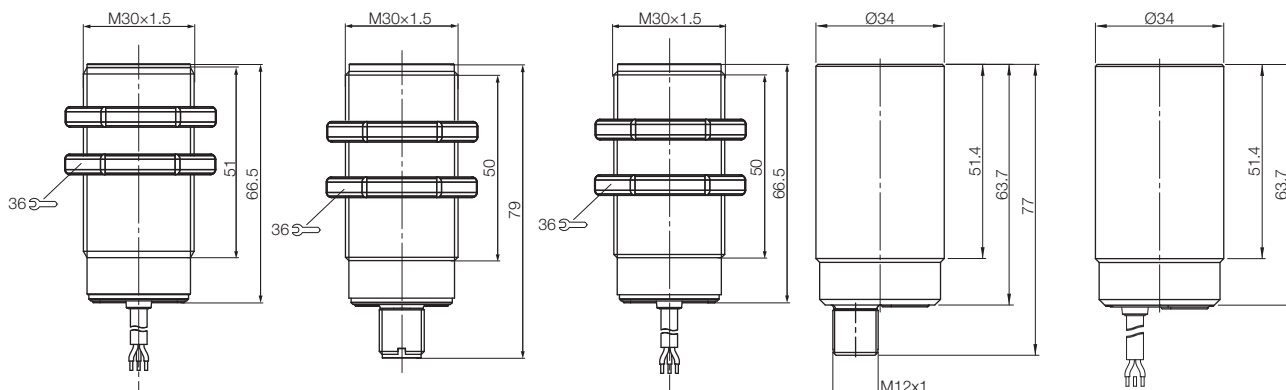Capacitive Sensors for Object Detection

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
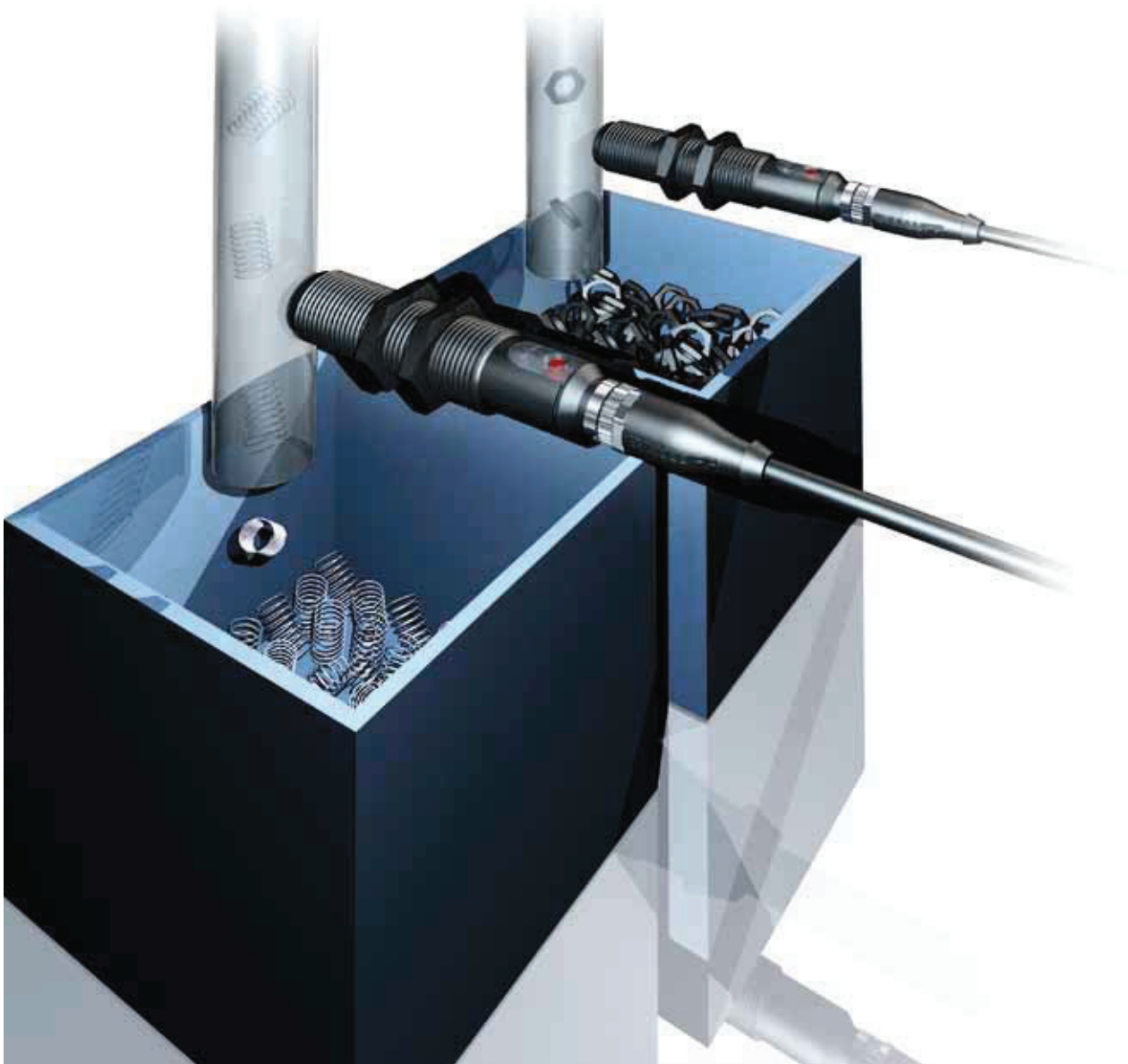## Standard sensors in use

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.
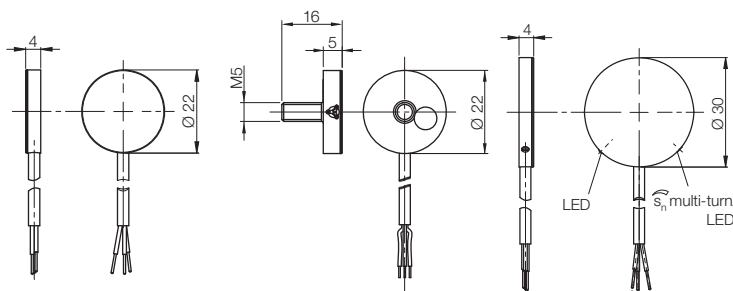
Capacitive Sensors for Object Detection
Standard sensors, disk designs, DC 3-wire, Ø 22 mm, Ø 30 mm

Size		**Ø 22×4 mm**	**Ø 22×4 mm**	**Ø 30×4 mm**
Mounting type		Flush	Flush	Flush
Rated switching distance s_n		**6 mm ±10 %**	**6 mm ±10 %**	**2…15 mm**
PNP, NO	**Ordering code**	**BCS003H**	**BCS00HK**	**BCS003A**
	Part number	BCS D22T403-PSM60C-EP02	BCS D22T402-PSM60C-EP02	BCS D30T401-PSC15C-EP02
PNP, NC	**Ordering code**			**BCS003C**
	Part number			BCS D30T401-POC15C-EP02
NPN, NO	**Ordering code**	**BCS003J**		**BCS003E**
	Part number	BCS D22T403-NSM60C-EP02		BCS D30T401-NSC15C-EP02
NPN, NC	**Ordering code**			**BCS003F**
	Part number			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_e		≤ 0.8 V	≤ 0.8 V	≤ 0.8 V
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC
Output current max.		300 mA	300 mA	300 mA
No-load supply current I_0 max.		≤ 10 mA	≤ 10 mA	≤ 10 mA
Polarity reversal protected/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	Stainless steel	Stainless steel
	Sensing surface	PTFE	PTFE	PTFE
Connection		2 m PUR cable, 3×0.14 mm²	2 m PUR cable, 3×0.14 mm²	2 m PUR cable, 3×0.14 mm²

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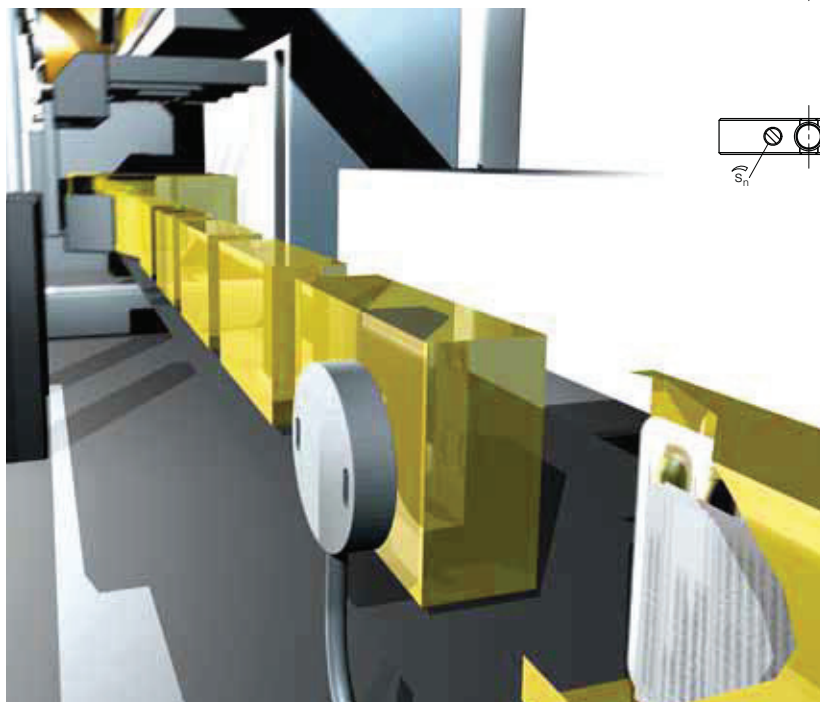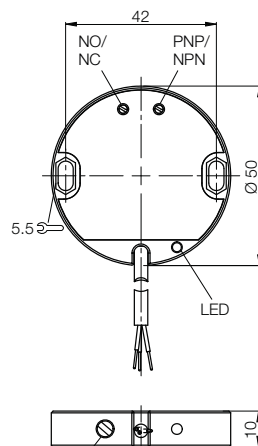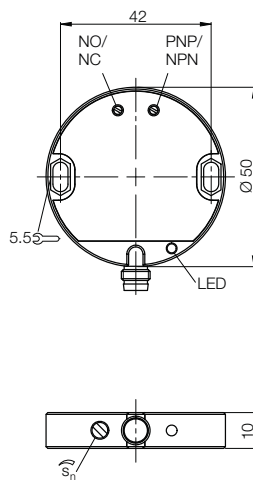
**Standard sensors, disk designs, DC 3-wire,
Ø 50 mm**

Size		**Ø 50×10 mm**	**Ø 50×10 mm**
Mounting type		Flush	Flush
Rated switching distance s_n		**2…25 mm**	**2…25 mm**
PNP/NPN and	**Ordering code**	**BCS003L**	**BCS003K**
NO/NC, can be coded	Part number	BCS D50OO03-YPC25C-S49G	BCS D50OO02-YPC25C-EV02
Supply voltage U_S		10…30 V DC	10…30 V DC
Voltage drop U_d at I_e		≤ 2 V	≤ 2 V
Rated insulation voltage U_i		75 V DC	75 V DC
Output current max.		150 mA	150 mA
No-load supply current I_0 max.		≤ 15 mA	≤ 15 mA
Polarity reversal protected/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, 3×0.25 mm²

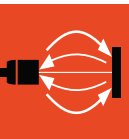**Additional cable lengths on request.**

Capacitive Sensors for Object Detection
Standard sensors, block designs, DC 3-wire, 16×34×8 mm MicroBox

Size		**16×34×8 mm** MicroBox	**16×34×8 mm** MicroBox
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_e		≤ 1.5 V	≤ 1.5 V
Rated insulation voltage U_i		75 V DC	75 V DC
Output current max.		50 mA	50 mA
No-load supply current I_0 max.		≤ 10 mA	≤ 10 mA
Polarity reversal protected/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 mm² with M8 connector, 3-pin	2 m PUR cable, 3×0.14 mm²

Additional cable lengths on request.

Mounting frame included in scope of delivery

Mounting frame included in scope of delivery

Capacitive Sensors

Capacitive Sensors for Object Detection

Mini-Sensors

Standard Sensors

Capacitive Sensors for Level Detection
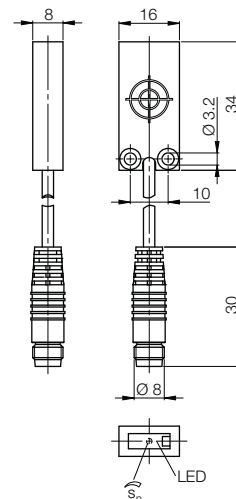
Capacitive Sensors with Special Properties

Capacitive Sensors for Analog Distance Measurement
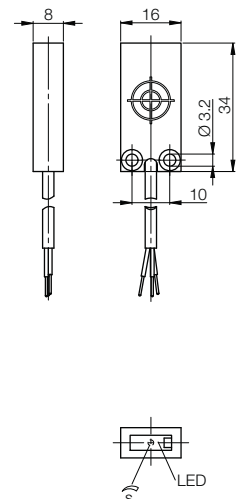
Accessories for Capacitive Sensors

Capacitive Sensors for Object Detection
**Standard sensors, block designs, DC 3-wire,
40×40×10 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
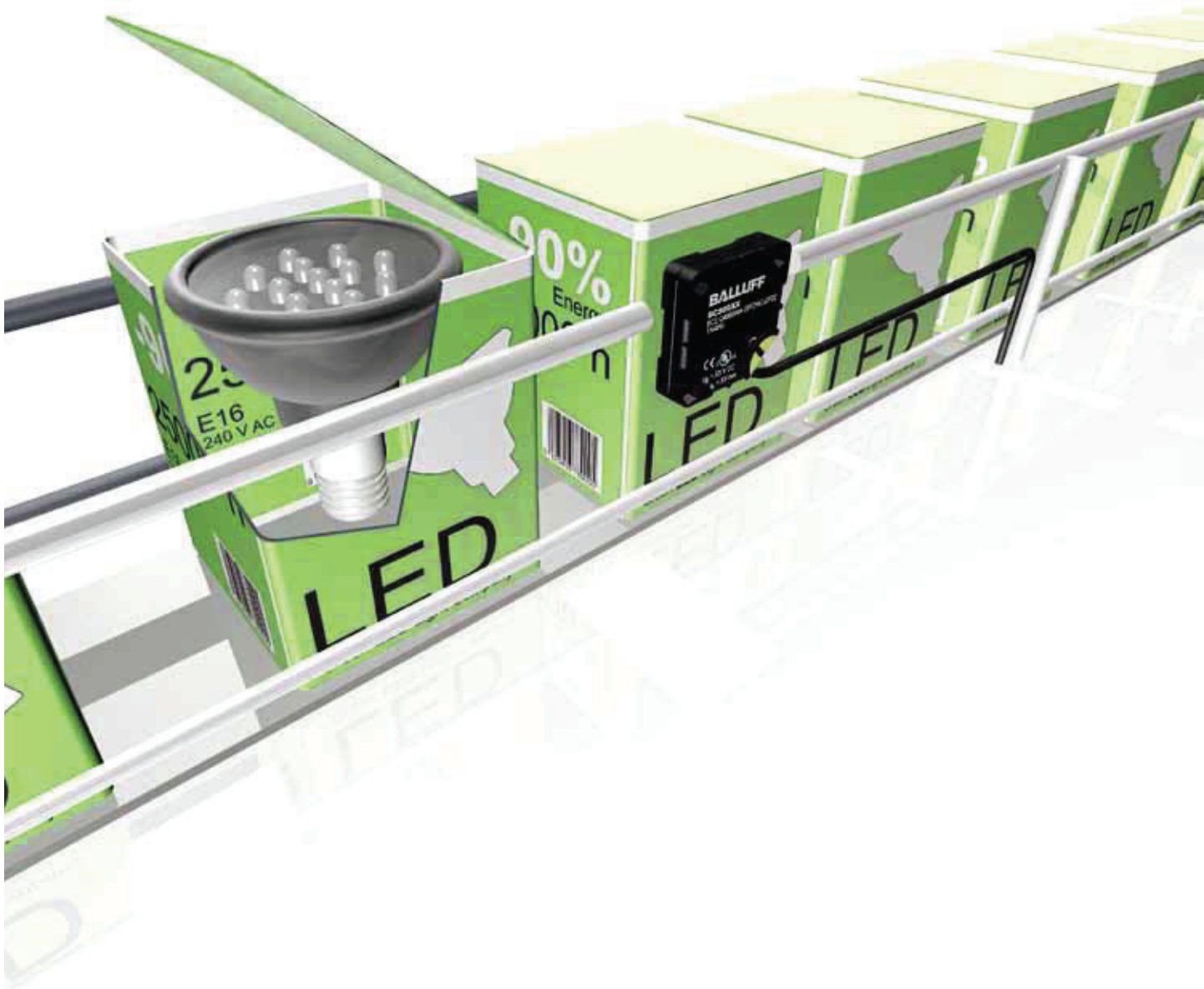
Capacitive Sensors for Object Detection
Standard sensors, block designs, DC 3-wire, 40×40×10 mm, Uniflat

Size		**40×40×10 mm** Uniflat	**40×40×10 mm** Uniflat
Mounting type		Flush	Flush
Rated switching distance s_n		**1...20 mm**	**1...20 mm**
PNP/NPN and	**Ordering code**		**BCS00TR**
NO/NC, can be coded	Part number		BCS Q40BBAA-GPC20C-EP02
PNP, NO	**Ordering code**	**BCS00U6**	
	Part number	BCS Q40BBAA-PSC20C-EP00,3-GS49	
PNP, NC	**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_e		≤ 2.5 V	≤ 2.5 V
Rated insulation voltage U_i		75 V DC	75 V DC
Output current max.		100 mA	100 mA
No-load supply current I_0 max.		≤ 15 mA	≤ 15 mA
Polarity reversal protected/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, 3×0.14 mm²

Wiring diagrams, see page 971.

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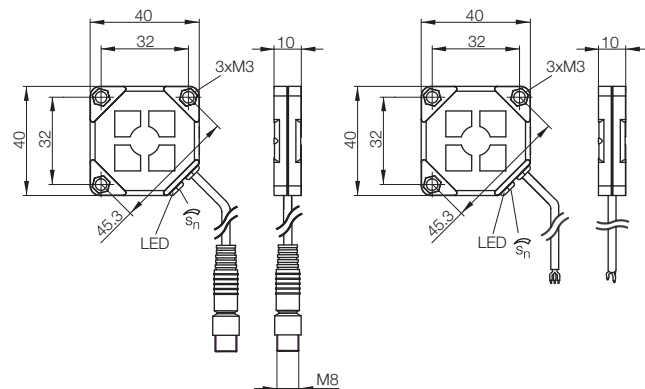
The Uniflat, which can be installed flush, has a 45° cable outlet and LEDS visible from all sides. Due to this, it can be integrated very easily in every position.