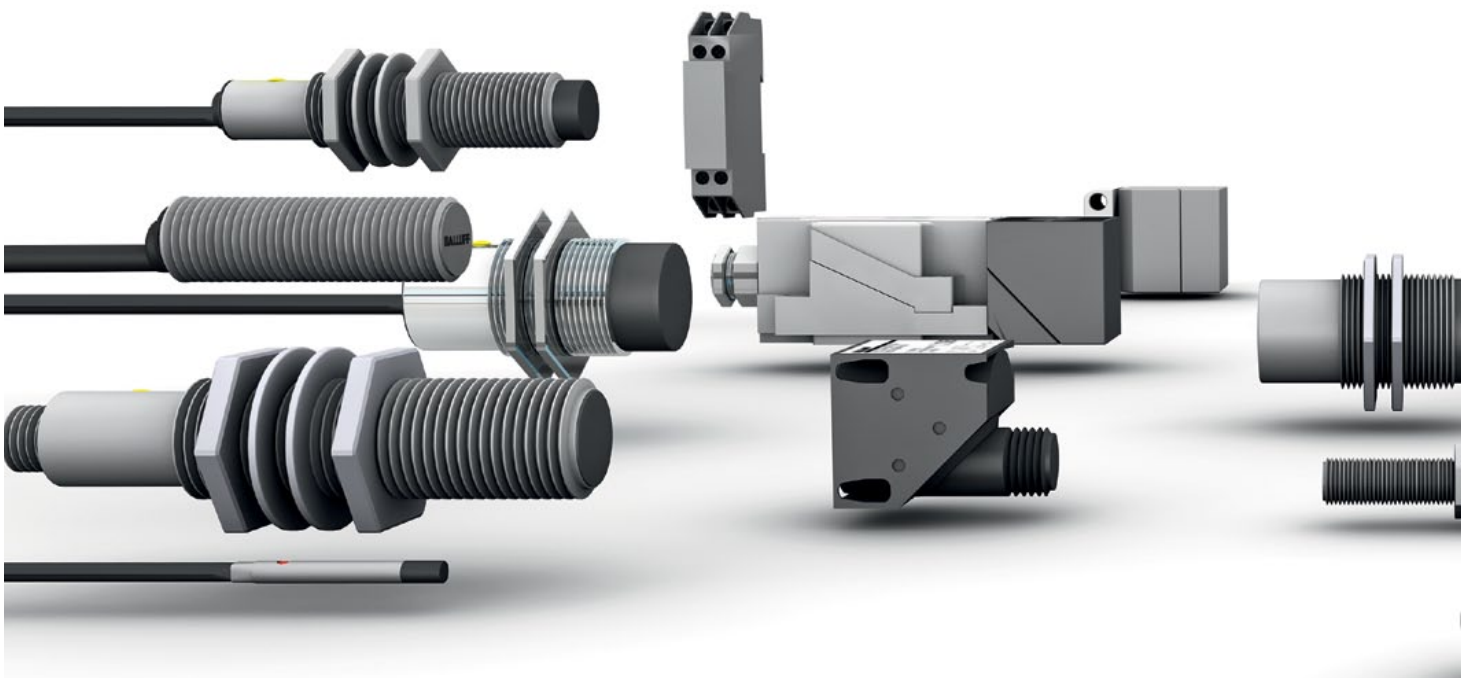


Inductive Sensors

Inductive sensors for object detection

Automation is almost inconceivable without inductive sensors. Wherever processes are automated, non-contact position detection, freedom from wear, and reliability are in demand. Whether in machine building, automation technology, electronics manufacturing or the plastics industry, in textile machines, wood processing or in the automobile industry – Balluff sensors monitor, control and automate processes and states. Providing the highest quality and optimized for any application. From standard to extended switching distance, from temperature and high pressure rated to "Factor 1" from mini to maxi: You too can take advantage of Balluff's versatility in your applications. And profit from the reliability and quality of proven products from your full-line provider.



Inductive sensors		Inductive sensors with special properties	
Introduction	468	High-pressure sensors	643
Product overview	470	Strokemaster® sensors	660
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		Weld field immune sensors	696
DC 3-/4-wire inductive sensors		Large designs	704
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Block housings	552	Tube sensors	714
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		Prox mounts for tubular sensors	761
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		Mounting brackets for 8x8 block sensors & seal nuts	764
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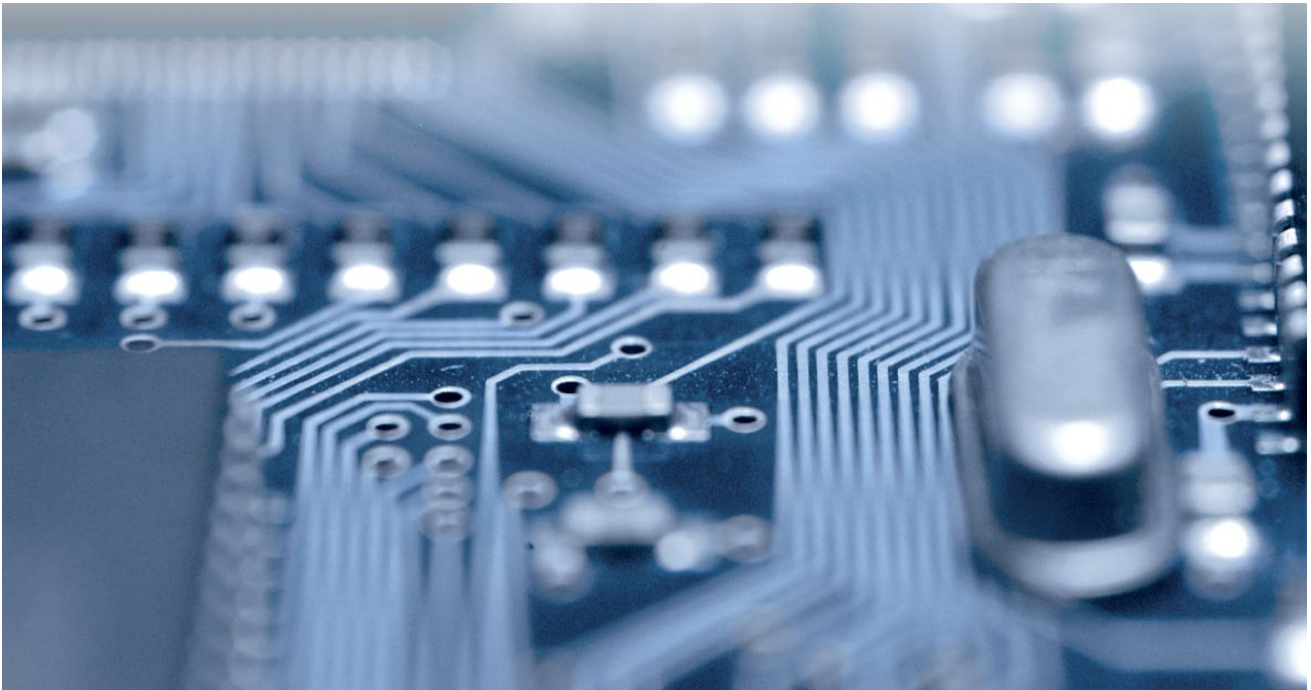


Basic information and definitions can be found on **page 952**.



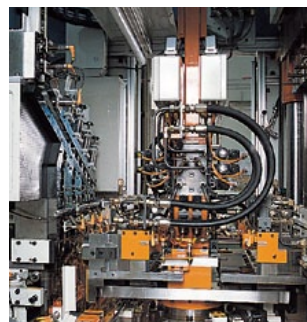
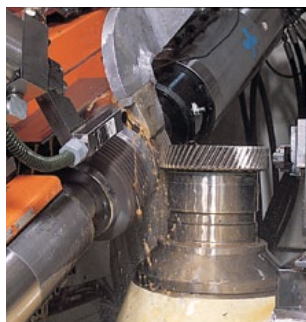
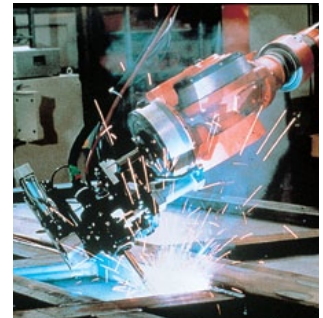
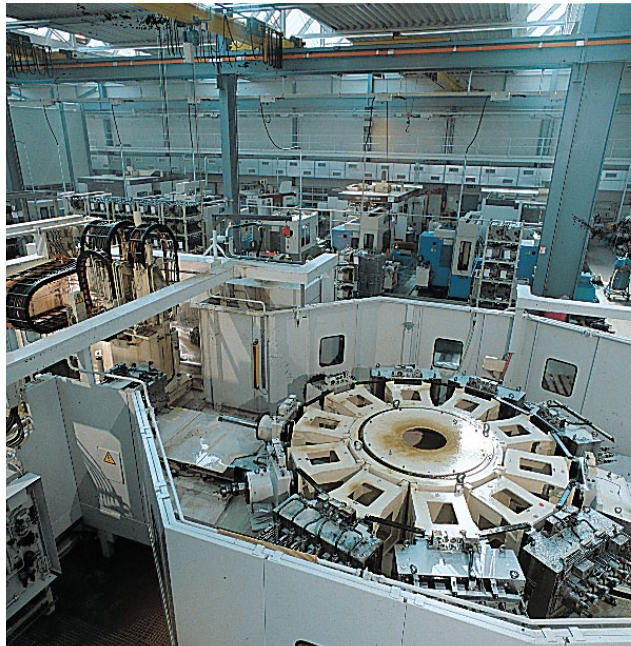
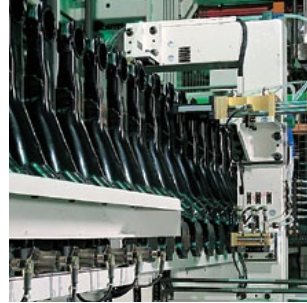
Inductive Sensors Introduction

DC 3-/4-Wire	F1
DC 2-Wire	PTFE Coated Weld Immune
AC/ DC 2-Wire	500bar High Pressure
	120°C High Temperature
IP68 BWN Pr27 BWN Pr20	Stainless Steel



Inductive Sensors

Introduction



Inductive Sensors

Introduction

Product overview

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Inductive Sensors

Product overview



Housing size	Ø 3 mm, Ø 4 mm, M4x0.5	M5x0.5 Ø 6.5	M8x1, Ø 8 mm	M12x1	M16x1	M18x1	
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Inductive sensors							
DC 3-wire Global			page 476	page 481		page 484	
DC 3-/4-wire	page 492	page 498 page 503	page 512	page 530		page 538	
DC 2-wire			page 595	page 597		page 600	
AC/DC 2-wire				page 615		page 617	
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Inductive Sensors with Special Properties							
High pressure sensors		page 643 page 651 page 590	page 651	page 643 page 645 page 653	page 648	page 650 page 659	
Steelface sensors			page 665	page 666		page 667	
High temperature sensors		page 670	page 670	page 670		page 671 page 673	page 676
Sensors for harsh environments				page 674		page 676	
Factor 1 sensors			page 685	page 686		page 689	
Weld field immune sensors				page 697		page 699	
Large housing							
Tube sensors							
Ring sensors							

Inductive distance sensors for analog distance measurement							
Tubular-style housings			page 721	page 722		page 725	
Block housings							
Ring sensors							

Inductive Sensors

Product overview



M30×1.5	5×5 mm	8×8 mm	8×16 mm R04	10×30 mm R03	16.5×30 mm	20×32 mm R01	99×17.6 mm
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Inductive Sensors

Introduction

Product overview

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

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page 603						page 606	
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page 671 page 673 page 677							
page 692							
page 701						page 702	
page 728							
				page 731			

Inductive Sensors

Product overview



Housing size	25x50 mm	26x26 mm	26x40 mm	42x48 mm	74x60.5 mm	40x40 mm	
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Inductive sensors							
DC 3-wire Global							
DC 3-/4-wire	page 571		page 572	page 574	page 575	page 577	
DC 2-wire		page 607				page 608	
AC/DC 2-wire			page 623			page 625	
AC 2-wire							

Inductive Sensors with Special Properties							
High pressure sensors							
Steelface sensors							
High temperature sensors	page 671						
Sensors for harsh environments							
Factor 1 sensors						page 693	
Weld field immune sensors						page 703	
Large housing							
Tube sensors							
Ring sensors							

Inductive distance sensors for analog distance measurement							
Tubular-style housings							
Block housings							

Inductive Sensors

Product overview



	40x40 mm	80x80 mm	35x35 mm	Ø 80x67 mm	Ø 110x110 mm	Ring sensors	Tube sensors
	page 581	page 588					
	page 609	page 610					
	page 627	page 631					
		page 639					
			page 707	page 708	page 709		
							page 715
						page 711	
					page 734		

Inductive Sensors

Introduction

Product overview

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

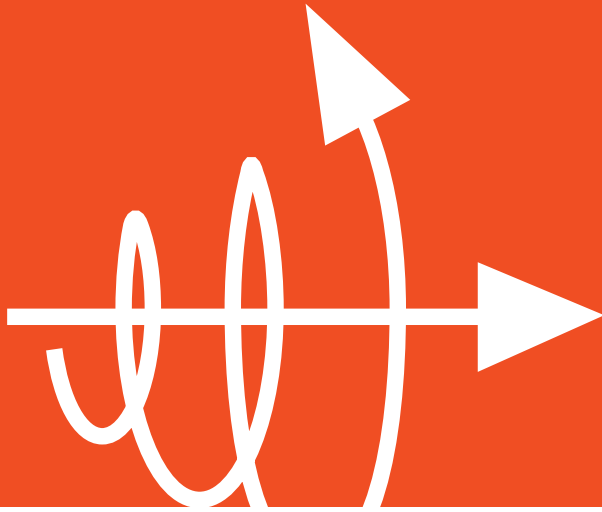
AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

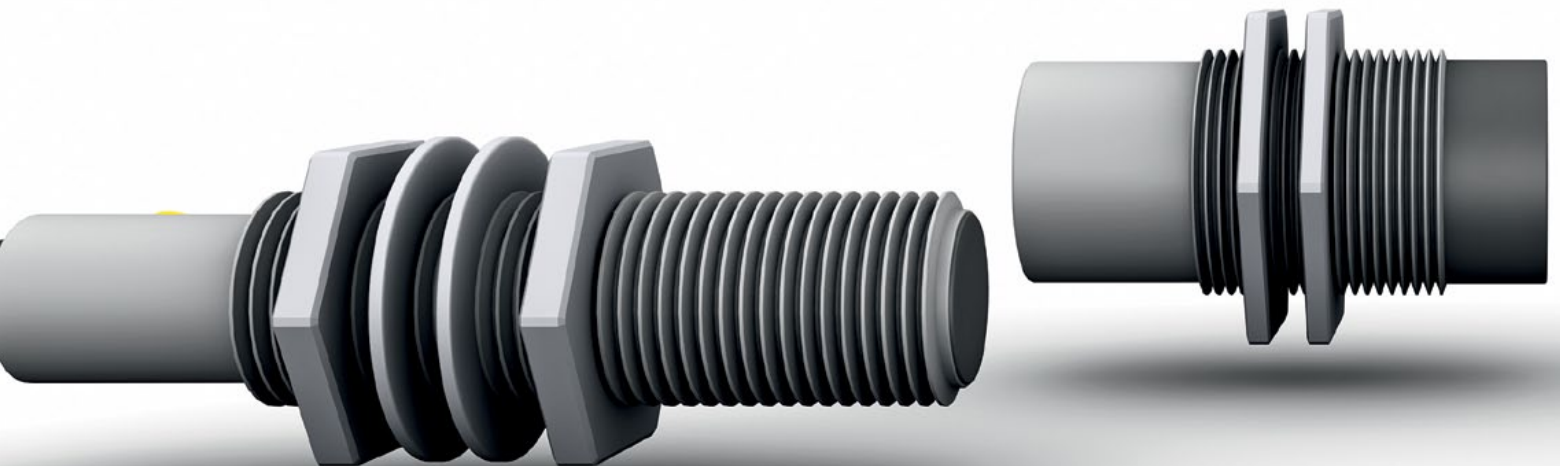
Accessories



Inductive Sensors

DC 3-wire inductive Global Sensors

DC 3-wire inductive global sensors: Global sensors are the most economical sensors from the Balluff group. These standardized sensors are readily available and are ideal for general-purpose applications



Tubular design

M8×1

476

M12×1

481

M18×1

484

M30×1.5

487



Global



DC 3-wire Inductive Global Sensors

Tubular housing, M8x1

Global: Performance and value in inductive proximity sensors

Balluff Global sensors are proven performers that are globally standardized with an optimum price point ratio.

- Short and mid-size designs M8 to M30x1.5
- Shielded and unshielded designs
- Cable and connector versions
- Standard and extended switching distance

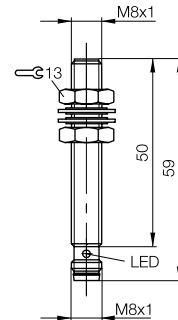
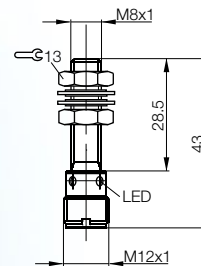
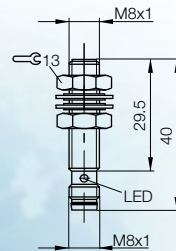


Housing size	M8 x 1	M8 x 1	M8 x 1
Installation type (observe instructions in Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	1.5 mm	1.5 mm	1.5 mm
Assured switching distance s_a	0...1.2 mm	0...1.2 mm	0...1.2 mm
Sensing distance	1X	1X	1X
PNP, NO	Ordering code Part number	BES00CJ BES M08EE-PSC15B-S49G-003	BES00CH BES M08EE-PSC15B-S04G-003
PNP, NC	Ordering code Part number	BES00CC BES M08EE-POC15B-S49G-003	BES00CA BES M08EE-POC15B-S04G-003
NPN, NO	Ordering code Part number	BES00C7 BES M08EE-NSC15B-S49G-003	BES00C6 BES M08EE-NSC15B-S04G-003
NPN, NC	Ordering code Part number	BES00C3 BES M08EE-NOC15B-S49G-003	BES00C2 BES M08EE-NOC15B-S04G-003
Supply voltage U_B	10...30 V DC	10...30 V DC	12...30 V DC
Voltage drop U_d at I_o max.	2.5 V	2.5 V	2 V
Rated insulation voltage U_i (protection class)	250 V AC (□)	250 V AC (□)	75 V DC
Rated operating current I_o	200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...70 °C	-25...70 °C	-25...70 °C
Switching frequency f max.	1 kHz	1 kHz	1 kHz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67
Approvals	CE, cULus	CE, cULus	CE, cULus
Material	Housing: Stainless steel Sensing surface: PBT	Stainless steel PBT	Brass-coated PA 12
Connection	M8 connector, 3-pin	M12 connector, 4-pin	M8 connector, 3-pin
Suggested mating cable	BCC M313-0000-10-001-VX43T2-020-C013	BCC M415-0000-1A-003-VX44T2-020-C013	BCC M313-0000-10-001-VX43T2-020-C013

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.





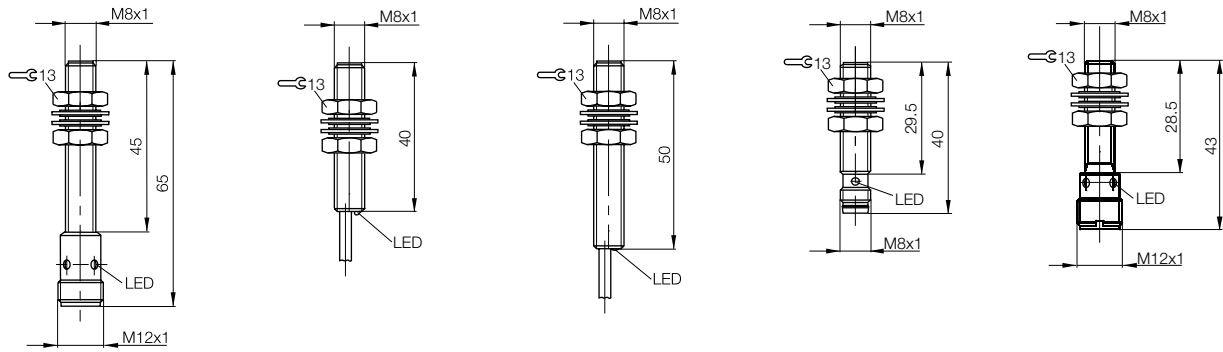
DC 3-wire Inductive Global Sensors

Tubular housing, M8x1



M8 x 1	M8 x 1	M8 x 1	M8 x 1	M8 x 1
Flush	Flush	Flush	Flush	Flush
1.5 mm	1.5 mm	1.5 mm	2 mm	2 mm
0...1.2 mm	0...1.2 mm	0...1.2 mm	0...1.6 mm	0...1.6 mm
1X	1X	1X	2X	2X
BES0027	BES00CU	BES0037	BES00CK	BES00FC
BES M08MH1-PSC15B-S04G	BES M08EF-PSC15B-BP02-003	BES M08MI-PSC15B-BV02	BES M08EE-PSC20B-S49G-003	BES M08EE-PSC20B-S04G-003
BES0026	BES00CR	BES0030	BES00CF	BES00CE
BES M08MH1-POC15B-S04G	BES M08EF-POC15B-BP02-003	BES M08MI-POC15B-BV02	BES M08EE-POC20B-S49G-003	BES M08EE-POC20B-S04G-003
BES0024	BES00CN	BES002F	BES00C9	BES00C8
BES M08MH1-NSC15B-S04G	BES M08EF-NSC15B-BP02-003	BES M08MI-NSC15B-BV02	BES M08EE-NSC20B-S49G-003	BES M08EE-NSC20B-S04G-003
BES0023	BES00CL	BES003PJ	BES00C5	BES00C4
BES M08MH1-NOC15B-S04G	BES M08EF-NOC15B-BP02-003	BES M08MI-NOC15B-BV02	BES M08EE-NOC20B-S49G-003	BES M08EE-NOC20B-S04G-003
12...30 V DC	10...30 V DC	12...30 V DC	10...30 V DC	10...30 V DC
2 V	2.5 V	2 V	2.5 V	2.5 V
75 V DC	250 V AC (□)	75 V DC	250 V AC (□)	250 V AC (□)
200 mA	200 mA	200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...70 °C	-25...70 °C	-25...70 °C	-25...70 °C	-25...70 °C
1 kHz	1 kHz	1 kHz	700 Hz	700 Hz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 67	IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Brass-coated	Stainless steel	Brass-coated	Stainless steel	Stainless steel
PA 12	PBT	PA 12	PBT	PBT
M12 connector, 4-pin	2 m PUR cable, 26 AWG	2 m PVC cable, 26 AWG	M8 connector, 3-pin	M12 connector, 4-pin
BCC M415-0000-1A-003-VX44T2-020-C013			BCC M313-0000-10-001-VX43T2-020-C013	BCC M415-0000-1A-003-VX44T2-020-C013

Inductive sensors
Global DC 3-wire
Tubular housings
Block housings
DC 3-/4-wire
DC 2-wire
AC/DC 2-wire
AC 2-wire
Special properties
Analog distance measurement
Accessories



DC 3-wire Inductive Global Sensors

Tubular housing, M8x1

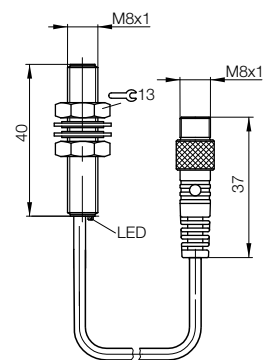
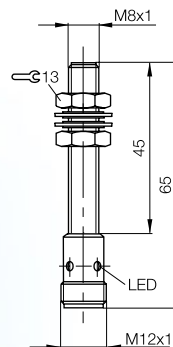
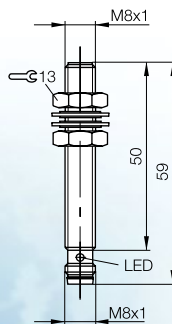


Housing size		M8 x 1	M8 x 1	M8 x 1
Installation type (observe instructions in Basic Information chapter)		Flush	Flush	Flush
Rated switching distance s_n		2 mm	2 mm	2 mm
Assured switching distance s_a		0...1.6 mm	0...1.6 mm	0...1.6 mm
Sensing distance		2X	2X	2X
PNP, NO	Ordering code	BES003P	BES0028	
	Part number	BES M08MI-PSC20B-S49G	BES M08MH1-PSC20B-S04G	
PNP, NC	Ordering code	BES0033	BES03T5	
	Part number	BES M08MI-POC20B-S49G	BES M08MH1-POC20B-S04G	
NPN, NO	Ordering code	BES002U	BES0025	BES045P
	Part number	BES M08MI-NSC20B-S49G	BES M08MH1-NSC20B-S04G	BES M08EF-NSC20B-BP00,3-GS49
NPN, NC	Ordering code	BES03TJ	BES03T6	
	Part number	BES M08MI-NOC20B-S49G	BES M08MH1-NOC20B-S04G	
Supply voltage U_B		12...30 V DC	12...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.		2.5 V	2.5 V	2.5 V
Rated insulation voltage U_i (protection class)		75 V DC	75 V DC	250 V AC (II)
Rated operating current I_e		200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...70 °C	-25...70 °C	-25...70 °C
Switching frequency f max.		700 Hz	700 Hz	700 Hz
Output function indicator		Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67	IP 68 per BWN Pr. 20
Approvals		CE, cULus	CE, cULus	CE, cULus
Material	Housing	Brass-coated	Brass-coated	Stainless steel
	Sensing surface	PA 12	PA 12	PBT
Connection		M8 connector, 3-pin	M12 connector, 4-pin	0.3 m PUR cable with M8 connector, 3-pin
Suggested mating cable		BCC M313-0000-10-001-VX43T2-020-C013	BCC M415-0000-1A-003-VX44T2-020-C013	BCC M313-0000-10-001-VX43T2-020-C013

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



Global



DC 3-wire Inductive Global Sensors

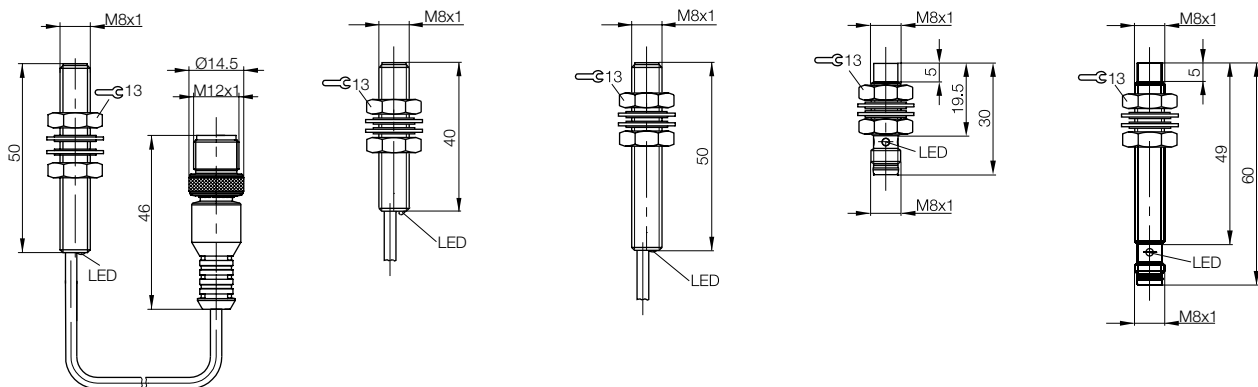
Tubular housing, M8x1



M8 x 1	M8 x 1	M8 x 1	M8 x 1	M8 x 1
Flush	Flush	Flush	Non-flush	Non-flush
2 mm	2 mm	2 mm	4 mm	4 mm
0...1.6 mm	0...1.6 mm	0...1.6 mm	0...3.2 mm	0...3.2 mm
2X	2X	2X	2X	2X
BES003E	BES00CW	BES003K	BES000M	BES001J
BES M08MI-PSC20B-BP00,2-GS04	BES M08EF-PSC20B-BP02-003	BES M08MI-PSC20B-BV02	BES M08EB-PSC40F-S49G	BES M08EH-PSC40F-S49G
	BES00CT	BES03TH	BES000L	BES001F
	BES M08EF-POC20B-BP02-003	BES M08MI-POC20B-BV02	BES M08EB-POC40F-S49G	BES M08EH-POC40F-S49G
	BES00CP	BES002P	BES000K	BES001C
	BES M08EF-NSC20B-BP02-003	BES M08MI-NSC20B-BV02	BES M08EB-NSC40F-S49G	BES M08EH-NSC40F-S49G
	BES00CM	BES03TF	BES000J	BES0019
	BES M08EF-NOC20B-BP02-003	BES M08MI-NOC20B-BV02	BES M08EB-NOC40F-S49G	BES M08EH-NOC40F-S49G
12...30 V DC	10...30 V DC	12...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2.5 V	2.5 V	2.5 V	2.5 V
75 V DC	250 V AC (□)	75 V DC	250 V AC (□)	250 V AC (□)
200 mA	200 mA	200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...70 °C	-25...70 °C	-25...70 °C	-25...70 °C	-25...70 °C
700 Hz	700 Hz	700 Hz	1.5 kHz	1.5 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 67	IP 67	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Brass-coated	Stainless steel	Brass-coated	Stainless steel	Stainless steel
PA 12	PBT	PA 12	PBT	PBT
0.2 m PUR cable with M12 connector, 4-pin	2 m PUR cable, 26 AWG	2 m PVC cable, 26 AWG	M8 connector, 3-pin	M8 connector, 3-pin
BCC M415-0000-1A-003-VX44T2-020-C013			BCC M313-0000-10-001-VX43T2-020-C013	BCC M313-0000-10-001-VX43T2-020-C013



- Inductive sensors
- Global DC 3-wire
- Tubular housings
- Block housings
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties
- Analog distance measurement
- Accessories



DC 3-wire Inductive Global Sensors

Tubular housing, M8x1

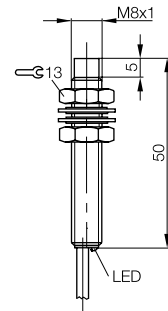
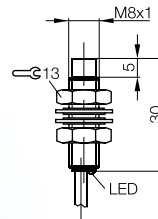
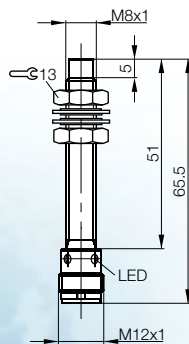


Housing size	M8 x 1	M8 x 1	M8 x 1
Installation type (observe instructions in Basic Information chapter)	Non-flush	Non-flush	Non-flush
Rated switching distance s_n	4 mm	4 mm	4 mm
Assured switching distance s_a	0...3.2 mm	0...3.2 mm	0...3.2 mm
Sensing distance	2X	2X	2X
PNP, NO	Ordering code Part number	BES001H BES M08EH-PSC40F-S04G	BES000Z BES M08ED-PSC40F-BV02
PNP, NC	Ordering code Part number	BES001E BES M08EH-POC40F-S04G	BES000W BES M08ED-POC40F-BV02
NPN, NO	Ordering code Part number	BES001A BES M08EH-NSC40F-S04G	BES000T BES M08ED-NSC40F-BV02
NPN, NC	Ordering code Part number	BES0018 BES M08EH-NOC40F-S04G	BES000P BES M08ED-NOC40F-BV02
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.	2.5 V	2.5 V	2.5 V
Rated insulation voltage U_i (protection class)	250 V AC (II)	250 V AC (II)	250 V AC (II)
Rated operating current I_o	200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...70 °C	-25...70 °C	-25...70 °C
Switching frequency f max.	1.5 kHz	1.5 kHz	1.5 kHz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
Approvals	CE, cULus	CE, cULus	CE, cULus
Material	Housing: Stainless steel Sensing surface: PBT	Stainless steel PA 12	Stainless steel PBT
Connection	M12 connector, 4-pin	2 m PVC cable, 26 AWG	2 m PVC cable, 26 AWG
Suggested mating cable	BCC M415-0000-1A-003-VX44T2-020-C013		

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



Global



DC 3-wire Inductive Global Sensors

Tubular housing, M12x1



M12x1	M12x1	M12x1	M12x1	M12x1	M12x1
Flush	Flush	Flush	Flush	Flush	Flush
2 mm	2 mm	2 mm	2 mm	2 mm	4 mm
0...1.6 mm	0...1.6 mm	0...1.6 mm	0...1.6 mm	0...1.6 mm	0...3.2 mm
1X	1X	1X	1X	1X	2X
BES00EE	BES0060	BES00E4	BES005U	BES00EF	
BES M12ME-PSC20B-S04G-003	BES M12MI-PSC20B-S04G	BES M12MD-PSC20B-BP02-003	BES M12MI-PSC20B-BV02	BES M12ME-PSC40B-S04G-003	
BES00EA	BES005F	BES00E2	BES00FP	BES00EC	
BES M12ME-POC20B-S04G-003	BES M12MI-POC20B-S04G	BES M12MD-POC20B-BP02-003	BES M12MI-POC20B-BV02	BES M12ME-POC40B-S04G-003	
BES00E8	BES0054	BES00E0	BES00FL	BES00E9	
BES M12ME-NSC20B-S04G-003	BES M12MI-NSC20B-S04G	BES M12MD-NSC20B-BP02-003	BES M12MI-NSC20B-BV02	BES M12ME-NSC40B-S04G-003	
BES00E6	BES004Y	BES00CY	BES03PR	BES00E7	
BES M12ME-NOC20B-S04G-003	BES M12MI-NOC20B-S04G	BES M12MD-NOC20B-BP02-003	BES M12MI-NOC20B-BV02	BES M12ME-NOC40B-S04G-003	
10...30 V DC	12...30 V DC	10...30 V DC	12...30 V DC	10...30 V DC	
2 V	2.5 V	2 V	2.5 V	2.5 V	
250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)	
200 mA	200 mA	200 mA	200 mA	200 mA	
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	
-25...70 °C	-25...70 °C	-25...70 °C	-25...70 °C	-25...70 °C	
1.2 kHz	1.2 kHz	1.2 kHz	1.2 kHz	300 Hz	
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED	
IP 67	IP 68 per BWN Pr. 20	IP 67	IP 68 per BWN Pr. 20	IP 67	
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus	
Brass-coated	Brass-coated	Brass-coated	Brass-coated	Brass-coated	
PBT	PA 12	PBT	PA 12	LCP	
M12 connector, 4-pin	M12 connector, 4-pin	2 m PUR cable, 22 AWG	2 m PVC cable, 22 AWG	M12 connector, 4-pin	
BCC M415-0000-1A-003-VX44T2-020-C013	BCC M415-0000-1A-003-VX44T2-020-C013			BCC M415-0000-1A-003-VX44T2-020-C013	



Inductive sensors

Global DC 3-wire

Tubular housings

Block housings

DC 3-/4-wire

DC 2-wire

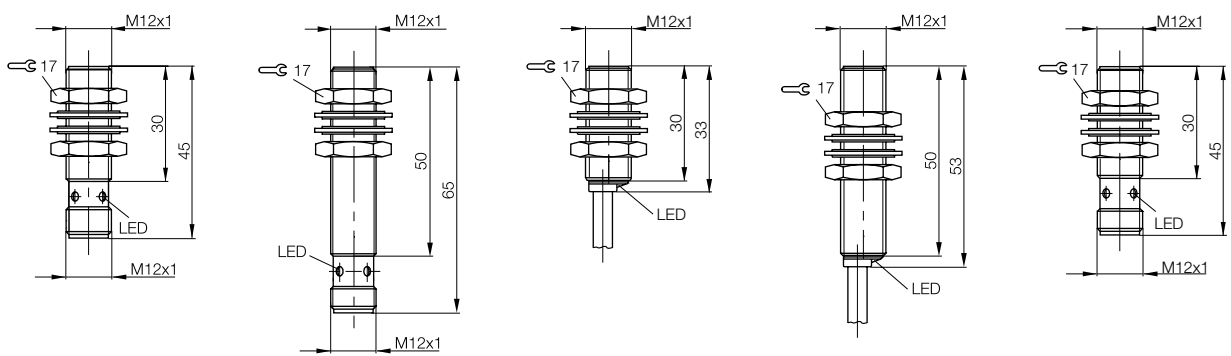
AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories



DC 3-wire Inductive Global Sensors

Tubular housing, M12x1

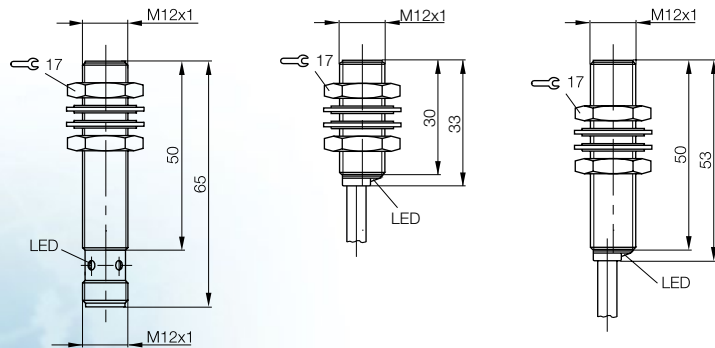


Housing size		M12x1	M12x1	M12x1
Installation type (observe instructions in Basic Information chapter)		Flush	Flush	Flush
Rated switching distance s_n		4 mm	4 mm	4 mm
Assured switching distance s_a		0...3.2 mm	0...3.2 mm	0...3.2 mm
Sensing distance		2X	2X	2X
PNP, NO	Ordering code	BES0068	BES00E5	BES0064
	Part number	BES M12MI-PSC40B-S04G	BES M12MD-PSC40B-BP02-003	BES M12MI-PSC40B-BV02
PNP, NC	Ordering code	BES005N	BES00E3	BES005L
	Part number	BES M12MI-POC40B-S04G	BES M12MD-POC40B-BP02-003	BES M12MI-POC40B-BV02
NPN, NO	Ordering code	BES0059	BES00E1	BES00FM
	Part number	BES M12MI-NSC40B-S04G	BES M12MD-NSC40B-BP02-003	BES M12MI-NSC40B-BV02
NPN, NC	Ordering code	BES004Z	BES00CZ	BES03PT
	Part number	BES M12MI-NOC40B-S04G	BES M12MD-NOC40B-BP02-003	BES M12MI-NOC40B-BV02
Supply voltage U_B		12...30 V DC	10...30 V DC	12...30 V DC
Voltage drop U_d at I_o max.		2.5 V	2.5 V	2.5 V
Rated insulation voltage U_i (protection class)		250 V AC (II)	250 V AC (II)	250 V AC (II)
Rated operating current I_o		200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...70 °C	-25...70 °C	-25...70 °C
Switching frequency f max.		500 Hz	300 Hz	500 Hz
Output function indicator		Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 68 per BWN Pr. 20	IP 67	IP 68 per BWN Pr. 20
Approvals		CE, cULus	CE, cULus	CE, cULus
Material	Housing	Brass-coated	Brass-coated	Brass-coated
	Sensing surface	PA 12	LCP	PA 12
Connection		M12 connector, 4-pin	2 m PUR cable, 22 AWG	2 m PVC cable, 22 AWG
Suggested mating cable		BCC M415-0000-1A-003-VX44T2-020-C013		

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



Global



DC 3-wire Inductive Global Sensors

Tubular housing, M12x1



M12x1	M12x1	M12x1		
Non-flush	Non-flush	Non-flush		
8 mm	8 mm	8 mm		
0...6.4 mm	0...6.4 mm	0...6.4 mm		
2X	2X	2X		
BES01PY	BES004N	BES004M		
BES M12MD-PSC80F-S04G	BES M12MG-PSC80F-S04G	BES M12MG-PSC80F-BV02		
BES01PU	BES004K	BES004J		
BES M12MD-POC80F-S04G	BES M12MG-POC80F-S04G	BES M12MG-POC80F-BV02		
BES01PT	BES004F	BES004E		
BES M12MD-NSC80F-S04G	BES M12MG-NSC80F-S04G	BES M12MG-NSC80F-BV02		
BES01PR	BES004A	BES0049		
BES M12MD-NOC80F-S04G	BES M12MG-NOC80F-S04G	BES M12MG-NOC80F-BV02		
10...30 V DC	10...30 V DC	10...30 V DC		
2.5 V	2.5 V	2.5 V		
250 V AC (□)	250 V AC (□)	250 V AC (□)		
200 mA	200 mA	200 mA		
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes		
-25...70 °C	-25...70 °C	-25...70 °C		
800 Hz	800 Hz	800 Hz		
Yellow LED	Yellow LED	Yellow LED		
IP 68 per BWN Pr. 20	IP 67	IP 67		
CE, cULus	CE, cULus	CE, cULus		
Brass-coated	Brass-coated	Brass-coated		
PBT	PBT	PBT		
M12 connector, 4-pin	M12 connector, 4-pin	2 m PVC cable, 22 AWG		
BCC M415-0000-1A-003-VX44T2-020-C013	BCC M415-0000-1A-003-VX44T2-020-C013			



Inductive sensors

Global DC 3-wire
Tubular housings
Block housings

DC 3-/4-wire

DC 2-wire

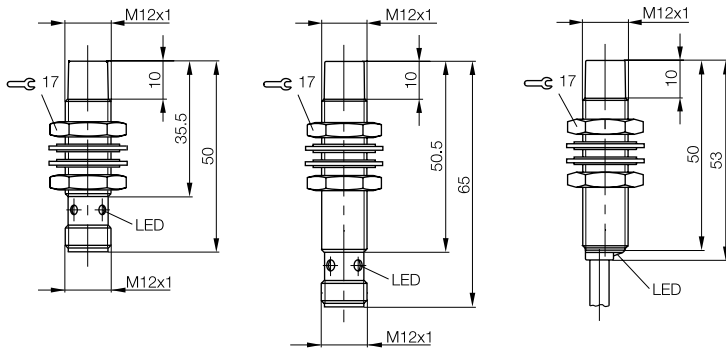
AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories



DC 3-wire Inductive Global Sensors

Tubular housing, M18x1

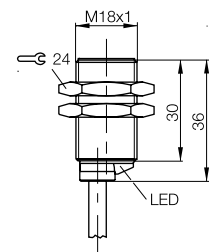
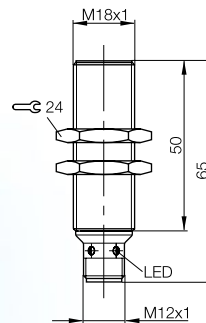
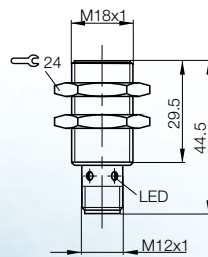


Housing size	M18x1	M18x1	M18x1
Installation type (observe instructions in Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	5 mm	5 mm	5 mm
Assured switching distance s_a	0...4 mm	0...4 mm	0...4 mm
Sensing distance	1X	1X	1X
PNP, NO	Ordering code Part number	BES00EY BES M18ME-PSC50B-S04G-003	BES0086 BES M18MI-PSC50B-S04G
PNP, NC	Ordering code Part number	BES00EU BES M18ME-POC50B-S04G-003	BES043J BES M18MI-POC50B-S04G
NPN, NO	Ordering code Part number	BES00ER BES M18ME-NSC50B-S04G-003	BES00EJ BES M18MD-NSC50B-BP02-003
NPN, NC	Ordering code Part number	BES03T7 BES M18ME-NOC50B-S04G-003	BES03T8 BES M18MD-NOC50B-BP02-003
Supply voltage U_B	10...30 V DC	12...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.	2 V	2.5 V	2 V
Rated insulation voltage U_i (protection class)	75 V DC	250 V AC (II)	75 V DC
Rated operating current I_e	200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...70 °C	-25...70 °C	-25...70 °C
Switching frequency f max.	700 Hz	700 Hz	700 Hz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 68 per BWN Pr. 20	IP 67
Approvals	CE, cULus	CE, cULus	CE, cULus
Material	Housing Sensing surface	Brass-coated PA 12	Brass-coated PA 12
Connection	M12 connector, 4-pin	M12 connector, 4-pin	2 m PUR cable, 22 AWG
Suggested mating cable	BCC M415-0000-1A-003-VX44T2-020-C013	BCC M415-0000-1A-003-VX44T2-020-C013	

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



Global

DC 3-wire Inductive Global Sensors

Tubular housing, M18x1



M18x1	M18x1	M18x1	M18x1	M18x1	M18x1
Flush	Flush	Flush	Flush	Flush	Flush
5 mm	8 mm	8 mm	8 mm	8 mm	8 mm
0...4 mm	0...6.4 mm	0...6.4 mm	0...6.4 mm	0...6.4 mm	0...6.4 mm
1X	2X	2X	2X	2X	2X
BES0082	BES00EZ	BES008L	BES00EP	BES008E	
BES M18MI-PSC50B-BV02	BES M18ME-PSC80B-S04G-003	BES M18MI-PSC80B-S04G	BES M18MD-PSC80B-BP02-003	BES M18MI-PSC80B-BV02	
BES007R	BES00EW	BES03RP	BES00EM	BES03PY	
BES M18MI-POC50B-BV02	BES M18ME-POC80B-S04G-003	BES M18MI-POC80B-S04G	BES M18MD-POC80B-BP02-003	BES M18MI-POC80B-BV02	
BES007A	BES00ET	BES007L	BES00EK	BES00FE	
BES M18MI-NSC50B-BV02	BES M18ME-NSC80B-S04G-003	BES M18MI-NSC80B-S04G	BES M18MD-NSC80B-BP02-003	BES M18MI-NSC80B-BV02	
BES03RR	BES03RN	BES0077	BES00EH	BES03T4	
BES M18MI-NOC50B-BV02	BES M18ME-NOC80B-S04G-003	BES M18MI-NOC80B-S04G	BES M18MD-NOC80B-BP02-003	BES M18MI-NOC80B-BV02	
12...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	12...30 V DC	
2.5 V	3.5 V	2.5 V	3.5 V	2.5 V	
250 V AC (□)	75 V DC	250 V AC (□)	75 V DC	250 V AC (□)	
200 mA	130 mA	200 mA	130 mA	200 mA	
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	
-25...70 °C	-25...70 °C	-25...70 °C	-25...70 °C	-25...70 °C	
700 Hz	150 Hz	1 kHz	150 Hz	150 Hz	
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED	
IP 68 per BWN Pr. 20	IP 67	IP 67	IP 67	IP 68 per BWN Pr. 20	
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus	
Brass-coated	Brass-coated	Brass-coated	Brass-coated	Brass-coated	
PA 12	PBT	PBT	PBT	PA 12	
2 m PVC cable, 22 AWG	M12 connector, 4-pin BCC M415-0000-1A-003-VX44T2-020-C013	M12 connector, 4-pin BCC M415-0000-1A-003-VX44T2-020-C013	2 m PUR cable, 22 AWG	2 m PVC cable, 22 AWG	



Inductive sensors

Global DC 3-wire

Tubular housings

Block housings

DC 3-/4-wire

DC 2-wire

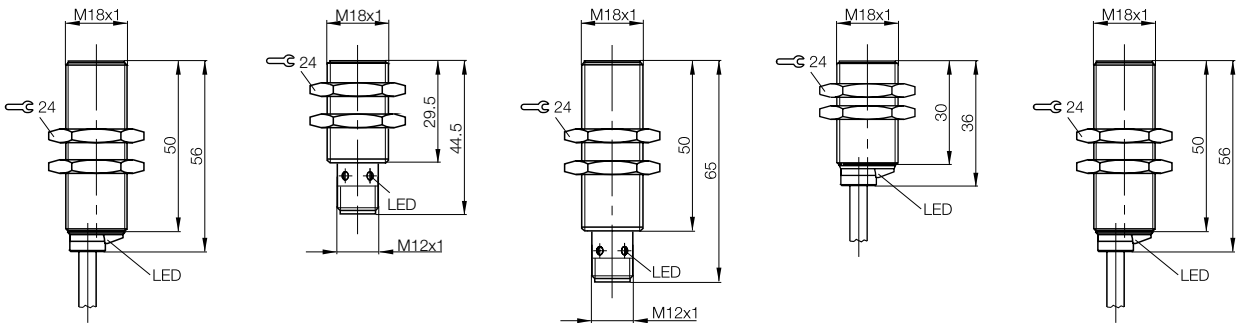
AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories



DC 3-wire Inductive Global Sensors

Tubular housing, M18x1

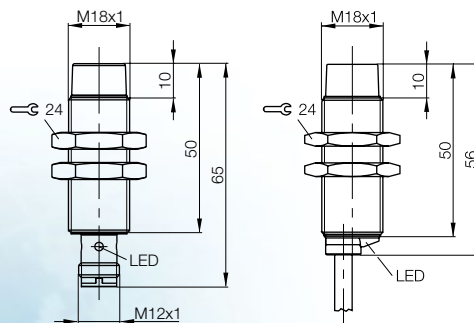


Housing size	M18x1	M18x1		
Installation type (observe instructions in Basic Information chapter)	Non-flush	Non-flush		
Rated switching distance s_n	16 mm	16 mm		
Assured switching distance s_a	0...13 mm	0...13 mm		
Sensing distance	2X	2X		
PNP, NO	Ordering code	BES03RM	BES006Z	
	Part number	BES M18MG-PSC16F-S04G	BES M18MG-PSC16F-BV02	
PNP, NC	Ordering code	BES03RL	BES006U	
	Part number	BES M18MG-POC16F-S04G	BES M18MG-POC16F-BV02	
NPN, NO	Ordering code		BES006P	
	Part number		BES M18MG-NSC16F-BV02	
NPN, NC	Ordering code		BES006L	
	Part number		BES M18MG-NOC16F-BV02	
Supply voltage U_B	10...30 V DC	10...30 V DC		
Voltage drop U_d at I_o max.	2.5 V	2.5 V		
Rated insulation voltage U_i (protection class)	75 V DC (□)	250 V AC (□)		
Rated operating current I_o	200 mA	200 mA		
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes		
Ambient temperature T_a	-25...70 °C	-25...70 °C		
Switching frequency f max.	800 Hz	800 Hz		
Output function indicator	Yellow LED	Yellow LED		
Degree of protection as per IEC 60529	IP 67	IP 67		
Approvals	CE, cULus	CE, cULus		
Material	Housing	Brass-coated	Brass-coated	
	Sensing surface	PBT	PBT	
Connection	M12 connector, 4-pin	M12 connector, 4-pin	2 m PVC cable, 22 AWG	
Suggested mating cable	BCC M415-0000-1A-003-VX44T2-020-C013			

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



Global

DC 3-wire Inductive Global Sensors

Tubular housing, M30x1.5



Inductive sensors

Global DC 3-wire

Tubular housings

Block housings

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

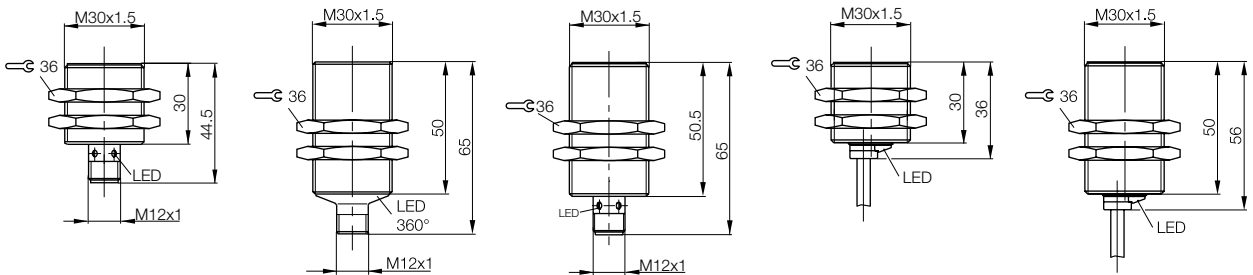
AC 2-wire

Special properties

Analog distance measurement

Accessories

M30x1.5	M30x1.5	M30x1.5	M30x1.5	M30x1.5
Flush	Flush	Flush	Flush	Flush
10 mm	10 mm	10 mm	10 mm	10 mm
0...8 mm	0...8.1 mm	0...8.1 mm	0...8.1 mm	0...8.1 mm
1X	1X	1X	1X	1X
BES00F8	BES00A4	BES00A3	BES00F3	BES00A0
BES M30ME-PSC10B-S04G-003	BES M30MI-PSC10B-S04K	BES M30MI-PSC10B-S04G	BES M30MD-PSC10B-BP02-003	BES M30MI-PSC10B-BV02
BES00F6	BES009P	BES043H	BES03TC	BES009M
BES M30ME-POC10B-S04G-003	BES M30MI-POC10B-S04K	BES M30MI-POC10B-S04G	BES M30MD-POC10B-BP02-003	BES M30MI-POC10B-BV02
BES00F5	BES009H		BES00F0	BES009C
BES M30ME-NSC10B-S04G-003	BES M30MI-NSC10B-S04K		BES M30MD-NSC10B-BP02-003	BES M30MI-NSC10B-BV02
BES03TA	BES0097		BES03TE	BES0096
BES M30ME-NOC10B-S04G-003	BES M30MI-NOC10B-S04K		BES M30MD-NOC10B-BP02-003	BES M30MI-NOC10B-BV02
10...30 V DC	12...30 V DC	12...30 V DC	10...30 V DC	12...30 V DC
3.5 V	2.5 V	2.5 V	3.5 V	2.5 V
75 V DC	250 V AC (□)	75 V DC	75 V DC	250 V AC (□)
130 mA	200 mA	200 mA	130 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...70 °C	-25...70 °C	-25...70 °C	-25...70 °C	-25...70 °C
150 Hz	400 Hz	400 Hz	150 Hz	400 Hz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 68 per BWN Pr. 20	IP 67	IP67	IP 68 per BWN Pr. 20
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Brass-coated	Brass-coated	Brass-coated	Brass-coated	Brass-coated
PA 12	PA 12	PA 12	PA 12	PA 12
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	2 m PUR cable, 22 AWG	2 m PVC cable, 22 AWG
BCC M415-0000-1A-003-VX44T2-020-C013	BCC M415-0000-1A-003-VX44T2-020-C013	BCC M415-0000-1A-003-VX44T2-020-C013		



DC 3-wire Inductive Global Sensors

Tubular housing, M30x1.5

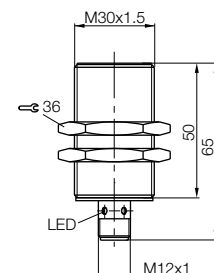
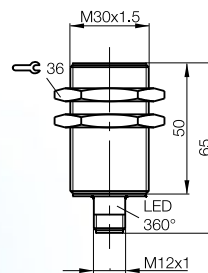
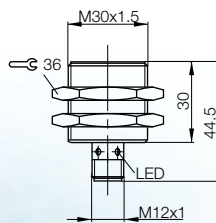


Housing size	M30x1.5	M30x1.5	M30x1.5
Installation type (observe instructions in Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	15 mm	15 mm	15 mm
Assured switching distance s_a	0...12 mm	0...12.2 mm	0...12.2 mm
Sensing distance	2X	2X	2X
PNP, NO	Ordering code	BES00F9	BES00AH
	Part number	BES M30ME-PSC15B-S04G-003	BES M30MI-PSC15B-S04K
PNP, NC	Ordering code	BES00F7	BES009U
	Part number	BES M30ME-POC15B-S04G-003	BES M30MI-POC15B-S04K
NPN, NO	Ordering code		BES009J
	Part number		BES M30MI-NSC15B-S04K
NPN, NC	Ordering code		BES0098
	Part number		BES M30MI-NOC15B-S04K
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.	3.5 V	2.5 V	2.5 V
Rated insulation voltage U_i (protection class)	75 DC	250 V AC (□)	250 V AC (□)
Rated operating current I_o	130 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...70 °C	-25...70 °C	-25...70 °C
Switching frequency f max.	75 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 67
Approvals	CE, cULus	CE, cULus	CE, cULus
Material	Housing Sensing surface	Brass-coated PA 12	Brass-coated PA 12
Connection	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cables	BCC M415-0000-1A-003-VX44T2-020-C013	BCC M415-0000-1A-003-VX44T2-020-C013	BCC M415-0000-1A-003-VX44T2-020-C013

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



Global

DC 3-wire Inductive Global Sensors

Tubular housing, M30×1.5



M30×1.5	M30×1.5	M30×1.5	M30×1.5	M30×1.5
Flush	Flush	Non-flush	Non-flush	Non-flush
15 mm	15 mm	30 mm	30 mm	30 mm
0...12 mm	0...12.2 mm	0...24 mm	0...24 mm	0...24 mm
2X	2X	2X	2X	2X
BES00F4	BES00AA	BES00AZ	BES03RE	BES00AY
BES M30MD-PSC15B-BP02-003	BES M30MI-PSC15B-BV02	BES M30MM-PSC30F-S04K	BES M30MM-PSC30F-S04G	BES M30MM-PSC30F-BV02
BES00F2	BES009T	BES00AU	BES03RC	BES00AT
BES M30MD-POC15B-BP02-003	BES M30MI-POC15B-BV02	BES M30MM-POC30F-S04K	BES M30MM-POC30F-S04G	BES M30MM-POC30F-BV02
BES00F1	BES03RH	BES00AP		BES00AN
BES M30MD-NSC15B-BP02-003	BES M30MI-NSC15B-BV02	BES M30MM-NSC30F-S04K		BES M30MM-NSC30F-BV02
	BES03RJ	BES00AL		BES00AK
	BES M30MI-NOC15B-BV02	BES M30MM-NOC30F-S04K		BES M30MM-NOC30F-BV02
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
3.5 V	2.5 V	2.5 V	2.5 V	2.5 V
75 V DC	250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)
130 mA	200 mA	200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...70 °C	-25...70 °C	-25...70 °C	-25...70 °C	-25...70 °C
75 Hz	100 Hz	300 Hz	300 Hz	300 Hz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 67	IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Brass-coated	Brass-coated	Brass-coated	Brass-coated	Brass-coated
PA 12	PA 12	PBT	PBT	PBT
2 m PUR cable, 22 AWG	2 m PVC cable, 22 AWG	M12 connector, 4-pin BCC M415-0000-1A-003-VX44T2-020-C013	M12 connector, 4-pin BCC M415-0000-1A-003-VX44T2-020-C013	2 m PVC cable, 22 AWG



Inductive sensors

Global DC 3-wire

Tubular housings

Block housings

DC 3-/4-wire

DC 2-wire

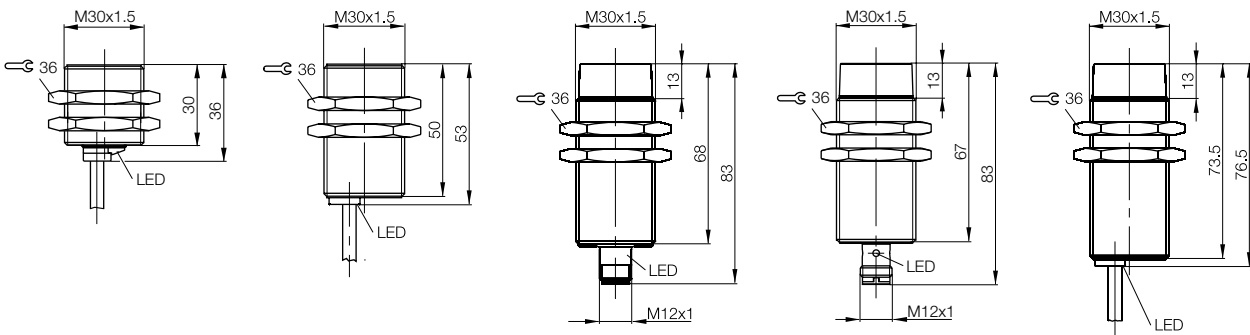
AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories



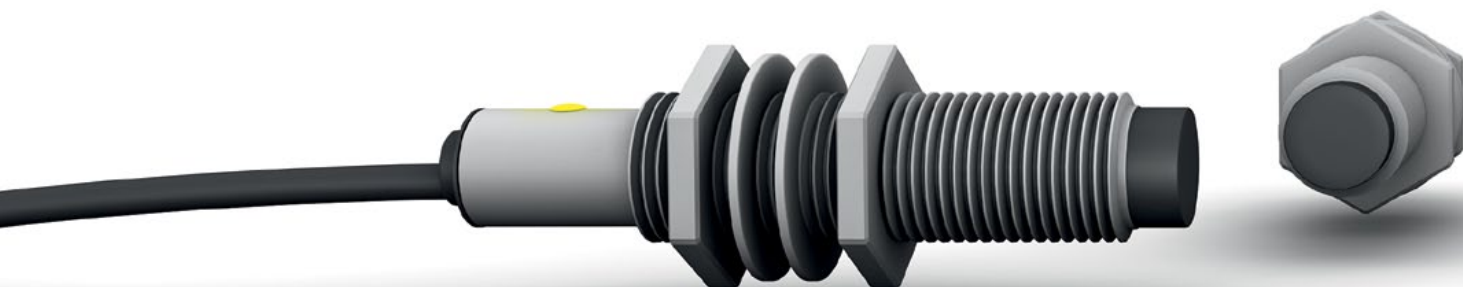


Inductive Sensors

DC 3-/4-wire inductive tubular sensors

Balluff's largest and most popular sensor family DC 3 and 4 wire sensors

are used extensively around the world. Available from \varnothing 3 mm to 80x80 mm for practically every application in automation. These high-quality sensors are designed and manufactured according to worldwide standards and the latest technology. Our 100 % final inspection of all products guarantees that only carefully tested sensors leave our plants. Balluff DC 3 and 4 wire sensors are available with PNP, NPN, and complementary outputs and come with Balluff's lifetime warranty.



Tubular housings

Ø 3 mm	493
Ø 4 mm	494
M4x0.5	497
M5x0.5	498
Ø 6.5 mm	502
Ø 8 mm	512
M8x1	513
M12x1	530
M18x1	538
M30x1.5	547

Block designs

5x5 mm	552
8x8 mm	556
8x16x4 mm (R04)	562
10x30x6 mm (R03)	566
30x20x10 mm	567
16x30x10 mm	568
20x32x8 mm (R01)	569
20x50x10 mm	571
26x40x12 mm (R05)	572
42x48x22 mm	574
74x60.5x28 mm	575
40x40 mm (Unicompact)	577
40x40 mm (Unisensor)	581
80x80 mm (Maxisensor)	588

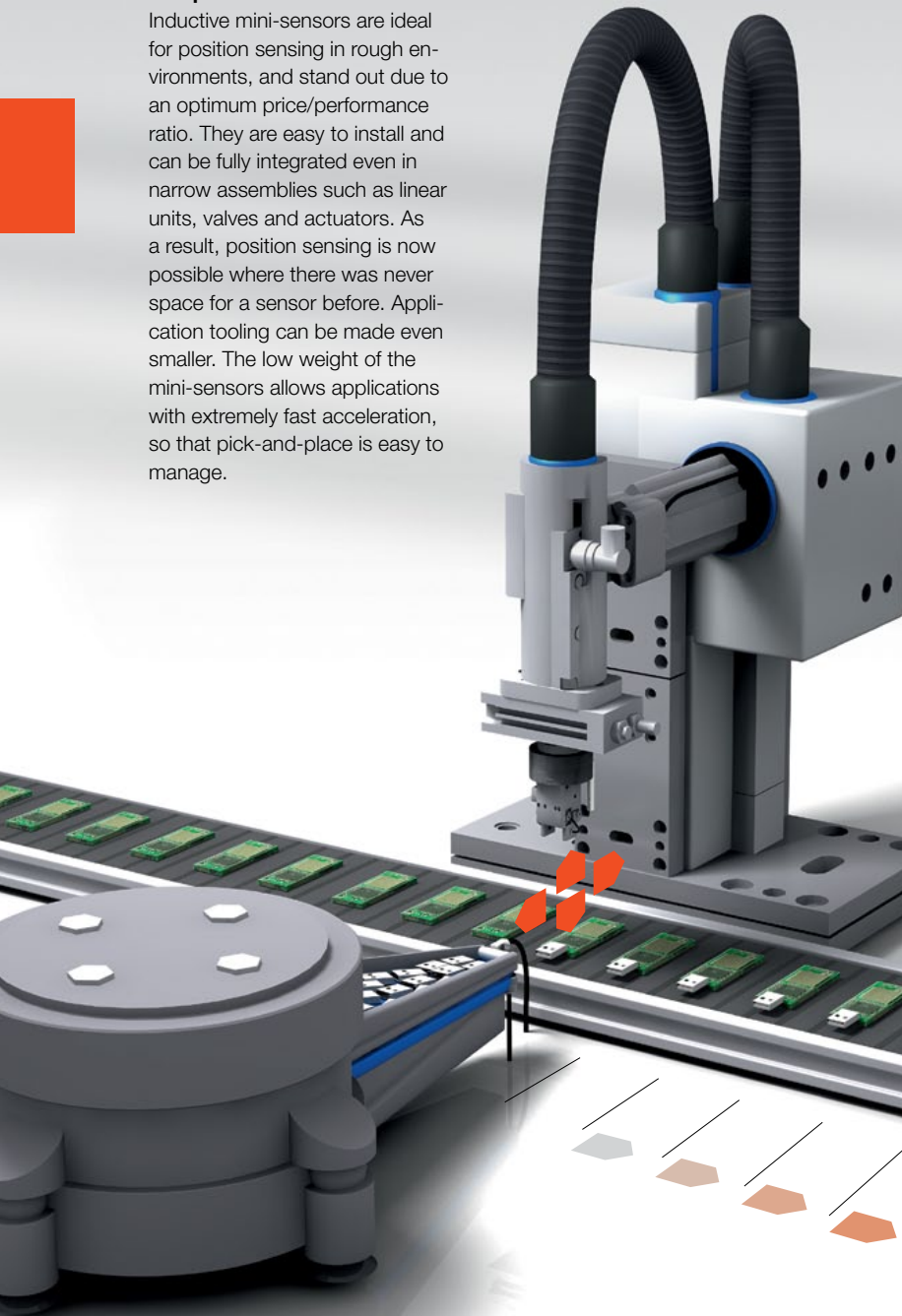


DC 3-/4-wire Inductive Tubular Sensors

Inductive mini-sensors

High-performance and compact

Inductive mini-sensors are ideal for position sensing in rough environments, and stand out due to an optimum price/performance ratio. They are easy to install and can be fully integrated even in narrow assemblies such as linear units, valves and actuators. As a result, position sensing is now possible where there was never space for a sensor before. Application tooling can be made even smaller. The low weight of the mini-sensors allows applications with extremely fast acceleration, so that pick-and-place is easy to manage.



Housing size		
Installation type (observe instructions in the Basic Information chapter)		
Rated switching distance s_n		
Assured switching distance s_a		
Sensing distance		
PNP, NO	Ordering code	
	Part number	
PNP, NC	Ordering code	
	Part number	
NPN, NO	Ordering code	
	Part number	
Supply voltage U_B		
Voltage drop U_d at I_o max.		
Rated insulation voltage U_i		
Rated operating current I_o		
Polarity reversal protected/transposition protected/short-circuit protected		
Ambient temperature T_a		
Switching frequency f max.		
Output function indicator		
Degree of protection as per IEC 60529		
Approvals		
Special properties		
Material	Housing	
	Sensing surface	
Connection		
Suggested mating cable		

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.

SuperShorties and slim designs

Inductive mini sensors are available with especially small diameter: with 3 mm, 4 mm and 5 mm. They are also available as compact short housings, with lengths of just 6 mm — offering the shortest inductive sensors on the market.

- The most compact on the market: can be fully integrated
- Unmatched in thinness and, as SuperShorty, unmatched in their short length
- Low weight (0.7 g) for extreme accelerations



DC 3-/4-wire Inductive Tubular Sensors

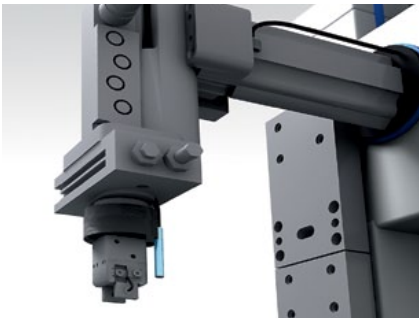
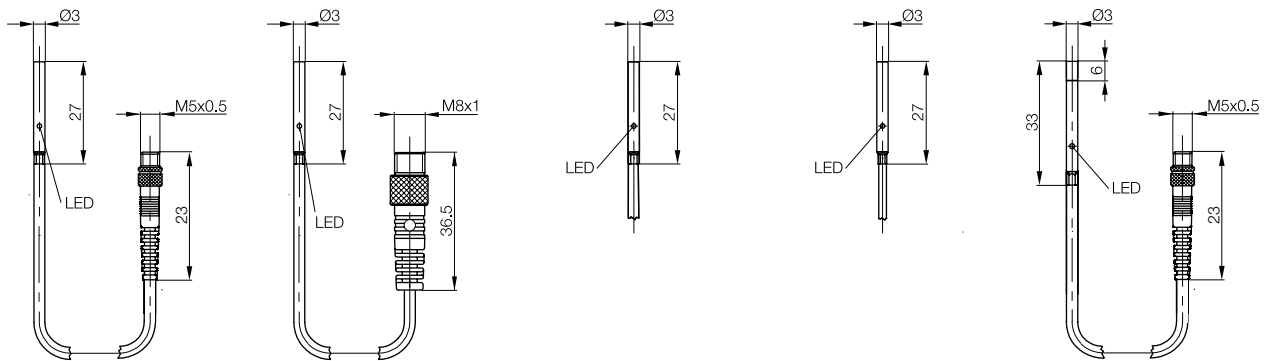
Tubular housing, Ø 3 mm



Ø 3 mm	Ø 3 mm	Ø 3 mm	Ø 3 mm	Ø 3 mm
Flush	Flush	Flush	Flush	Non-flush
1 mm	1 mm	1 mm	1 mm	3 mm
0...0.8 mm	0...0.8 mm	0...0.8 mm	0...0.8 mm	0...2.3 mm
2X	2X	2X	2X	2X
BES0468	BES00M5	BES00M3		BES00MH
BES 516-3044-G-E4-C-S26-00,3	BES 516-3044-G-E4-C-S49-00,3	BES 516-3044-G-E4-C-PU-02		BES 516-3048-G-E4-C-S26-00,3
	BES0415	BES00M7		
	BES G03ED-POC10B-EP00,3-GS49	BES 516-3045-G-E4-C-PU-02		
			BES00M9	
			BES 516-3046-G-E4-L-PU-02	
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	21.6...26.4 V DC
2.5 V	2.5 V	2.5 V	1.5 V	2.5 V
75 V DC	75 V DC	75 V DC	75 V DC	75 V DC
100 mA	100 mA	100 mA	100 mA	50 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/No	Yes/Yes/Yes
-25...+70°C	-25...+70°C	-25...+70°C	0...+70 °C	0...+70 °C
2 kHz	2 kHz	2 kHz	5 kHz	3 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 67	IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus	CE	CE, cULus
Slim design	Slim design	Slim design	Slim design	Slim design
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
POM	POM	POM	POM	PET-C
0.3 m PUR cable with M5 connector, 4-pin BKS-B 25-3-PU-03	0.3 m PUR cable with M8 connector, 3-pin BCC M313-0000-10-001-EX43T2-020	2 m PUR cable, 26 AWG	2 m PUR cable, 26 AWG	0.3 m PUR cable with M5 connector, 4-pin BKS-B 25-3-PU-03



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire Tubular housings
- Block housings
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Analog distance measurement
- Special properties
- Special accessories



DC 3-/4-wire Inductive Tubular Sensors

Tubular housings, Ø 3 mm, Ø 4 mm

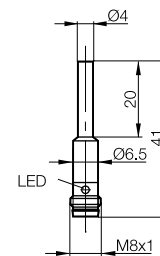
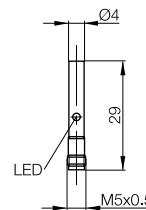
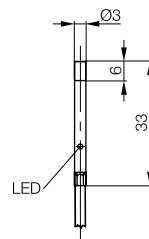


Housing size	Ø 3 mm	Ø 4 mm	Ø 4 mm
Installation type (observe instructions in the Basic Information chapter)	Non-flush	Flush	Flush
Rated switching distance s_n	3 mm	0.8 mm	0.8 mm
Assured switching distance s_a	0...2.3 mm	0...0.65 mm	0...0.65 mm
Sensing distance	3X	1X	1X
PNP, NO	Ordering code Part number	BES00ME BES 516-3048-G-E4-C-PU-02	BES0122 BES G04EC-PSC08B-S26G
PNP, NC	Ordering code Part number	BES00MJ BES 516-3049-G-E4-C-PU-02	BES0120 BES G04EC-POC08B-S26G
NPN, NO	Ordering code Part number	BES011Y BES G04EC-NSC08B-S26G	
NPN, NC	Ordering code Part number	BES011W BES G04EC-NOC08B-S26G	BES00KF BES 516-3018-E5-C-S49
Supply voltage U_B	21.6...26.4 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.	2.5 V	3 V	3 V
Rated insulation voltage U_i	75 V DC	75 V DC	75 V DC
Rated operating current I_o	50 mA	100 mA	100 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	0...+70 °C	-25...+70°C	-25...+70°C
Switching frequency f max.	3 kHz	3 kHz	3 kHz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67
Approvals	CE, cULus	CE, cULus	CE, cULus
Special properties	Slim design, large switching distance	Slim design	Slim design
Material	Housing: Stainless steel Sensing surface: PET-C	Stainless steel PBT	Stainless steel PBT
Connection	2 m PUR cable, 26 AWG	M5 connector, 4-pin	M8 connector, 3-pin
Suggested mating cable		BKS-B 25-3-PU-03	BCC M313-0000-10-001-EX43T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, Ø 4 mm



Ø 4 mm	Ø 4 mm	Ø 4 mm	Ø 4 mm	Ø 4 mm
Flush	Flush	Flush	Flush	Flush
0.8 mm	0.8 mm	0.8 mm	1.5 mm	1.5 mm
0...0.65 mm	0...0.65 mm	0...0.65 mm	0...1.2 mm	0...1.2 mm
1X	1X	1X	2X	2X
BES00J3	BES00J0	BES00HW	BES012F	BES00JN
BES 516-3007-E4-C-S49-00,3	BES 516-3007-E4-C-S4-00,3	BES 516-3007-E4-C-PU-02	BES G04ED-PSC15B-S26G	BES 516-3007-G-E5-C-S49
BES00K3		BES00K1	BES012A	BES00KA
BES 516-3017-E4-C-S49-00,3		BES 516-3017-E4-C-PU-02	BES G04ED-POC15B-S26G	BES 516-3017-G-E5-C-S49
		BES00JP	BES0126	BES00K0
		BES 516-3008-E4-C-PU-02	BES G04ED-NSC15B-S26G	BES 516-3008-G-E5-C-S49
		BES00KC	BES0123	BES00KK
		BES 516-3018-E4-C-PU-02	BES G04ED-NOC15B-S26G	BES 516-3018-G-E5-C-S49
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
3 V	3 V	3 V	3 V	3 V
75 V DC	75 V DC	75 V DC	75 V DC	75 V DC
100 mA	100 mA	100 mA	100 mA	100 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C
3 kHz	3 kHz	3 kHz	3 kHz	3 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 67	IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Slim design	Slim design	Slim design	Slim design	Slim design
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
PBT	PBT	PBT	PBT	PBT
0.3 m PUR cable with M8 connector, 3-pin	0.3 m PUR cable with M12 connector, 4-pin	2 m PUR cable, 26 AWG	M5 connector, 4-pin	M8 connector, 3-pin
BCC M313-0000-10-001-EX43T2-020	BCC M415-0000-1A-003-EX44T2-020		BKS-B 25-3-PU-03	BCC M313-0000-10-001-EX43T2-020



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

Tubular housings

Block housings

DC 2-wire

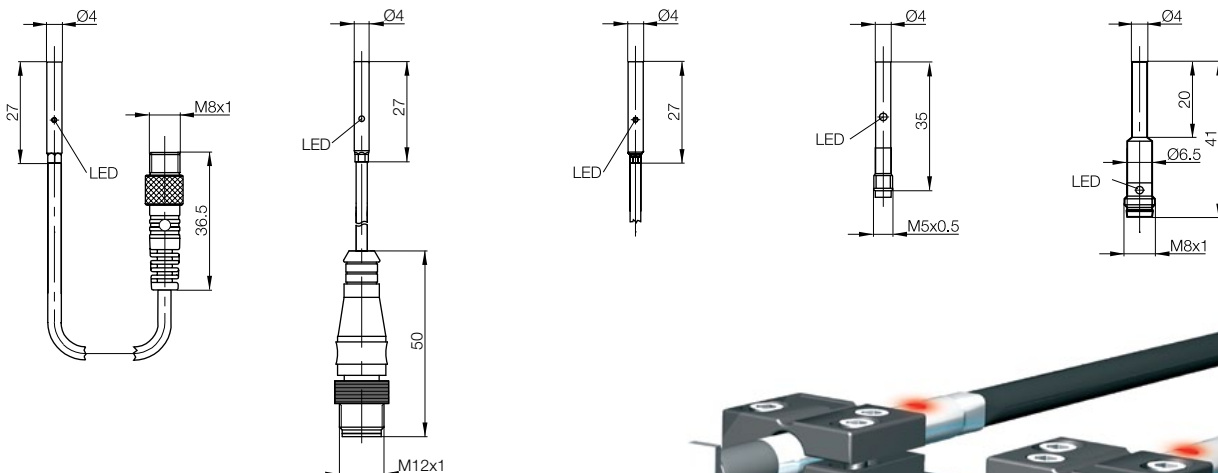
AC/DC 2-wire

AC 2-wire

Analog distance measurement

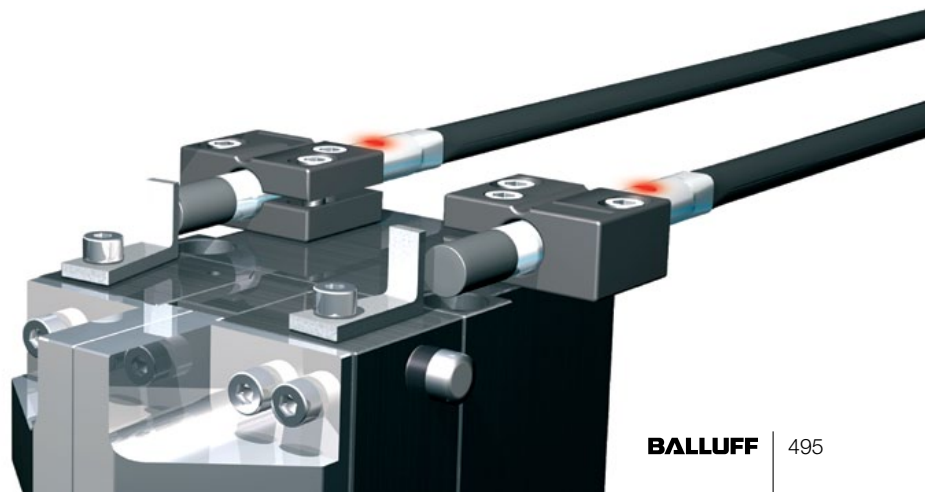
Special properties

Special accessories



mini.s Mini design

Ø 3 mm inductive sensors: Large switching distance with the smallest installation space.



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, Ø 4 mm

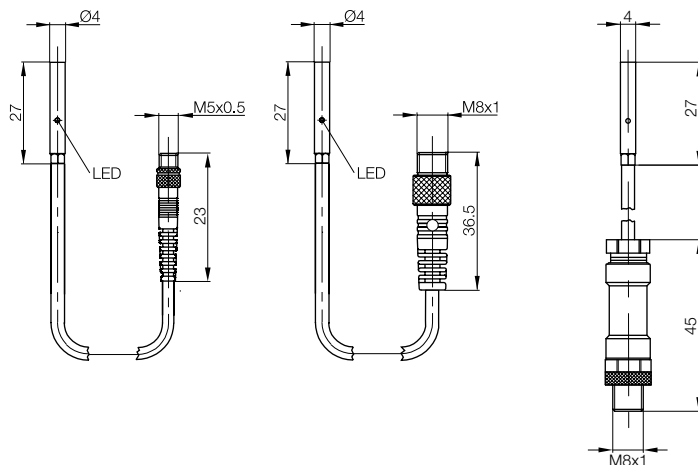


Housing size		Ø 4 mm	Ø 4 mm	Ø 4 mm
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush	Flush
Rated switching distance s_n		1.5 mm	1.5 mm	1.5 mm
Assured switching distance s_a		0...1.2 mm	0...1.2 mm	0...1.2 mm
Sensing distance		2X	2X	2X
PNP, NO	Ordering code	BES00J8	BES00JJ	
	Part number	BES 516-3007-G-E4-C-S26-00,2	BES 516-3007-G-E4-C-S49-00,3	
PNP, NC	Ordering code		BES00K9	
	Part number		BES 516-3017-G-E4-C-S49-00,3	
NPN, NO	Ordering code			BES0156
	Part number			BES 516-3008-G-E4-C-S49-PU-00,3
NPN, NC	Ordering code			
	Part number			
Supply voltage U_B		10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.		3 V	3 V	3 V
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC
Rated operating current I_o		100 mA	100 mA	100 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70°C	-25...+70°C	-25...+70°C
Switching frequency f max.		3 kHz	3 kHz	1.8 kHz
Output function indicator		Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67	IP 67
Approvals		CE, cULus	CE, cULus	CE, cULus
Special properties		Slim design	Slim design	Slim design
Material	Housing	Stainless steel	Stainless steel	Stainless steel
	Sensing surface	PBT	PBT	PBT
Connection		0.2 m PUR cable with M5 connector, 4-pin	0.3 m PUR cable with M8 connector, 3-pin	0.3 m PUR cable with M8 connector, 3-pin
Suggested mating cable		BKS-B 25-3-PU-03	BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Tubular Sensors

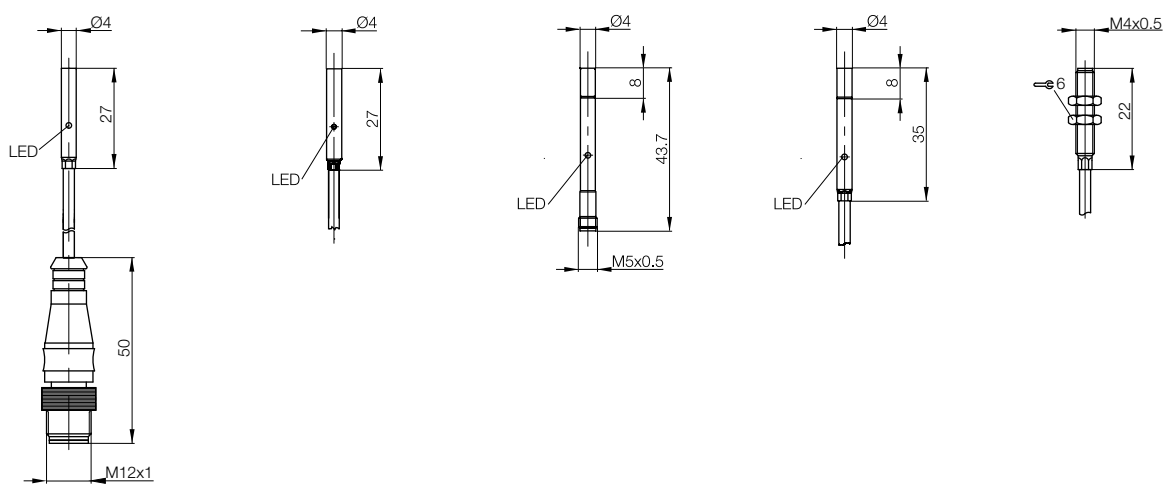
Tubular housings, Ø 4 mm, M4x0.5



Ø 4 mm	Ø 4 mm	Ø 4 mm	Ø 4 mm	M4x0.5
Flush	Flush	Non-flush	Non-flush	Flush
1.5 mm	1.5 mm	5 mm	5 mm	0.6 mm
0...1.2 mm	0...1.2 mm	0...4 mm	0...4 mm	0...0.42 mm
2X	2X	3X	3X	1X
BES00JA	BES00J6	BES012K	BES012H	BES01P0
BES 516-3007-G-E4-C-S4-00,3	BES 516-3007-G-E4-C-PU-02	BES G04ED-PSC50F-S26G	BES G04ED-PSC50F-EP02	BES M04EC-PSD06B-BP02
	BES00K5	BES012E	BES0127	
	BES 516-3017-G-E4-C-PU-02	BES G04ED-POC50F-S26G	BES G04ED-NSC50F-EP02	
	BES00JW	BES0129		
	BES 516-3008-G-E4-C-PU-02	BES G04ED-NSC50F-S26G		
	BES00KH	BES0125		
	BES 516-3018-G-E4-C-PU-02	BES G04ED-NOC50F-S26G		
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
3 V	3 V	2.5 V	2.5 V	2.5 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
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C
3 kHz	3 kHz	3 kHz	3 kHz	2 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	No
IP 67	IP 67	IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Slim design	Slim design	Slim design, large switching distance	Slim design, large switching distance	Slim design
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
PBT	PBT	PET-C	PET-C	POM
0.3 m PUR cable with M12 connector, 4-pin	2 m PUR cable, 26 AWG	M5 connector, 4-pin	2 m PUR cable, 26 AWG	2 m PUR cable, 26 AWG
BCC M415-0000-1A-003-EX44T2-020		BKS-B 25-3-PU-03		



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire Tubular housings
- Block housings
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Analog distance measurement
- Special properties
- Special accessories



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M5x0.5

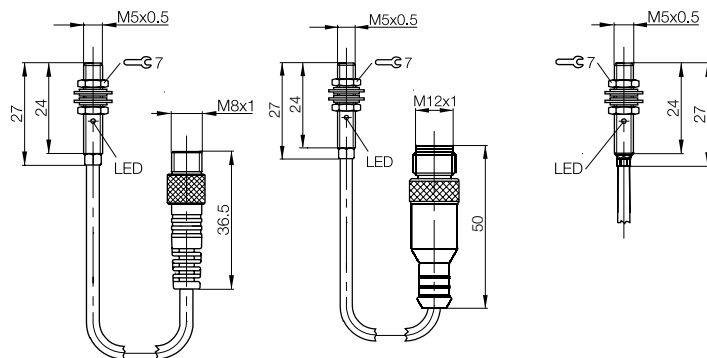


Housing size		M5x0.5	M5x0.5	M5x0.5
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush	Flush
Rated switching distance s_n		1.5 mm	1.5 mm	1.5 mm
Assured switching distance s_a		0...1.2 mm	0...1.2 mm	0...1.2 mm
Sensing distance		2X	2X	2X
PNP, NO	Ordering code	BES00HC	BES00H7	BES00H3
	Part number	BES 516-3005-G-E4-C-S49-00,3	BES 516-3005-G-E4-C-S4-00,3	BES 516-3005-G-E4-C-PU-02
PNP, NC	Ordering code	BES00L4		BES00L2
	Part number	BES 516-3022-G-E4-C-S49-00,3		BES 516-3022-G-E4-C-PU-02
NPN, NO	Ordering code			BES00HM
	Part number			BES 516-3006-G-E4-C-PU-02
NPN, NC	Ordering code			
	Part number			
Supply voltage U_B		10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.		3 V	3 V	3 V
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC
Rated operating current I_o		100 mA	100 mA	100 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70°C	-25...+70°C	-25...+70°C
Switching frequency f max.		3 kHz	3 kHz	3 kHz
Output function indicator		Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67	IP 67
Approvals		CE, cULus	CE, cULus	CE, cULus
Special properties		Slim design	Slim design	Slim design
Material	Housing	Stainless steel	Stainless steel	Stainless steel
	Sensing surface	PBT	PBT	PBT
Connection		0.3 m PUR cable with M8 connector, 3-pin	0.3 m PUR cable with M12 connector, 4-pin	2 m PUR cable, 26 AWG
Suggested mating cable		BCC M313-0000-10-001-EX43T2-020	BCC M415-0000-1A-003-EX44T2-020	

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M5x0.5



M5x0.5	M5x0.5	M5x0.5		
Non-flush	Non-flush	Non-flush		
5 mm	5 mm	5 mm		
0...4 mm	0...4 mm	0...4 mm		
3X	3X	3X		
BES013H	BES013C	BES013E		
BES M05ED-PSC50F-S26G	BES M05ED-PSC50F-EP00,3-GS04	BES M05ED-PSC50F-EP02		
BES0139				
BES M05ED-POC50F-S26G				
BES0136		BES0134		
BES M05ED-NSC50F-S26G		BES M05ED-NSC50F-EP02		
BES0132				
BES M05ED-NOC50F-S26G				
10...30 V DC	10...30 V DC	10...30 V DC		
2.5 V	2.5 V	2.5 V		
75 V DC	75 V DC	75 V DC		
100 mA	100 mA	100 mA		
Yes/Yes/Yes	No/Yes/Yes	Yes/Yes/Yes		
-25...+70°C	-25...+70°C	-25...+70°C		
3 kHz	3 kHz	3 kHz		
Yellow LED	Yellow LED	Yellow LED		
IP 67	IP 67	IP 67		
CE, cULus	CE, cULus	CE, cULus		
Slim design, large switching distance	Slim design, large switching distance	Slim design, large switching distance		
Stainless steel	Stainless steel	Stainless steel		
PET-C	PET-C	PET-C		
M5 connector, 4-pin	0.3 m PUR cable with M12 connector, 4-pin	2 m PUR cable, 26 AWG		
BKS-B 25-3-PU-03	BCC M415-0000-1A-003-EX44T2-020			



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

Tubular housings

Block housings

DC 2-wire

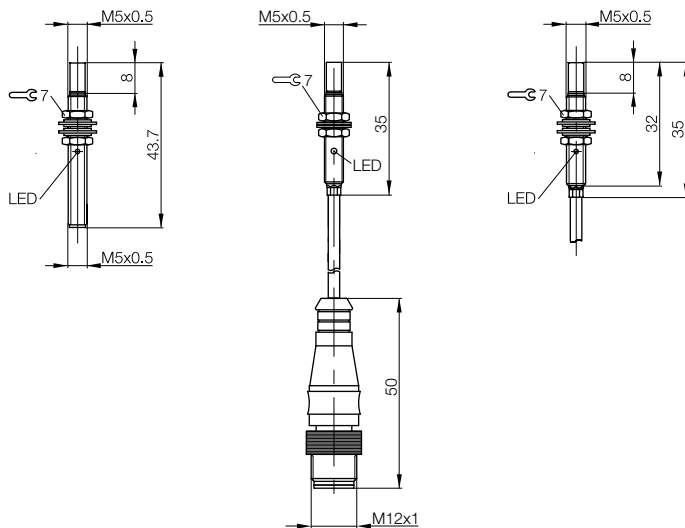
AC/DC 2-wire

AC 2-wire

Analog distance measurement

Special properties

Special accessories



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M5×0.5

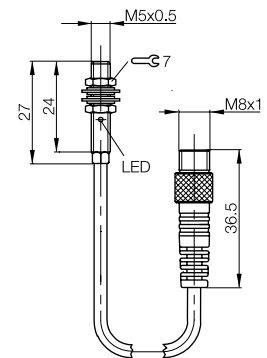
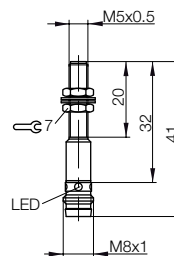
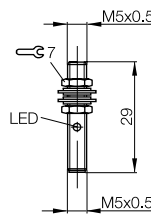


	M5×0.5	M5×0.5	M5×0.5
Housing size	M5×0.5	M5×0.5	M5×0.5
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	0.8 mm	0.8 mm	0.8 mm
Assured switching distance s_a	0...0.65 mm	0...0.65 mm	0...0.65 mm
Sensing distance	1X	1X	1X
PNP, NO	Ordering code Part number	BES012Z BES M05EC-PSC08B-S26G	BES00H2 BES 516-3005-E5-C-S49
PNP, NC	Ordering code Part number	BES012Y BES M05EC-POC08B-S26G	BES00L1 BES 516-3022-E5-C-S49
NPN, NO	Ordering code Part number	BES012W BES M05EC-NSC08B-S26G	BES00HL BES 516-3006-E5-C-S49
NPN, NC	Ordering code Part number	BES012U BES M05EC-NOC08B-S26G	BES00L8 BES 516-3023-E5-C-S49
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.	3 V	3 V	3 V
Rated insulation voltage U_i	75 V DC	75 V DC	75 V DC
Rated operating current I_o	100 mA	100 mA	100 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70°C	-25...+70°C	-25...+70°C
Switching frequency f max.	3 kHz	3 kHz	3 kHz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67
Approvals	CE, cULus	CE, cULus	CE, cULus
Special properties	Slim design	Slim design	Slim design
Material	Housing: Stainless steel Sensing surface: PBT	Stainless steel PBT	Stainless steel PBT
Connection	M5 connector, 4-pin	M8 connector, 3-pin	0.3 m PUR cable with M8 connector, 3-pin
Suggested mating cable	BKS-B 25-3-PU-03	BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M5x0.5



M5x0.5	M5x0.5	M5x0.5	M5x0.5	M5x0.5	M5x0.5
Flush	Flush	Flush	Flush	Flush	Flush
0.8 mm	0.8 mm	1.5 mm	1.5 mm	1.5 mm	1.5 mm
0...0.65 mm	0...0.65 mm	0...1.2 mm	0...1.2 mm	0...1.2 mm	0...1.2 mm
1X	1X	2X	2X	2X	2X
BES00FW	BES00FT	BES013A	BES00HF	BES00H5	
BES 516-3005-E4-C-S4-00,3	BES 516-3005-E4-C-PU-02	BES M05ED-PSC15B-S26G	BES 516-3005-G-E5-C-S49	BES 516-3005-G-E4-C-S26-00,3	
	BES00KZ	BES0137			
	BES 516-3022-E4-C-PU-02	BES M05ED-POC15B-S26G			
	BES00HJ	BES0133			
	BES 516-3006-E4-C-PU-02	BES M05ED-NSC15B-S26G			
	BES00L6	BES0130			
	BES 516-3023-E4-C-PU-02	BES M05ED-NOC15B-S26G			
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
3 V	3 V	3 V	3 V	3 V	3 V
75 V DC	75 V DC	75 V DC	75 V DC	75 V DC	75 V DC
100 mA	100 mA	100 mA	100 mA	100 mA	100 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C
3 kHz	3 kHz	3 kHz	3 kHz	3 kHz	3 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 67	IP 67	IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Slim design	Slim design	Slim design	Slim design	Slim design	Slim design
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
PBT	PBT	PBT	PBT	PBT	PBT
0.3 m PUR cable with M12 connector, 4-pin	2 m PUR cable, 26 AWG	M5 connector, 4-pin	M8 connector, 3-pin	0.3 m PUR cable with M5 connector, 4-pin	0.3 m PUR cable with M5 connector, 4-pin
BCC M415-0000-1A-003-EX44T2-020		BKS-B 25-3-PU-03	BCC M313-0000-10-001-EX43T2-020	BKS-B 25-3-PU-03	



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

Tubular housings

Block housings

DC 2-wire

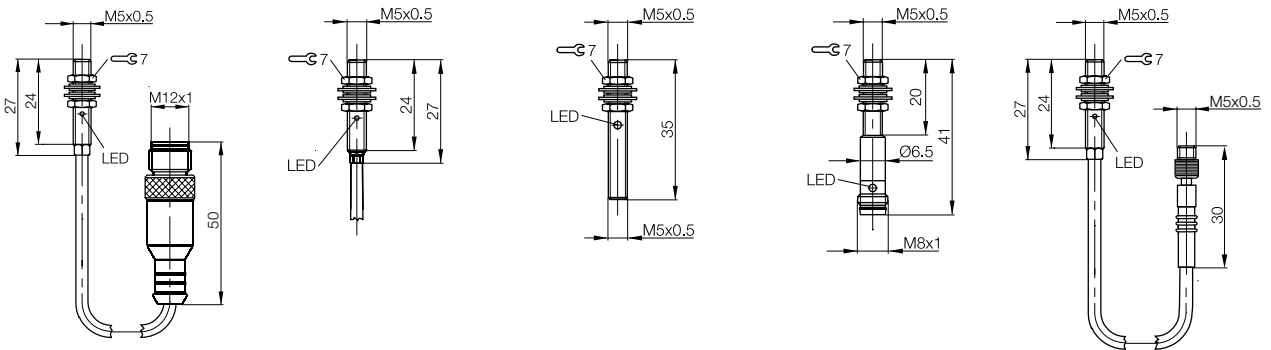
AC/DC 2-wire

AC 2-wire

Analog distance measurement

Special properties

Special accessories



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, Ø 6.5 mm



Housing size		
Installation type (observe instructions in Basic Information chapter)		
Rated switching distance s_n		
Assured switching distance s_a		
Sensing distance		
PNP, NO	Ordering code	
	Part number	
PNP, NC	Ordering code	
	Part number	
NPN, NO	Ordering code	
	Part number	
NPN, NC	Ordering code	
	Part number	
Supply voltage U_B		
Voltage drop U_d at I_o max.		
Rated insulation voltage U_i (protection class)		
Rated operating current I_o		
Polarity reversal protected/transposition protected/short-circuit protected		
Ambient temperature T_a		
Switching frequency f max.		
Output function indicator		
Degree of protection as per IEC 60529		
Approvals		
Material	Housing	
	Sensing surface	
Connection		
Suggested mating cable		

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.

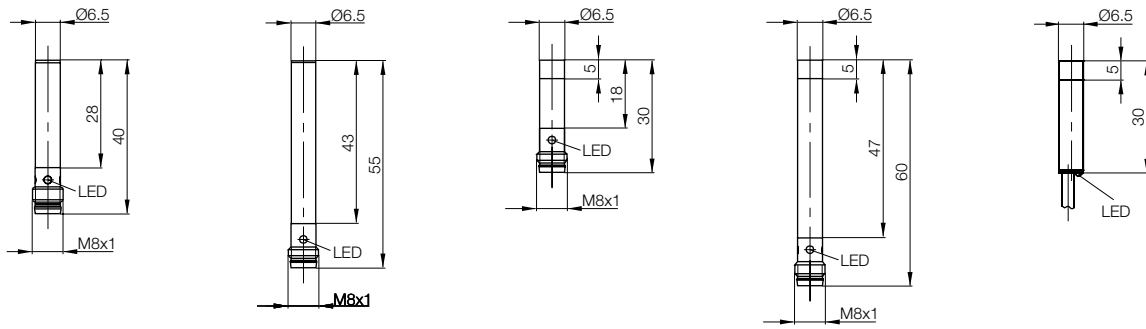
DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, Ø 6.5 mm



Ø 6.5 mm	Ø 6.5 mm	Ø 6.5 mm	Ø 6.5 mm	Ø 6.5 mm
Flush	Flush	Non-flush	Non-flush	Non-flush
2 mm	2 mm	4 mm	4 mm	4 mm
0...1.6 mm	0...1.6 mm	0...3.2 mm	0...3.2 mm	0...3.2 mm
2X	2X	2X	2X	2X
BES03R9	BES03P4	BES0005	BES03P5	BES000F
BES G06EE-PSC20B-S49G-003	BES G06EH-PSC20B-S49G	BES G06EB-PSC40F-S49G	BES G06EH-PSC40F-S49G	BES G06ED-PSC40F-BV02
BES03RY	BES03RT	BES0004	BES03T1	BES000C
BES G06EE-POC20B-S49G-003	BES G06EH-POC20B-S49G	BES G06EB-POC40F-S49G	BES G06EH-POC40F-S49G	BES G06ED-POC40F-BV02
BES03RZ		BES0003	BES03T2	BES0009
BES G06EE-NSC20B-S49G-003		BES G06EB-NSC40F-S49G	BES G06EH-NSC40F-S49G	BES G06ED-NSC40F-BV02
BES03T0		BES0002	BES03T3	BES0007
BES G06EE-NOC20B-S49G-003		BES G06EB-NOC40F-S49G	BES G06EH-NOC40F-S49G	BES G06ED-NOC40F-BV02
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2.5 V	2.5 V	2.5 V	2.5 V
75 V DC	75 V DC	75 V DC	75 V DC	250 V AC (□)
200 mA	200 mA	200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...70 °C	-25...70 °C	-25...70 °C	-25...70 °C	-25...70 °C
700 Hz	1.5 kHz	1.5 kHz	1.5 kHz	1.5 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 67	IP 67	IP 67	IP 68 per BWN Pr. 20
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
PBT	PBT	PA 12	PBT	PBT
M8 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin	2 m PVC cable, 26 AWG
BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020	

-  Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire Tubular housings
- Block housings
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Analog distance measurement
- Special properties
- Special accessories



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, Ø 6.5 mm



SUPERSHORTY™

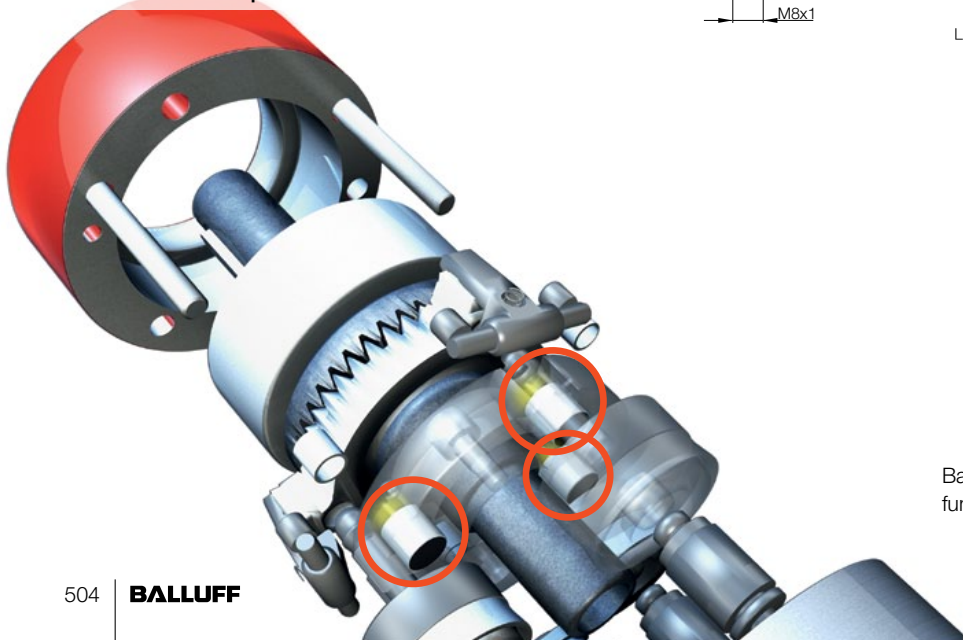
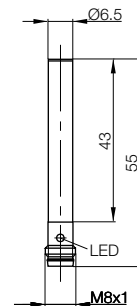
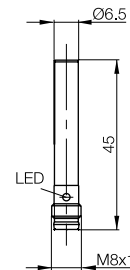
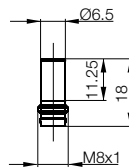


Housing size		Ø 6.5 mm	Ø 6.5 mm	Ø 6.5 mm
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush	Flush
Rated switching distance s_n		1.5 mm	1.5 mm	1.5 mm
Assured switching distance s_a		0...1.2 mm	0...1.2 mm	0...1.2 mm
Sensing distance		1X	1X	1X
PNP, NO	Ordering code	BES025N	BES00ZC	BES01KJ
	Part number	BES G06EA-PSD15B-S49G	BES 516-371-E5-C-S49	BES 516-371-S49-C
PNP, NC	Ordering code	BES025J		
	Part number	BES G06EA-POD15B-S49G		
NPN, NO	Ordering code	BES025F		
	Part number	BES G06EA-NSD15B-S49G		
NPN, NC	Ordering code	BES025A		
	Part number	BES G06EA-NOD15B-S49G		
Supply voltage U_B		10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.		2.5 V	2.5 V	2.5 V
Rated insulation voltage U_i (protection class)		75 V DC	75 V DC	75 V DC
Rated operating current I_o		150 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70°C	-25...+70°C	-25...+70°C
Switching frequency f max.		3 kHz	3 kHz	3 kHz
Output function indicator		No	Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67	IP 67
Approvals		CE, cULus	CE, cULus	CE, cULus
Special properties		Short design		
Material	Housing	Stainless steel	Stainless steel	Stainless steel
	Sensing surface	PBT	PBT	PBT
Connection		M8 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin
Suggested mating cable		BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



Balluff's SuperShorty sensors monitor the function of a pneumatic stepping motor.

DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, Ø 6.5 mm



Ø 6.5 mm	Ø 6.5 mm	Ø 6.5 mm	Ø 6.5 mm	Ø 6.5 mm
Flush	Flush	Flush	Flush	Flush
1.5 mm	1.5 mm	1.5 mm	1.5 mm	1.5 mm
0...1.2 mm	0...1.2 mm	0...1.2 mm	0...1.2 mm	0...1.2 mm
1X	1X	1X	1X	1X
BES0253	BES0254	BES00ZA	BES00Z8	BES0256
BES G06E60-PSC15B-EP00,3-GS26	BES G06E60-PSC15B-EP00,3-GS49	BES 516-371-E4-C-S49-00,3	BES 516-371-E4-C-S4-00,3	BES G06E60-PSC15B-EP02
				BES0251
				BES G06E60-POC15B-EP02
	BES024Y			BES024Z
	BES G06E60-NSC15B-EP00,3-GS49			BES G06E60-NSC15B-EP02
				BES024W
				BES G06E60-NOC15B-EP02
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2.5 V	2.5 V	2.5 V	2.5 V
75 V DC	75 V DC	250 V AC (□)	250 V AC (□)	75 V DC
150 mA	150 mA	200 mA	200 mA	150 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C
3 kHz	3 kHz	3 kHz	3 kHz	3 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 67	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 67
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Short design	Short design			Short design
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
PBT	PBT	PBT	PBT	PBT
0.3 m PUR cable with M5 connector, 4-pin	0.3 m PUR cable with M8 connector, 3-pin	0.3 m PUR cable with M8 connector, 3-pin	0.3 m PUR cable with M12 connector, 4-pin	2 m PUR cable, 28 AWG
BKS-B 25-3-PU-03	BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020	BCC M415-0000-1A-003-EX44T2-020	



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

Tubular housings

Block housings

DC 2-wire

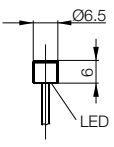
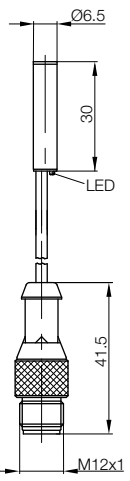
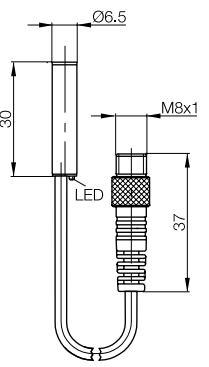
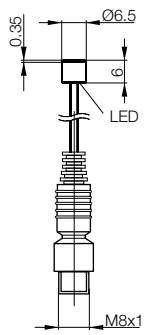
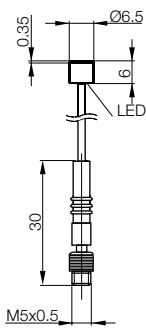
AC/DC 2-wire

AC 2-wire

Analog distance measurement

Special properties

Special accessories



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, Ø 6.5 mm

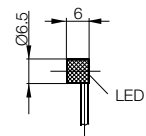
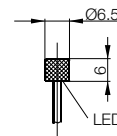
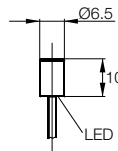


Housing size	Ø 6.5 mm	Ø 6.5 mm	Ø 6.5 mm
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	1.5 mm	1.5 mm	1.5 mm
Assured switching distance s_a	0...1.2 mm	0...1.2 mm	0...1.2 mm
Sensing distance	1X	1X	1X
PNP, NO	Ordering code Part number	BES025M BES G06EA-PSC15B-EP02	BES026F BES K06K60-PSC15B-EP02
PNP, NC	Ordering code Part number	BES025H BES G06EA-POC15B-EP02	BES026E BES K06K60-POC15B-EP02
NPN, NO	Ordering code Part number	BES025E BES G06EA-NSC15B-EP02	BES026C BES K06K60-NSC15B-EP02
NPN, NC	Ordering code Part number	BES0259 BES G06EA-NOC15B-EP02	BES026A BES K06K60-NOC15B-EP02
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.	2.5 V	2.5 V	2.5 V
Rated insulation voltage U_i (protection class)	75 V DC	75 V DC	75 V DC
Rated operating current I_o	150 mA	150 mA	150 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70°C	-25...+70°C	-25...+70°C
Switching frequency f max.	3 kHz	3 kHz	3 kHz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 65	IP 65
Approvals	CE, cULus	CE, cULus	CE, cULus
Special properties	Short design	Short design	Short design
Material	Housing: Stainless steel Sensing surface: PBT	PBT	PBT
Connection	2 m PUR cable, 28 AWG	2 m PUR cable, 28 AWG	2 m PUR cable, 28 AWG
Suggested mating cable			

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.

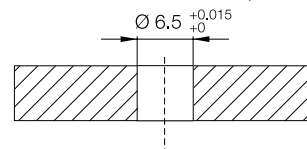


Features

- Simple installation with glue-in sensor
- Flexible use with optional radial cable outlet

Installation recommended for Ø 6.5 mm smooth sensor

Prepare and clean drill hole and sensor according to the specifications of the glue used. Coat hole and sensor with adhesive and position sensor in hole. Allow to cure. For additional instructions, see the data sheet.



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, Ø 6.5 mm



SUPERSHORTY™

Ø 6.5 mm	Ø 6.5 mm	Ø 6.5 mm	Ø 6.5 mm	Ø 6.5 mm
Flush	Flush	Flush	Flush	Flush
1.5 mm	1.5 mm	1.5 mm	2 mm	2 mm
0...1.2 mm	0...1.2 mm	0...1.2 mm	0...1.6 mm	0...1.6 mm
1X	1X	1X	2X	2X
BES00Z2	BES00Z5	BES01K7		BES037K
BES 516-371-E4-C-02	BES 516-371-E4-C-PU-02	BES 516-371-EO-C-02		BES 516-371-SA15-C-S49
			BES025K	
			BES G06EA-POD20B-S49G	
BES00ZW	BES0100	BES01L1		
BES 516-372-E4-C-02	BES 516-372-E4-C-PU-02	BES 516-372-EO-C-02		
			BES025C	
			BES G06EA-NOD20B-S49G	
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2.5 V	2.5 V	2.5 V	2.5 V
250 V AC (□)	250 V AC (□)	250 V AC (□)	75 V DC	75 V DC
200 mA	200 mA	200 mA	150 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C
3 kHz	3 kHz	3 kHz	3 kHz	1.5 kHz
Yellow LED	Yellow LED	Yellow LED	No	Yellow LED
IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
			Short design	
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
PBT	PBT	PBT	PBT	PBT
2 m PVC cable, 26 AWG	2 m PUR cable, 26 AWG	2 m PVC cable, 26 AWG	M8 connector, 3-pin	M8 connector, 3-pin
			BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

Tubular housings

Block housings

DC 2-wire

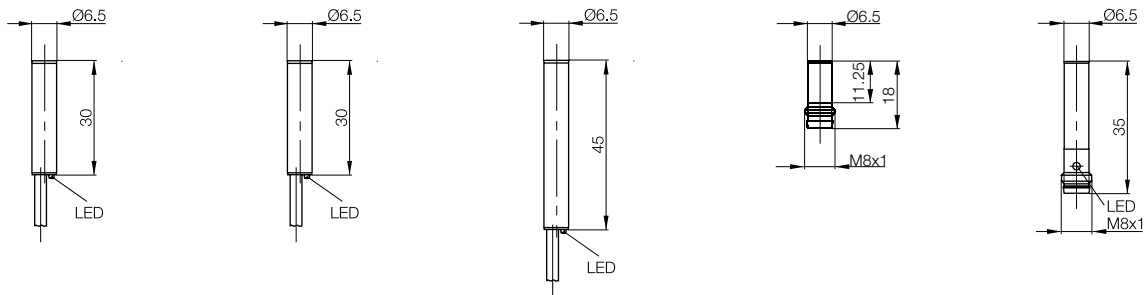
AC/DC 2-wire

AC 2-wire

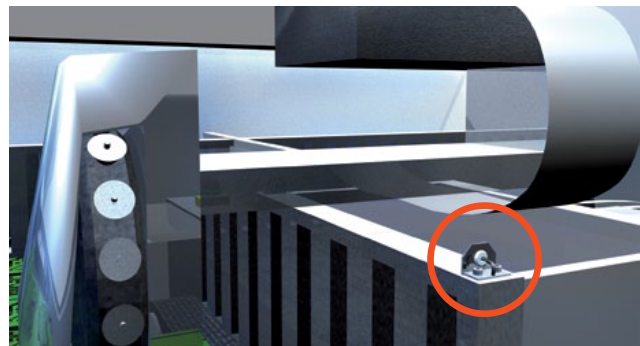
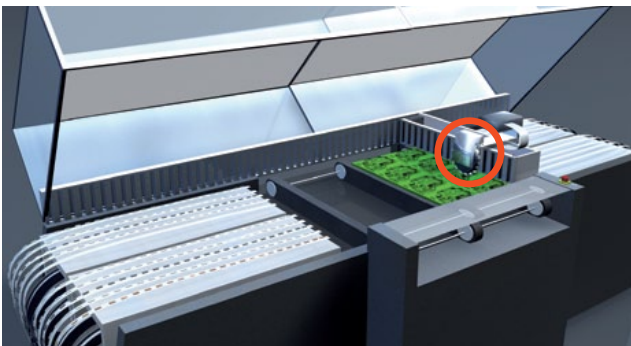
Analog distance measurement

Special properties

Special accessories



SuperShorty sensors in electronics production: SMT placement equipment



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, Ø 6.5 mm



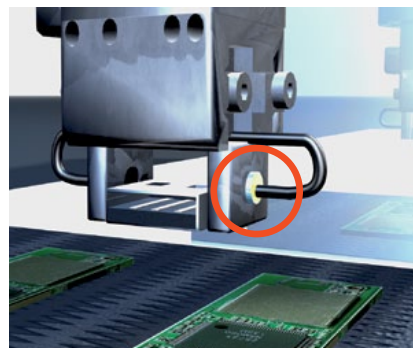
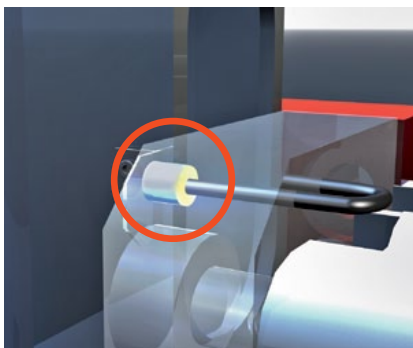
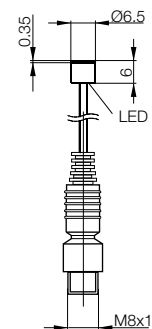
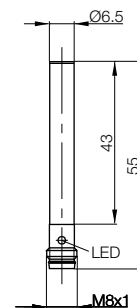
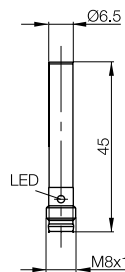
SUPERSHORTY™

	Ø 6.5 mm	Ø 6.5 mm	Ø 6.5 mm
Housing size	Ø 6.5 mm	Ø 6.5 mm	Ø 6.5 mm
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	2 mm	2 mm	2 mm
Assured switching distance s_a	0...1.6 mm	0...1.6 mm	0...1.6 mm
Sensing distance	2X	2X	2X
PNP, NO	Ordering code Part number	BES00ZU BES 516-371-G-E5-C-S49	BES01KH BES 516-371-G-S49-C
PNP, NC	Ordering code Part number	BES00KY BES 516-3021-G-E5-C-S49	
NPN, NO	Ordering code Part number	BES0107 BES 516-372-G-E5-C-S49	BES03RU BES G06EH-NSC20B-S49G
NPN, NC	Ordering code Part number		BES03RW BES G06EH-NOC20B-S49G
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.	2.5 V	2.5 V	2.5 V
Rated insulation voltage U_i (protection class)	75 V DC	75 V DC	75 V DC
Rated operating current I_o	200 mA	200 mA	150 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70°C	-25...+70°C	-25...+70°C
Switching frequency f max.	1.5 kHz	1.5 kHz	3 kHz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67
Approvals	CE, cULus	CE, cULus	CE, cULus
Special properties			Short design
Material	Housing: Stainless steel Sensing surface: PBT	Stainless steel PBT	Stainless steel PBT
Connection	M8 connector, 3-pin	M8 connector, 3-pin	0.3 m PUR cable with M8 connector, 3-pin
Suggested mating cable	BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Tubular Sensors

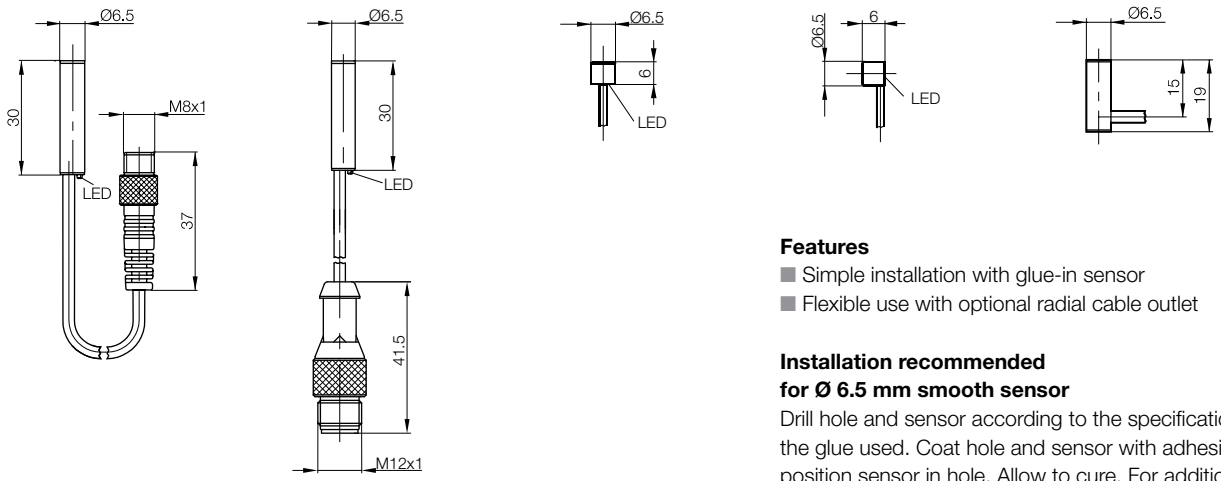
Tubular housing, Ø 6.5 mm



Ø 6.5 mm	Ø 6.5 mm	Ø 6.5 mm	Ø 6.5 mm	Ø 6.5 mm
Flush	Flush	Flush	Flush	Flush
2 mm	2 mm	2 mm	2 mm	2 mm
0...1.6 mm	0...1.6 mm	0...1.6 mm	0...1.6 mm	0...1.6 mm
2X	2X	2X	2X	2X
BES00ZR	BES00ZN	BES0258	BES03ZA	BES01KW
BES 516-371-G-E4-C-S49-00,3	BES 516-371-G-E4-C-S4-00,2	BES G06E60-PSC20B-EP02	BES G06K40-PSC20B-FP02	BES 516-371-SA13-PU-02
BES03F8	BES00KU			
BES 516-3021-G-E4-C-S49-00,3	BES 516-3021-G-E4-C-S4-00,2			
BES0106		BES0250		
BES 516-372-G-E4-C-S49-00,3		BES G06E60-NSC20B-EP02		
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2.5 V	2.5 V	2.5 V	2.5 V
250 V AC (□)	250 V AC (□)	75 V DC	75 V DC	75 V DC
200 mA	200 mA	150 mA	150 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C
1.5 kHz	1.5 kHz	3 kHz	1.5 kHz	2 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	No
IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 67	IP 65	IP 65
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE
		Short design	Short design	
Stainless steel	Stainless steel	Stainless steel	PBT	Stainless steel
PBT	PBT	PBT	PBT	PBT
0.3 m PUR cable with M8 connector, 3-pin	0.2 m PUR cable with M12 connector, 4-pin	2 m PUR cable, 28 AWG	2 m PUR cable, 28 AWG	2 m PUR cable, 26 AWG
BCC M313-0000-10-001-EX43T2-020	BCC M415-0000-1A-003-EX44T2-020			



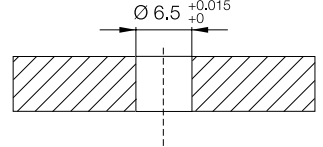
- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire Tubular housings
- Block housings
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Analog distance measurement
- Special properties
- Special accessories



- Features**
- Simple installation with glue-in sensor
 - Flexible use with optional radial cable outlet

Installation recommended for Ø 6.5 mm smooth sensor

Drill hole and sensor according to the specifications of the glue used. Coat hole and sensor with adhesive and position sensor in hole. Allow to cure. For additional instructions see data sheet.



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, Ø 6.5 mm

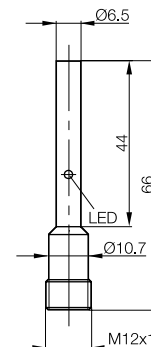
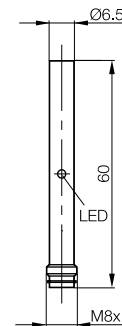
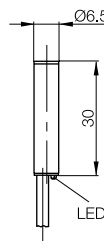


Housing size	Ø 6.5 mm	Ø 6.5 mm	Ø 6.5 mm
Installation type (observe instructions in the Basic Information chapter)	Flush	Quasi-flush	Quasi-flush
Rated switching distance s_n	2 mm	3 mm	3 mm
Assured switching distance s_a	0...1.6 mm	0...2.4 mm	0...2.4 mm
Sensing distance	2X	3X	3X
PNP, NO	Ordering code Part number	BES00ZF BES 516-371-G-E4-C-02	BES02UY BES G06MI-PSC30B-S49G
PNP, NC	Ordering code Part number	BES00KP BES 516-3021-G-E4-C-02	BES02UW BES G06MI-POC30B-S49G
NPN, NO	Ordering code Part number	BES0102 BES 516-372-G-E4-C-02	BES02UU BES G06MI-NSC30B-S49G
NPN, NC	Ordering code Part number		BES02UT BES G06MI-NOC30B-S49G
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.	2.5 V	2 V	2 V
Rated insulation voltage U_i (protection class)	250 V AC (II)	75 V DC	75 V DC
Rated operating current I_o	200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70°C	-25...+70°C	-25...+70°C
Switching frequency f max.	1.5 kHz	1 kHz	1 kHz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 68 per BWN Pr. 20	IP 67	IP 67
Approvals	CE, cULus	CE	CE
Special properties		Large switching distance	Large switching distance
Material	Housing: Stainless steel Sensing surface: PBT	Brass-coated PBT	Brass-coated PBT
Connection	2 m PVC cable, 26 AWG	M8 connector, 3-pin	M12 connector, 4-pin
Suggested mating cable		BCC M313-0000-10-001-EX43T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, Ø 6.5 mm



Ø 6.5 mm	Ø 6.5 mm	Ø 6.5 mm		
Quasi-flush	Non-flush	Non-flush		
4 mm	2.5 mm	4 mm		
0...2.9 mm	0...2 mm	0...3.2 mm		
4X	1X	2X		
BES01NT	BES00TZ	BES01NP		
BES G06MI-PSC40B-S49G	BES 516-349-E4-C-02	BES G06EF-PSC40F-S49G		
BES01NR	BES00U6			
BES G06MI-NSC40B-S49G	BES 516-350-E4-C-02			
10...30 V DC	10...30 V DC	10...30 V DC		
2.8 V	2.5 V	2.5 V		
75 V DC	250 V AC (□)	75 V DC		
200 mA	200 mA	200 mA		
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes		
0...+60 °C	-25...+70°C	-25...+70°C		
700 Hz	2 kHz	1.5 kHz		
Yellow LED	Yellow LED	Yellow LED		
IP 65	IP 68 per BWN Pr. 20	IP 67		
CE, cULus	CE, cULus	CE, cULus		
Large switching distance				
Brass-coated	Stainless steel	Stainless steel		
PBT	PBT	PBT		
M8 connector, 3-pin	2 m PVC cable, 26 AWG	M8 connector, 3-pin		
BCC M313-0000-10-001-EX43T2-020		BCC M313-0000-10-001-EX43T2-020		



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

Tubular housings

Block housings

DC 2-wire

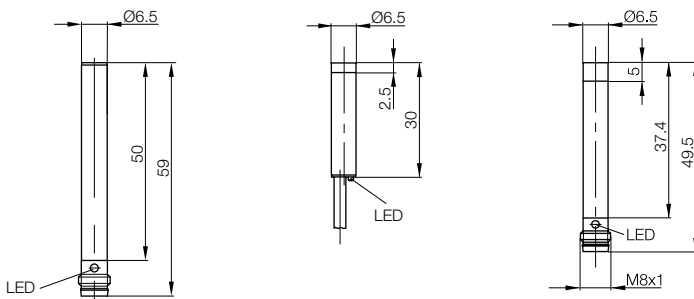
AC/DC 2-wire

AC 2-wire

Analog distance measurement

Special properties

Special accessories



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, Ø 8 mm

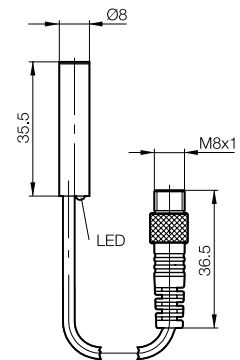
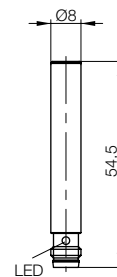
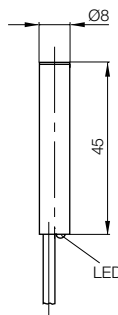


Housing size		Ø 8 mm	Ø 8 mm	Ø 8 mm
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush	Flush
Rated switching distance s_n		1.5 mm	2 mm	2 mm
Assured switching distance s_a		0...1.2 mm	0...1.6 mm	0...1.6 mm
Sensing distance		1X	2X	2X
PNP, NO	Ordering code	BES01NY	BES0379	
	Part number	BES G08EG-PSC15B-BV02	BES 516-369-G-SA2-S49-C	
PNP, NC	Ordering code		BES0349	BES0348
	Part number		BES 516-3013-G-SA2-S49-C	BES 516-3013-G-SA2-S49-00,5
NPN, NO	Ordering code			
	Part number			
Supply voltage U_B		10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.		2.5 V	3.5 V	3.5 V
Rated insulation voltage U_i (protection class)		250 V AC (II)	75 V DC	75 V DC
Rated operating current I_o		200 mA	130 mA	130 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70°C	-25...+70°C	-25...+70°C
Switching frequency f max.		3 kHz	800 Hz	800 Hz
Output function indicator		Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 68 per BWN Pr. 20	IP 67	IP 67
Approvals		CE, cULus	CE, cULus	CE
Special properties				
Material	Housing	Stainless steel	Stainless steel	Stainless steel
	Sensing surface	PBT	PA 12	PA 12
Connection		2 m PVC cable, 26 AWG	M8 connector, 3-pin	0.5 m PUR cable with M8 connector, 3-pin
Suggested mating cable			BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Tubular Sensors

Tubular housings, Ø 8 mm, M8x1



SUPERSHORTY™

Ø 8 mm	Ø 8 mm	M8 x 1	M8 x 1	M8 x 1
Flush	Flush	Flush	Flush	Flush
2 mm	2 mm	0.5 mm	1 mm	1 mm
0...1.6 mm	0...1.6 mm	0...0.36 mm	0...0.8 mm	0...0.8 mm
2X	2X	1X	1X	1X
BES0388	BES012N	BES03P0		BES02HP
BES G08EC-PSC20B-EP01-GS04-516	BES G08EE-PSC20B-BV02	BES M08EA-PSC05B-EP02		BES 516-324-SA8-02
			BES0367	
			BES 516-343-SA13-E5-C-S49	
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2.5 V	2.5 V	2.5 V	1.5 V
75 V DC	250 V AC (□)	75 V DC	75 V DC	75 V DC
200 mA	200 mA	150 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/No/No
-25...+70°C	-25...+70°C	-25...85 °C	-25...+70°C	-25...+100 °C
2 kHz	1.5 kHz	2 kHz	3.5 kHz	2 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	No
IP 67	IP 68 per BWN Pr. 20	IP 67	IP 67	IP 67
CE	CE, cULus	CE, cULus	CE, cULus	CE
		Short design		
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Ceramic	PBT	PBT	PBT	PBT
1 m PUR cable with M12 connector, 4-pin	2 m PVC cable, 26 AWG	2 m PUR cable, 28 AWG	M8 connector, 3-pin	2 m PVC cable, 26 AWG
BCC M415-0000-1A-003-EX44T2-020			BCC M313-0000-10-001-EX43T2-020	



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

Tubular housings

Block housings

DC 2-wire

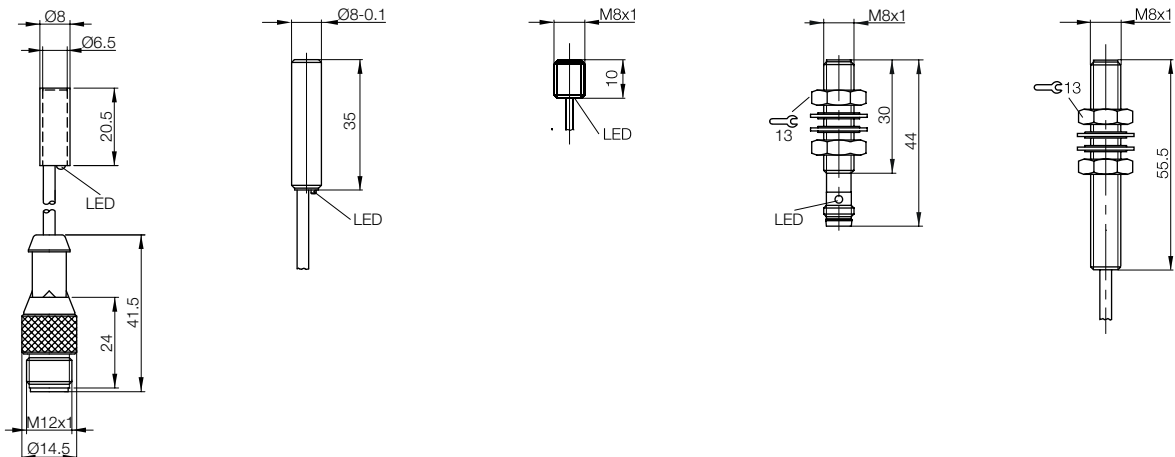
AC/DC 2-wire

AC 2-wire

Analog distance measurement

Special properties

Special accessories



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M8x1



SUPERSHORTY™

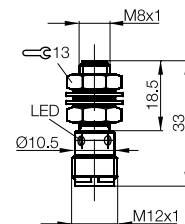
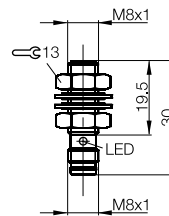
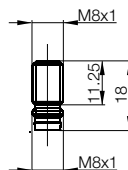


Housing size	M8 x 1	M8 x 1	M8 x 1	
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush	
Rated switching distance s_n	1.5 mm	1.5 mm	1.5 mm	
Assured switching distance s_a	0...1.2 mm	0...1.2 mm	0...1.2 mm	
Sensing distance	1X	1X	1X	
PNP, NO	Ordering code Part number	BES0277 BES M08EA-PSD15B-S49G	BES013N BES M08EC-PSC15B-S49G	BES013M BES M08EC-PSC15B-S04G
PNP, NC	Ordering code Part number	BES0270 BES M08EA-POD15B-S49G	BES013K BES M08EC-POC15B-S49G	
NPN, NO	Ordering code Part number	BES026W BES M08EA-NSD15B-S49G	BES013J BES M08EC-NSC15B-S49G	
NPN, NC	Ordering code Part number	BES026R BES M08EA-NOD15B-S49G		
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC	
Voltage drop U_d at I_o max.	2.5 V	2.5 V	2.5 V	
Rated insulation voltage U_i (protection class)	75 V DC	250 V AC (□)	250 V AC (□)	
Rated operating current I_o	150 mA	200 mA	200 mA	
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	
Ambient temperature T_a	-25...+70°C	-25...+70°C	-25...+70°C	
Switching frequency f max.	3 kHz	3 kHz	3 kHz	
Output function indicator	No	Yellow LED	Yellow LED	
Degree of protection as per IEC 60529	IP 67	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	
Approvals	CE, cULus	CE, cULus	CE, cULus	
Special properties	Short design			
Material	Housing	Stainless steel	Stainless steel	Stainless steel
	Sensing surface	PBT	PBT	PBT
Connection	M8 connector, 3-pin	M8 connector, 3-pin	M12 connector, 4-pin	
Suggested mating cable	BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020	BCC M415-0000-1A-003-EX44T2-020	

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M8x1



M8 x 1	M8 x 1	M8 x 1	M8 x 1	M8 x 1
Flush	Flush	Flush	Flush	Flush
1.5 mm	1.5 mm	1.5 mm	1.5 mm	1.5 mm
0...1.2 mm	0...1.2 mm	0...1.2 mm	0...1.2 mm	0...1.2 mm
1X	1X	1X	1X	1X
BES0147	BES0146	BES01P7	BES01AW	BES01PF
BES M08EE-PSC15B-S49G	BES M08EE-PSC15B-S04G	BES M08EG-PSC15B-S49G	BES 516-324-S49-C	BES M08EH-PSC15B-S04G
BES0143	BES0142		BES01LR	BES01PE
BES M08EE-POC15B-S49G	BES M08EE-POC15B-S04G		BES 516-377-S49-C	BES M08EH-POC15B-S04G
BES013Z	BES013Y		BES01F5	BES01PC
BES M08EE-NSC15B-S49G	BES M08EE-NSC15B-S04G		BES 516-343-S49-C	BES M08EH-NSC15B-S04G
BES013T	BES013R		BES01LZ	BES01PA
BES M08EE-NOC15B-S49G	BES M08EE-NOC15B-S04G		BES 516-378-S49-C	BES M08EH-NOC15B-S04G
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2.5 V	2.5 V	2.5 V	2.5 V
250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)
200 mA	200 mA	200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C
3 kHz	3 kHz	3 kHz	3 kHz	3 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
PBT	PBT	PBT	PBT	PBT
M8 connector, 3-pin	M12 connector, 4-pin	M8 connector, 3-pin	M8 connector, 3-pin	M12 connector, 4-pin
BCC M313-0000-10-001-EX43T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020	BCC M415-0000-1A-003-EX44T2-020



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

Tubular housings

Block housings

DC 2-wire

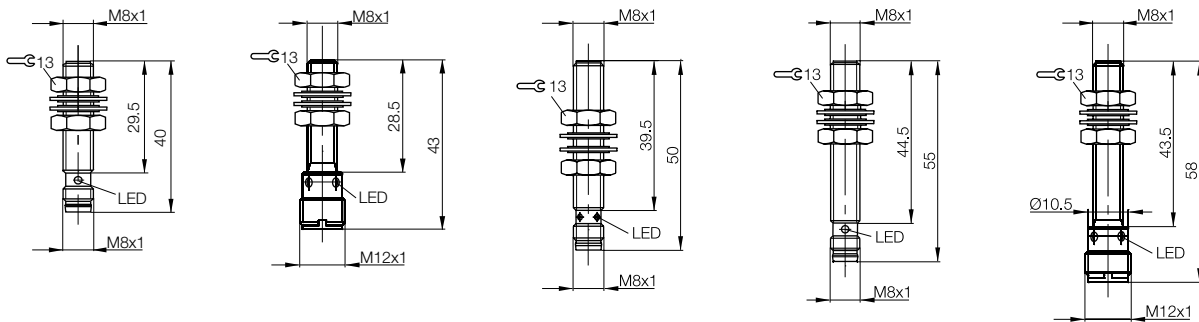
AC/DC 2-wire

AC 2-wire

Analog distance measurement

Special properties

Special accessories



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M8x1



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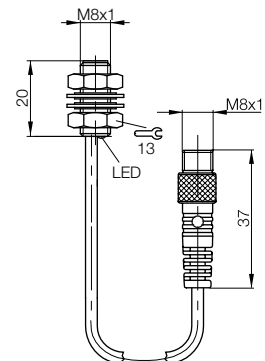
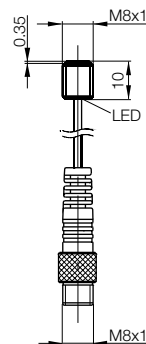
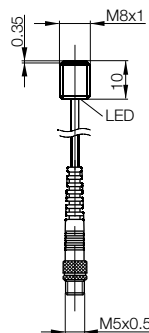


Housing size	M8 x 1	M8 x 1	M8 x 1
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	1.5 mm	1.5 mm	1.5 mm
Assured switching distance s_a	0...1.2 mm	0...1.2 mm	0...1.2 mm
Sensing distance	1X	1X	1X
PNP, NO	Ordering code Part number	BES0272 BES M08EA-PSC15B-EP00,3-GS26	BES0273 BES M08EA-PSC15B-EP00,3-GS49
PNP, NC	Ordering code Part number		BES034Y BES 516-324-SA44-C-S49-00,3
NPN, NO	Ordering code Part number		BES026T BES M08EA-NSC15B-EP00,3-GS49
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.	2.5 V	2.5 V	2.5 V
Rated insulation voltage U_i (protection class)	75 V DC	75 V DC	75 V DC
Rated operating current I_o	150 mA	150 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70°C	-25...+70°C	-25...+70°C
Switching frequency f max.	3 kHz	3 kHz	4 kHz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67
Approvals	CE, cULus	CE, cULus	CE
Special properties	Short design	Short design	
Material	Housing: Stainless steel Sensing surface: PBT	Stainless steel PBT	Stainless steel PBT
Connection	0.3 m PUR cable with M5 connector, 4-pin	0.3 m PUR cable with M8 connector, 3-pin	0.3 m PUR cable with M8 connector, 3-pin
Suggested mating cable	BKS-B 25-3-PU-03	BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M8x1



M8 x 1	M8 x 1	M8 x 1	M8 x 1	M8 x 1
Flush	Flush	Flush	Flush	Flush
1.5 mm	1.5 mm	1.5 mm	1.5 mm	1.5 mm
0...1.2 mm	0...1.2 mm	0...1.2 mm	0...1.2 mm	0...1.2 mm
1X	1X	1X	1X	1X
BES00NK	BES00N9	BES00MU	BES00MT	BES01AL
BES 516-324-E4-C-S49-00,3	BES 516-324-E4-C-S4-00,3	BES 516-324-E3-C-S49-00,3	BES 516-324-E3-C-S4-00,3	BES 516-324-EO-C-S49-00,3
			BES010N	BES01LN
			BES 516-377-E3-C-S4-PU-00,3	BES 516-377-EO-C-S49-00,3
				BES01F4
				BES 516-343-EO-C-S49-00,3
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2.5 V	2.5 V	2.5 V	2.5 V
250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)
200 mA	200 mA	200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C
3 kHz	3 kHz	3 kHz	3 kHz	3 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
PBT	PBT	PBT	PBT	PBT
0.3 m PUR cable with M8 connector, 3-pin	0.3 m PUR cable with M12 connector, 4-pin	0.3 m PUR cable with M8 connector, 3-pin	0.3 m PUR cable with M12 connector, 4-pin	0.3 m PUR cable with M8 connector, 3-pin
BCC M313-0000-10-001-EX43T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M313-0000-10-001-EX43T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M313-0000-10-001-EX43T2-020



Inductive sensors

Global DC 3-wire

DC 3-/4-wire Tubular housings

Block housings

DC 2-wire

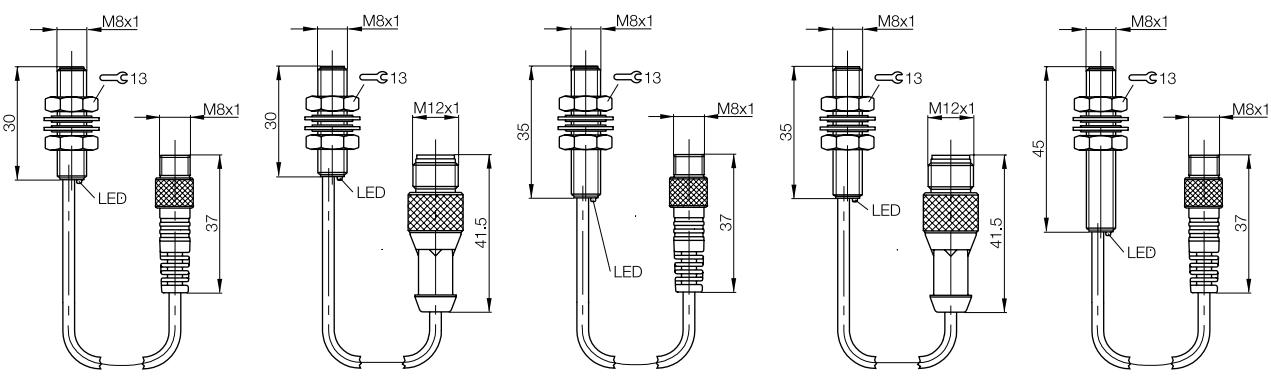
AC/DC 2-wire

AC 2-wire

Analog distance measurement

Special properties

Special accessories



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M8x1



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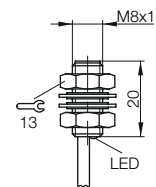
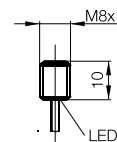
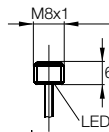


	M8 x 1	M8 x 1	M8 x 1
Housing size	M8 x 1	M8 x 1	M8 x 1
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	1.5 mm	1.5 mm	1.5 mm
Assured switching distance s_a	0...1.2 mm	0...1.2 mm	0...1.2 mm
Sensing distance	1X	1X	1X
PNP, NO	Ordering code Part number	BES026M BES M08E60-PSC15B-EP02	BES0275 BES M08EA-PSC15B-EP02
PNP, NC	Ordering code Part number	BES026K BES M08E60-POC15B-EP02	BES026Y BES M08EA-POC15B-EP02
NPN, NO	Ordering code Part number	BES026J BES M08E60-NSC15B-EP02	BES026U BES M08EA-NSC15B-EP02
NPN, NC	Ordering code Part number	BES026H BES M08E60-NOC15B-EP02	BES026N BES M08EA-NOC15B-EP02
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.	2.5 V	2.5 V	2.5 V
Rated insulation voltage U_i (protection class)	75 V DC	75 V DC	75 V DC
Rated operating current I_o	150 mA	150 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70°C	-25...+70°C	-25...+70°C
Switching frequency f max.	3 kHz	3 kHz	4 kHz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67
Approvals	CE, cULus	CE, cULus	CE
Special properties	Short design	Short design	
Material	Housing: Stainless steel Sensing surface: PBT	Stainless steel PBT	Stainless steel PBT
Connection	2 m PUR cable, 28 AWG	2 m PUR cable, 28 AWG	2 m PVC cable, 26 AWG

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M8x1



M8 x 1	M8 x 1	M8 x 1	M8 x 1	M8 x 1
Flush	Flush	Flush	Flush	Flush
1.5 mm	1.5 mm	1.5 mm	1.5 mm	1.5 mm
0...1.2 mm	0...1.2 mm	0...1.2 mm	0...1.2 mm	0...1.2 mm
1X	1X	1X	1X	1X
BES00MY		BES014K	BES01A7	BES01AC
BES 516-324-E4-C-02		BES M08EF-PSC15B-BP02	BES 516-324-EO-C-02	BES 516-324-EO-C-PU-02
BES010T	BES010K	BES014H	BES01LC	BES01LH
BES 516-377-E4-C-02	BES 516-377-E3-C-PU-02	BES M08EF-POC15B-BP02	BES 516-377-EO-C-02	BES 516-377-EO-C-PU-02
BES00TL		BES03J6	BES01EY	BES01F1
BES 516-343-E4-C-02		BES M08EF-NSC15B-BP02	BES 516-343-EO-C-02	BES 516-343-EO-C-PU-02
		BES014C	BES01LT	
		BES M08EF-NOC15B-BP02	BES 516-378-EO-C-02	
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2.5 V	2.5 V	2.5 V	2.5 V
250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)
200 mA	200 mA	200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C
3 kHz	3 kHz	3 kHz	3 kHz	3 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
PBT	PBT	PBT	PBT	PBT
2 m PVC cable, 26 AWG	2 m PUR cable, 26 AWG	2 m PUR cable, 26 AWG	2 m PVC cable, 26 AWG	2 m PUR cable, 26 AWG



Inductive sensors

Global DC 3-wire

DC 3-/4-wire Tubular housings

Block housings

DC 2-wire

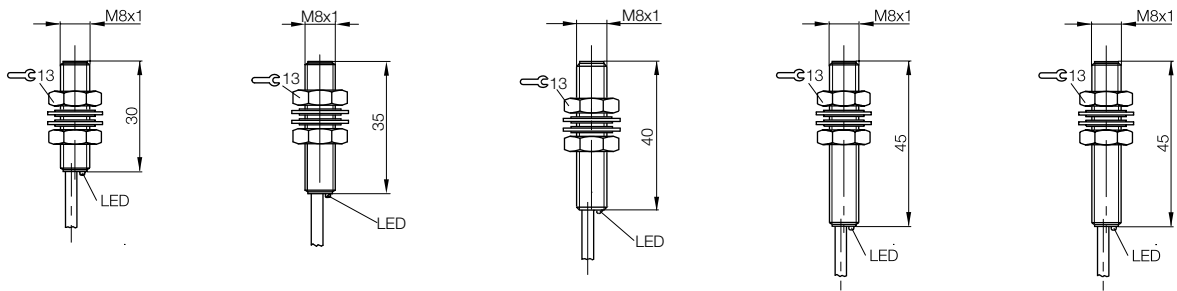
AC/DC 2-wire

AC 2-wire

Analog distance measurement

Special properties

Special accessories



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M8x1



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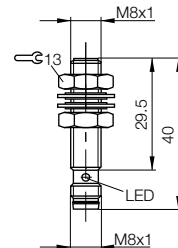
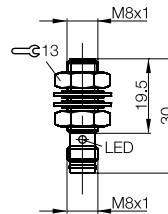
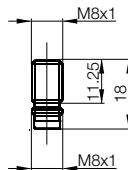


Housing size		M8 x 1	M8 x 1	M8 x 1
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush	Flush
Rated switching distance s_n		2 mm	2 mm	2 mm
Assured switching distance s_a		0...1.6 mm	0...1.6 mm	0...1.6 mm
Sensing distance		2X	2X	2X
PNP, NO	Ordering code	BES0278	BES013P	BES014A
	Part number	BES M08EA-PSD20B-S49G	BES M08EC-PSC20B-S49G	BES M08EE-PSC20B-S49G
PNP, NC	Ordering code		BES013L	BES0145
	Part number		BES M08EC-POC20B-S49G	BES M08EE-POC20B-S49G
NPN, NO	Ordering code	BES01P1		BES0141
	Part number	BES M08EA-NSD20B-S49G		BES M08EE-NSC20B-S49G
NPN, NC	Ordering code			BES013W
	Part number			BES M08EE-NOC20B-S49G
Supply voltage U_B		10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.		2.5 V	2.5 V	2.5 V
Rated insulation voltage U_i (protection class)		75 V DC	250 V AC (□)	250 V AC (□)
Rated operating current I_o		150 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70°C	-25...+70°C	-25...+70°C
Switching frequency f max.		3 kHz	1.5 kHz	1.5 kHz
Output function indicator		No	Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
Approvals		CE, cULus	CE, cULus	CE, cULus
Special properties		Short design		
Material	Housing	Stainless steel	Stainless steel	Stainless steel
	Sensing surface	PBT	PBT	PBT
Connection		M8 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin
Suggested mating cable		BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M8x1



M8 x 1	M8 x 1	M8 x 1	M8 x 1	M8 x 1
Flush	Flush	Flush	Flush	Flush
2 mm	2 mm	2 mm	2 mm	2 mm
0...1.6 mm	0...1.4 mm	0...1.6 mm	0...1.4 mm	0...1.6 mm
2X	2X	2X	2X	2X
BES0148	BES0149	BES00P7	BES02P0	BES01AU
BES M08EE-PSC20B-S04G	BES M08EE-PSC20B-S04G-101	BES 516-324-G-E5-C-S49	BES 516-324-SA96-G-E5-C-S49	BES 516-324-G-S49-C
BES0144		BES0113		BES01LP
BES M08EE-POC20B-S04G		BES 516-377-G-E5-C-S49		BES 516-377-G-S49-C
BES0140		BES00TY	BES02P1	
BES M08EE-NSC20B-S04G		BES 516-343-G-E5-C-S49	BES 516-343-SA96-G-E5-C-S49	
BES013U		BES0118		
BES M08EE-NOC20B-S04G		BES 516-378-G-E5-C-S49		
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2.5 V	2.5 V	2.5 V	2.5 V
250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)
200 mA	200 mA	200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C
1.5 kHz	1.5 kHz	1.5 kHz	1.5 kHz	1.5 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
PBT	With ceramic coating	PBT	with ceramic coating	PBT
M12 connector, 4-pin	M12 connector, 4-pin	M8 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

Tubular housings

Block housings

DC 2-wire

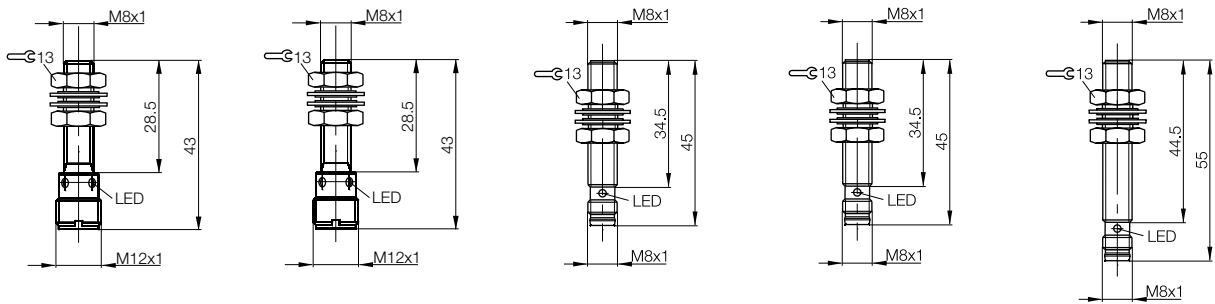
AC/DC 2-wire

AC 2-wire

Analog distance measurement

Special properties

Special accessories



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M8x1



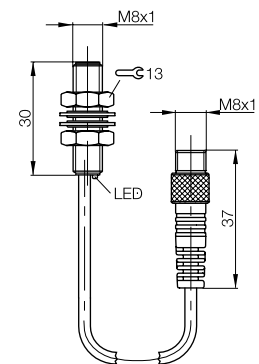
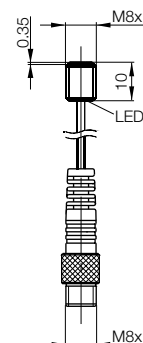
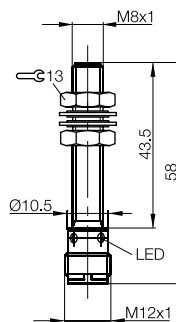
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Housing size	M8 x 1	M8 x 1	M8 x 1
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	2 mm	2 mm	2 mm
Assured switching distance s_a	0...1.6 mm	0...1.6 mm	0...1.6 mm
Sensing distance	2X	2X	2X
PNP, NO	Ordering code Part number	BES01PH BES M08EH-PSC20B-S04G	BES0276 BES M08EA-PSC20B-EP00,3-GS49
PNP, NC	Ordering code Part number		BES00P4 BES 516-324-G-E4-C-S49-00,3
NPN, NC	Ordering code Part number		BES0112 BES 516-377-G-E4-C-S49-00,3
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.	2.5 V	2.5 V	2.5 V
Rated insulation voltage U_i (protection class)	250 V AC (II)	75 V DC	250 V AC (II)
Rated operating current I_o	200 mA	150 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70°C	-25...+70°C	-25...+70°C
Switching frequency f max.	1.5 kHz	3 kHz	1.5 kHz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 68 per BWN Pr. 20	IP 67	IP 68 per BWN Pr. 20
Approvals	CE, cULus	CE, cULus	CE, cULus
Special properties		Short design	
Material	Housing Sensing surface	Stainless steel PBT	Stainless steel PBT
Connection	M12 connector, 4-pin	0.3 m PUR cable with M8 connector, 3-pin	0.3 m PUR cable with M8 connector, 3-pin
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	BCC M813-0000-10-001-EX43T2-020	BCC M813-0000-10-001-EX43T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M8x1



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M8 x 1	M8 x 1	M8 x 1	M8 x 1	M8 x 1
Flush	Flush	Flush	Flush	Flush
2 mm	2 mm	2 mm	2 mm	2 mm
0...1.6 mm	0...1.4 mm	0...1.6 mm	0...1.6 mm	0...1.6 mm
2X	2X	2X	2X	2X
BES00P2	BES02P5	BES03TU	BES01AT	
BES 516-324-G-E4-C-S4-00,3	BES 516-324-SA96-G-E4-C-S4-00,3	BES M08EF-PSC20B-BP00,3-GS49	BES 516-324-G-EO-C-S49-01	
				BES026Z
				BES M08EA-POC20B-EP02
				BES026P
				BES M08EA-NOC20B-EP02
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2.5 V	2.5 V	2.5 V	2.5 V
250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)	75 V DC
200 mA	200 mA	200 mA	200 mA	150 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C
1.5 kHz	1.5 kHz	1.5 kHz	1.5 kHz	3 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 67
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
				Short design
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
PBT	with ceramic coating	PBT	PBT	PBT
0.3 m PUR cable with M12 connector, 4-pin	0.3 m PUR cable with M12 connector, 4-pin	0.3 m PUR cable with M8 connector, 3-pin	1 m PUR cable with M8 connector, 3-pin	2 m PUR cable, 28 AWG
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020	



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

Tubular housings

Block housings

DC 2-wire

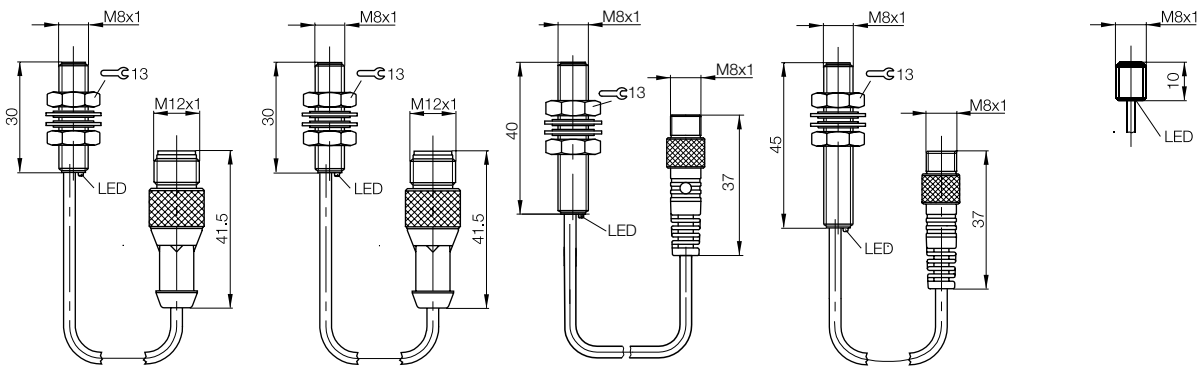
AC/DC 2-wire

AC 2-wire

Analog distance measurement

Special properties

Special accessories



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M8x1

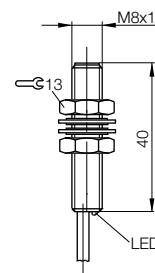
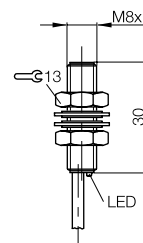
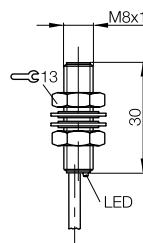


Housing size	M8 x 1	M8 x 1	M8 x 1
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	2 mm	2 mm	2 mm
Assured switching distance s_a	0...1.6 mm	0...1.6 mm	0...1.6 mm
Sensing distance	2X	2X	2X
PNP, NO	Ordering code Part number	BES00NR BES 516-324-G-E4-C-02	BES00NY BES 516-324-G-E4-C-PU-02
PNP, NC	Ordering code Part number	BES010Y BES 516-377-G-E4-C-02	BES010Z BES 516-377-G-E4-C-PU-02
NPN, NO	Ordering code Part number	BES00TT BES 516-343-G-E4-C-02	BES014F BES M08EF-NSC20B-BP02
NPN, NC	Ordering code Part number	BES0116 BES 516-378-G-E4-C-02	BES014E BES M08EF-NOC20B-BP02
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.	2.5 V	2.5 V	2.5 V
Rated insulation voltage U_i (protection class)	250 V AC (□)	250 V AC (□)	250 V AC (□)
Rated operating current I_o	200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70°C	-25...+70°C	-25...+70°C
Switching frequency f max.	1.5 kHz	1.5 kHz	1.5 kHz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
Approvals	CE, cULus	CE, cULus	CE, cULus
Special properties			
Material	Housing Sensing surface	Stainless steel PBT	Stainless steel PBT
Connection		2 m PVC cable, 26 AWG	2 m PUR cable, 26 AWG
Suggested mating cable			2 m PUR cable, 26 AWG

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Tubular Sensors

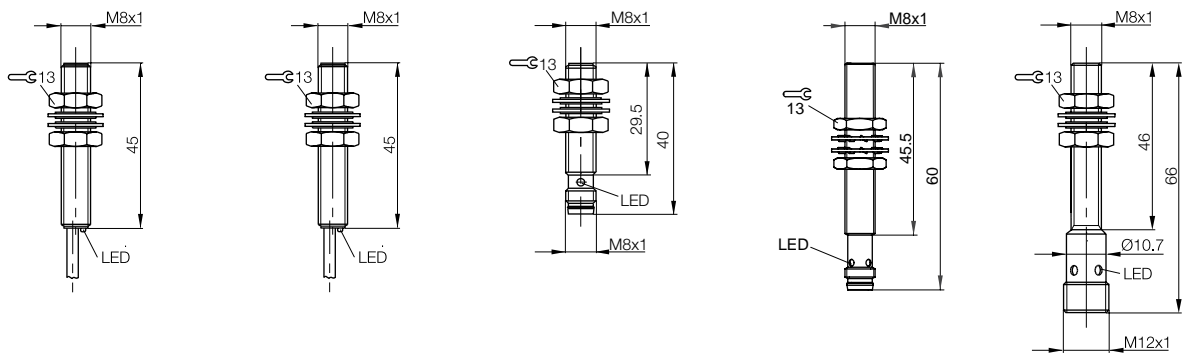
Tubular housing, M8x1



M8 x 1	M8 x 1	M8 x 1	M8 x 1	M8 x 1
Flush	Flush	Flush	Quasi-flush	Quasi-flush
2 mm	2 mm	2.5 mm	3 mm	3 mm
0...1.6 mm	0...1.6 mm	0...2 mm	0...2.4 mm	0...2.4 mm
2X	2X	2X	3X	3X
BES01AM	BES01AN	BES0427	BES02WA	BES02W9
BES 516-324-G-EO-C-02	BES 516-324-G-EO-C-PU-02	BES M08EE-PSC25B-S49G	BES M08MH1-PSC30B-S49G	BES M08MH1-PSC30B-S04G
		BES0423		
		BES M08EE-POC25B-S49G		
			BES02W8	BES02W7
			BES M08MH1-NSC30B-S49G	BES M08MH1-NSC30B-S04G
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2.5 V	2.5 V	2 V	2 V
250 V AC (□)	250 V AC (□)	250 V AC	75 V DC	75 V DC
200 mA	200 mA	100 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70°C	0...+60 °C	-25...+70°C	-25...+70°C
1.5 kHz	1.5 kHz	1 kHz	1 kHz	1 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus	CE	CE
			Large switching distance	Large switching distance
Stainless steel	Stainless steel	Stainless steel	Brass-coated	Brass-coated
PBT	PBT	PBT	PBT	PBT
2 m PVC cable, 26 AWG	2 m PUR cable, 26 AWG	M8 connector, 3-pin	M8 connector, 3-pin	M12 connector, 4-pin
		BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020	BCC M415-0000-1A-003-EX44T2-020



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire Tubular housings
- Block housings
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Analog distance measurement
- Special properties
- Special accessories



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M8x1

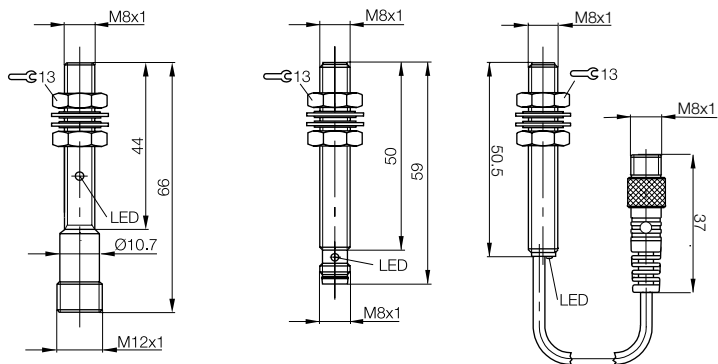


Housing size	M8 x 1	M8 x 1	M8 x 1
Installation type (observe instructions in the Basic Information chapter)	Quasi-flush	Quasi-flush	Quasi-flush
Rated switching distance s_n	3 mm	4 mm	4 mm
Assured switching distance s_a	0...2.2 mm	0...2.9 mm	0...2.9 mm
Sensing distance	3X	4X	4X
PNP, NO	Ordering code Part number	BES02PW BES M08MH1-PSC30B-S04G-101	BES01ZW BES M08MI-PSC40B-S49G
PNP, NC	Ordering code Part number		BES003R BES M08MI-PSC40B-BP00,3-GS49
NPN, NO	Ordering code Part number		BES01ZT BES M08MI-NSC40B-S49G
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.	2 V	2.8 V	2.8 V
Rated insulation voltage U_i (protection class)	75 V DC	75 V DC	75 V DC
Rated operating current I_o	200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70°C	0...+60 °C	0...+60 °C
Switching frequency f max.	1 kHz	800 Hz	800 Hz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67
Approvals	CE	CE, cULus	CE, cULus
Special properties	Large switching distance	Large switching distance	Large switching distance
Material	Housing Sensing surface	Brass-coated with ceramic coating	Brass-coated PBT
Connection	M12 connector, 4-pin	M8 connector, 3-pin	0.3 m PUR cable with M8 connector, 3-pin
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M8x1



M8 x 1	M8 x 1	M8 x 1	M8 x 1	M8 x 1
Quasi-flush	Non-flush	Non-flush	Non-flush	Non-flush
4 mm	2.5 mm	2.5 mm	2.5 mm	2.5 mm
0...2.9 mm	0...2 mm	0...2 mm	0...2 mm	0...2 mm
4X	1X	1X	1X	1X
BES01ZU	BES01P3	BES01M6	BES01P8	
BES M08MI-PSC40B-BP00,2-GS04	BES M08ED-PSC25F-S04G	BES 516-383-S49-C	BES M08EG-PSC25F-S04G	
			BES01P6	
			BES M08EG-POC25F-S04G	
BES01ZR	BES01P2		BES01P5	BES011U
BES M08MI-NSC40B-BP00,2-GS04	BES M08ED-NSC25F-S04G		BES M08EG-NSC25F-S04G	BES 516-384-E4-C-S49-00.2
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.8 V	2.5 V	2.5 V	2.5 V	2.5 V
75 V DC	250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)
200 mA	200 mA	200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
0...+60 °C	-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C
800 Hz	2 kHz	2 kHz	2 kHz	2 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 67
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Large switching distance				
Brass-coated	Stainless steel	Stainless steel	Stainless steel	Stainless steel
PBT	PBT	PBT	PBT	PBT
0.2 m PUR cable with M12 connector, 4-pin	M12 connector, 4-pin	M8 connector, 3-pin	M12 connector, 4-pin	0.2 m PVC cable with M8 connector, 3-pin
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M313-0000-10-001-EX43T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M313-0000-10-001-EX43T2-020



Inductive sensors

Global DC 3-wire

DC 3-/4-wire Tubular housings

Block housings

DC 2-wire

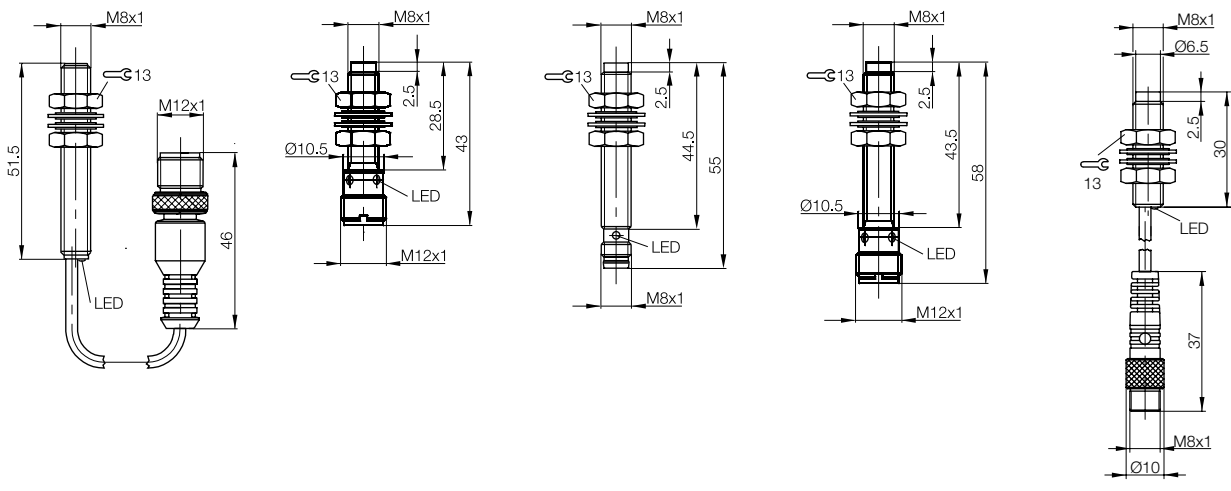
AC/DC 2-wire

AC 2-wire

Analog distance measurement

Special properties

Special accessories



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M8x1

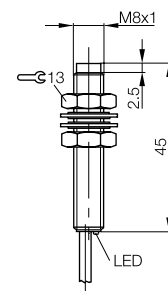
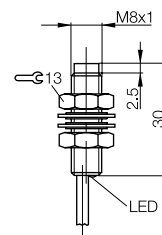
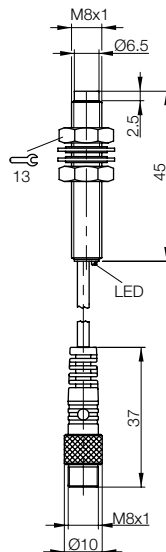


Housing size	M8 x 1	M8 x 1	M8 x 1
Installation type (observe instructions in the Basic Information chapter)	Non-flush	Non-flush	Non-flush
Rated switching distance s_n	2.5 mm	2.5 mm	2.5 mm
Assured switching distance s_a	0...2 mm	0...2 mm	0...2 mm
Sensing distance	1X	1X	1X
PNP, NO	Ordering code	BES011A	BES01M0
	Part number	BES 516-383-E4-C-02	BES 516-383-EO-C-02
PNP, NC	Ordering code		
	Part number		
NPN, NO	Ordering code	BES01MA	BES011M
	Part number	BES 516-384-EO-C-S49-00.2	BES 516-384-E4-C-02
NPN, NC	Ordering code		
	Part number		
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.	2.5 V	2.5 V	2.5 V
Rated insulation voltage U_i (protection class)	250 V AC (□)	250 V AC (□)	250 V AC (□)
Rated operating current I_o	200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70°C	-25...+70°C	-25...+70°C
Switching frequency f max.	2 kHz	2 kHz	2 kHz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
Approvals	CE, cULus	CE, cULus	CE, cULus
Special properties			
Material	Housing	Stainless steel	Stainless steel
	Sensing surface	PBT	PBT
Connection	0.2 m PVC cable with M8 connector, 3-pin	2 m PVC cable, 26 AWG	2 m PVC cable, 26 AWG
Suggested mating cable	BCC M313-0000-10-001-EX43T2-020		

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M8x1



M8 x 1	M8 x 1	M8 x 1	M8 x 1	
Non-flush	Non-flush	Non-flush	Non-flush	
4 mm	4 mm	6 mm	6 mm	
0...3.2 mm	0...3.2 mm	0...4.8 mm	0...4.8 mm	
2X	2X	3X	3X	
BES014M	BES01P9	BES02W4	BES02W3	
BES M08EF-PSC40F-S49G	BES M08EG1-PSC40F-S04G	BES M08MG1-PSC60F-S49G	BES M08MG1-PSC60F-S04G	
		BES02W2		
		BES M08MG1-POC60F-S49G		
			BES02W0	
			BES M08MG1-NSC60F-S04G	
		BES02UZ		
		BES M08MG1-NOC60F-S49G		
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	
2.5 V	2.5 V	2 V	2 V	
250 V AC (□)	250 V AC (□)	75 V DC	75 V DC	
200 mA	200 mA	200 mA	200 mA	
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	
-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C	
1.5 kHz	5 kHz	500 Hz	500 Hz	
Yellow LED	Yellow LED	Yellow LED	Yellow LED	
IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 67	IP 67	
CE, cULus	CE, cULus	CE	CE	
		Large switching distance	Large switching distance	
Stainless steel	Stainless steel	Brass-coated	Brass-coated	
PBT	PBT	PBT	PBT	
M8 connector, 3-pin	M12 connector, 4-pin	M8 connector, 3-pin	M12 connector, 4-pin	
BCC M313-0000-10-001-EX43T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M313-0000-10-001-EX43T2-020	BCC M415-0000-1A-003-EX44T2-020	



Inductive sensors

Global DC 3-wire

DC 3-/4-wire Tubular housings

Block housings

DC 2-wire

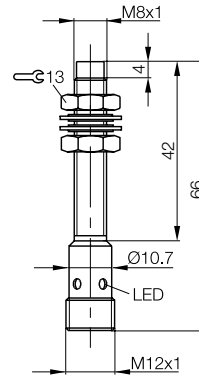
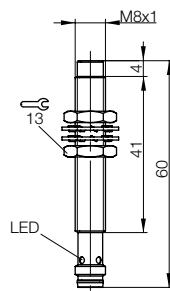
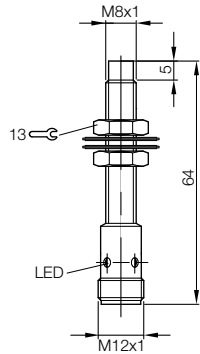
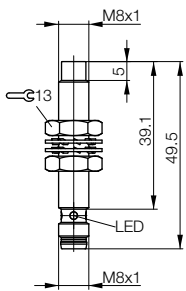
AC/DC 2-wire

AC 2-wire

Analog distance measurement

Special properties

Special accessories



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M12x1

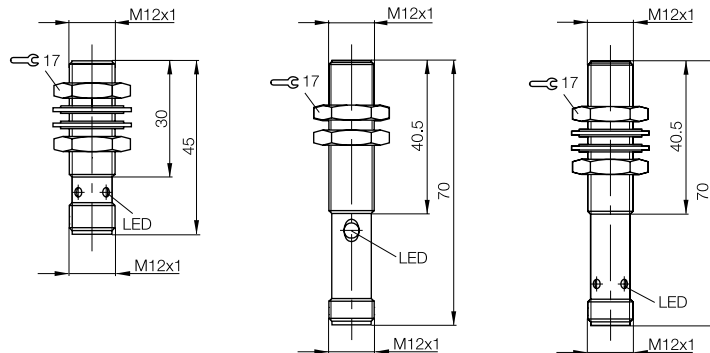


Housing size	M12x1	M12x1	M12x1
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	2 mm	2 mm	2 mm
Assured switching distance s_a	0...1.6 mm	0...1.6 mm	0...1.6 mm
Sensing distance	1X	1X	1X
PNP, NO	Ordering code Part number	BES00PK BES 516-325-E5-C-S4	BES02EL BES 515-325-S4-C
PNP, NC	Ordering code Part number	BES00YT BES 516-370-E5-C-S4	BES01K6 BES 516-370-S4-C
PNP, complementary	Ordering code Part number		BES0161 BES 516-113-S4-C
NPN, NO	Ordering code Part number	BES00T5 BES 516-329-E5-C-S4	BES01EN BES 516-329-S4-C
NPN, NC	Ordering code Part number	BES010A BES 516-375-E5-C-S4	BES01LA BES 516-375-S4-C
NPN, complementary	Ordering code Part number		BES016E BES 516-118-S4-C
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.	2 V	1.5 V	1.5 V
Rated insulation voltage U_i (protection class)	250 V AC (□)	250 V AC (□)	250 V AC (□)
Rated operating current I_e	200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70°C	-25...+70°C	-40...+85 °C
Switching frequency f max.	5 kHz	3 kHz	2.5 kHz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
Approvals	CE, cULus	CE, cULus	CE, cULus
Material	Housing: Brass-coated Sensing surface: PBT	Stainless steel	Stainless steel
Connection	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Tubular Sensors

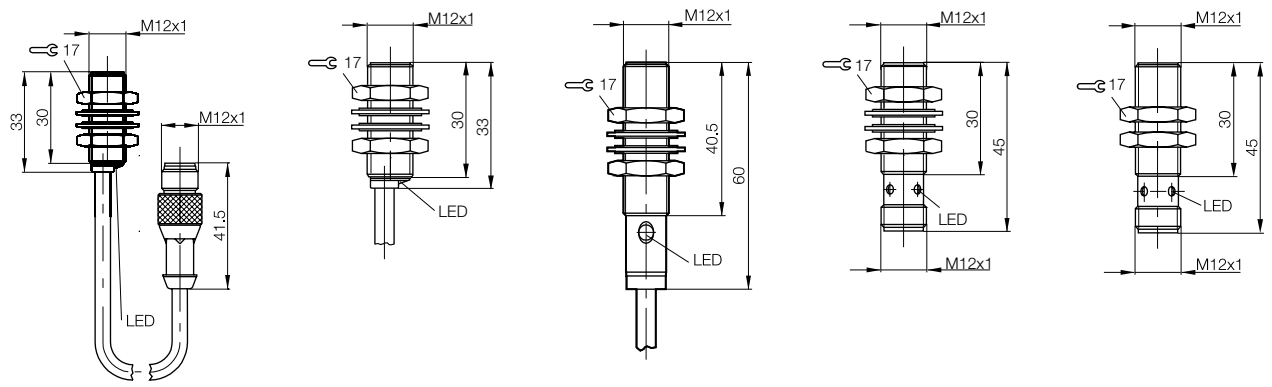
Tubular housing, M12x1



M12x1	M12x1	M12x1	M12x1	M12x1
Flush	Flush	Flush	Flush	Flush
2 mm	2 mm	2 mm	4 mm	4 mm
0...1.6 mm	0...1.6 mm	0...1.6 mm	0...3.2 mm	0...3.2 mm
1X	1X	1X	2X	2X
BES00PH	BES00P8	BES01AZ	BES00PY	BES014W
BES 516-325-E4-C-S4-00,5	BES 516-325-E4-C-02	BES 516-325-BO-C-02	BES 516-325-G-E5-C-S4	BES M12EE-PSC40B-S04G
	BES00YL	BES01K2	BES00Z0	BES014U
	BES 516-370-E4-C-02	BES 516-370-BO-C-02	BES 516-370-G-E5-C-S4	BES M12EE-POC40B-S04G
	BES00T0	BES01EF	BES00TC	
	BES 516-329-E4-C-02	BES 516-329-BO-C-02	BES 516-329-G-E5-C-S4	
	BES0108	BES01L7	BES010H	
	BES 516-375-E4-C-02	BES 516-375-BO-C-02	BES 516-375-G-E5-C-S4	
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2 V	2 V	1.5 V	2.5 V	2 V
250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)
200 mA	200 mA	200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70°C	-40...+85 °C	-25...+70°C	-25...+85 °C
5 kHz	5 kHz	3 kHz	2.5 kHz	2 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Brass-coated	Brass-coated	Stainless steel	Brass-coated	Stainless steel
PBT	PBT	PA 12	LCP	LCP
0.5 m PUR cable with M12 connector, 4-pin	2 m PVC cable, 22 AWG	2 m PVC cable, 22 AWG	M12 connector, 4-pin	M12 connector, 4-pin
BCC M415-0000-1A-003-EX44T2-020			BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020



Inductive sensors
Global DC 3-wire
DC 3-/4-wire Tubular housings
Block housings
DC 2-wire
AC/DC 2-wire
AC 2-wire
Analog distance measurement
Special properties
Special accessories



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M12x1

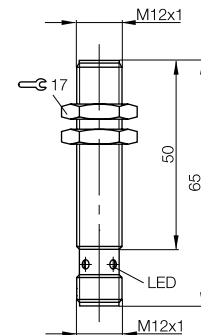
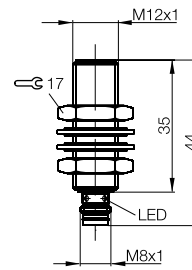
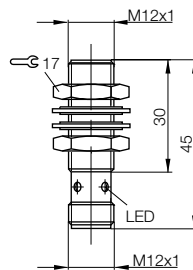


Housing size		M12x1	M12x1	M12x1
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush	Flush
Rated switching distance s_n		4 mm	4 mm	4 mm
Assured switching distance s_a		0...3 mm	0...3.2 mm	0...3.2 mm
Sensing distance		2X	2X	2X
PNP, NO	Ordering code		BES00PZ	BES02FU
	Part number		BES 516-325-G-E5-C-S49	BES M12EI-PSC40B-S04G
PNP, NC	Ordering code		BES00Z1	BES02FT
	Part number		BES 516-370-G-E5-C-S49	BES M12EI-POC40B-S04G
NPN, NO	Ordering code	BES03UP	BES00TE	BES02FR
	Part number	BES 516-329-SA96-G-E5-C-S4	BES 516-329-G-E5-C-S49	BES M12EI-NSC40B-S04G
NPN, NC	Ordering code		BES010J	
	Part number		BES 516-375-G-E5-C-S49	
Supply voltage U_B		10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.		2.5 V	2.5 V	2.5 V
Rated insulation voltage U_i (protection class)		250 V AC (□)	75 V DC	250 V AC (□)
Rated operating current I_o		200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70°C	-25...+70°C	-25...+85 °C
Switching frequency f max.		2.5 kHz	2.5 kHz	1 kHz
Output function indicator		Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 68 per BWN Pr. 20	IP 67	IP 68 per BWN Pr. 20
Approvals		CE, cULus	CE, cULus	CE, cULus
Special properties				
Material	Housing	Brass-coated	Brass-coated	Stainless steel
	Sensing surface	with ceramic coating	LCP	LCP
Connection		M12 connector, 4-pin	M8 connector, 3-pin	M12 connector, 4-pin
Suggested mating cable		BCC M415-0000-1A-003-EX44T2-020	BCC M313-0000-10-001-EX43T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M12x1



SUPERSHORTY™

M12x1	M12x1	M12x1	M12x1	M12x1
Flush	Flush	Flush	Flush	Flush
4 mm	4 mm	4 mm	4 mm	4 mm
0...3.2 mm	0...3.2 mm	0...3 mm	0...3.2 mm	0...3.2 mm
2X	2X	2X	2X	2X
BES038C	BES01C7	BES035R	BES0464	BES00PW
BES M12EI-PSC40B-S04G-009	BES 516-325-G-S4-C	BES 516-325-SA96-G-S4-C	BES M12EA-PSC40B-EP00,3-GS04	BES 516-325-G-E4-C-S4-00,5
			BES0465	
			BES M12EA-POC40B-EP00,3-GS04	
			BES0467	BES03EK
			BES M12EA-NSC40B-EP00,3-GS04	BES 516-329-G-E4-C-S4-PU-00,5
			BES0466	
			BES M12EA-NOC40B-EP00,3-GS04	
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2.5 V	2.5 V	1.7 V	2.5 V
250 V AC (□)	250 V AC (□)	250 V AC (□)	75 V DC	250 V AC (□)
200 mA	200 mA	200 mA	100 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-40...+85 °C	-25...+70°C	-25...+70°C	-40...+85 °C	-25...+70°C
2 kHz	1 kHz	1 kHz	1 kHz	2.5 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 67	IP 68 per BWN Pr. 20
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
			Short design	
Stainless steel	Brass-coated	Brass-coated	Stainless steel	Brass-coated
LCP	LCP	with ceramic coating	LCP	LCP
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	0.3 m PUR cable with M12 connector, 4-pin	0.5 m PUR cable with M12 connector, 4-pin
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

Tubular housings

Block housings

DC 2-wire

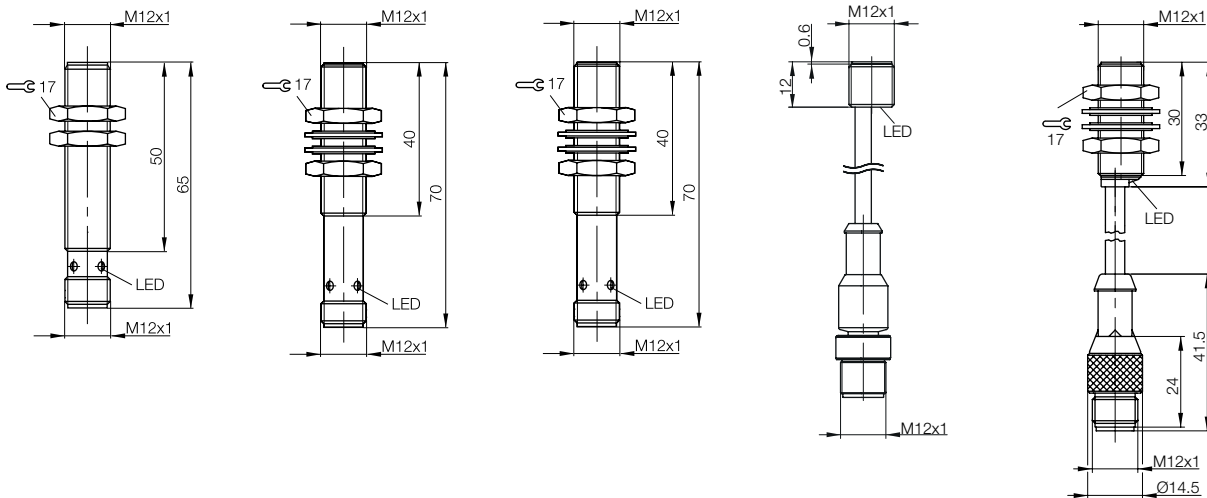
AC/DC 2-wire

AC 2-wire

Analog distance measurement

Special properties

Special accessories



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M12x1

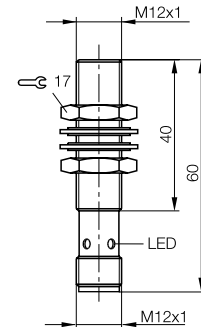
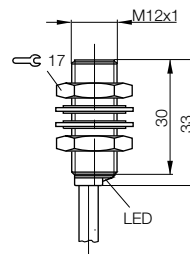
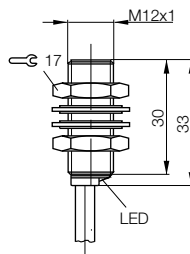


Housing size		M12x1	M12x1	M12x1
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush	Quasi-flush
Rated switching distance s_n		4 mm	4 mm	6 mm
Assured switching distance s_a		0...3.2 mm	0...3.2 mm	0...4.8 mm
Sensing distance		2X	2X	3X
PNP, NO	Ordering code	BES00PL	BES00PP	BES02WZ
	Part number	BES 516-325-G-E4-C-02	BES 516-325-G-E4-C-PU-02	BES M12MG1-PSC60B-S04G
PNP, NC	Ordering code	BES00YU	BES00YW	BES02WY
	Part number	BES 516-370-G-E4-C-02	BES 516-370-G-E4-C-PU-02	BES M12MG1-POC60B-S04G
PNP, complementary	Ordering code			
	Part number			
NPN, NO	Ordering code	BES00T6	BES00T9	BES02WW
	Part number	BES 516-329-G-E4-C-02	BES 516-329-G-E4-C-PU-02	BES M12MG1-NSC60B-S04G
NPN, NC	Ordering code	BES010C	BES010E	BES02WU
	Part number	BES 516-375-G-E4-C-02	BES 516-375-G-E4-C-PU-02	BES M12MG1-NOC60B-S04G
Supply voltage U_B		10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.		2.5 V	2.5 V	2 V
Rated insulation voltage U_i (protection class)		250 V AC (II)	250 V AC (II)	75 V DC
Rated operating current I_o		200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70°C	-25...+70°C	-25...+70°C
Switching frequency f max.		2.5 kHz	2.5 kHz	800 Hz
Output function indicator		Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 67
Approvals		CE, cULus	CE, cULus	CE
Special properties				Large switching distance
Material	Housing	Brass-coated	Brass-coated	Brass-coated
	Sensing surface	LCP	LCP	PBT
Connection		2 m PVC cable, 22 AWG	2 m PUR cable, 22 AWG	M12 connector, 4-pin
Suggested mating cable				BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Tubular Sensors

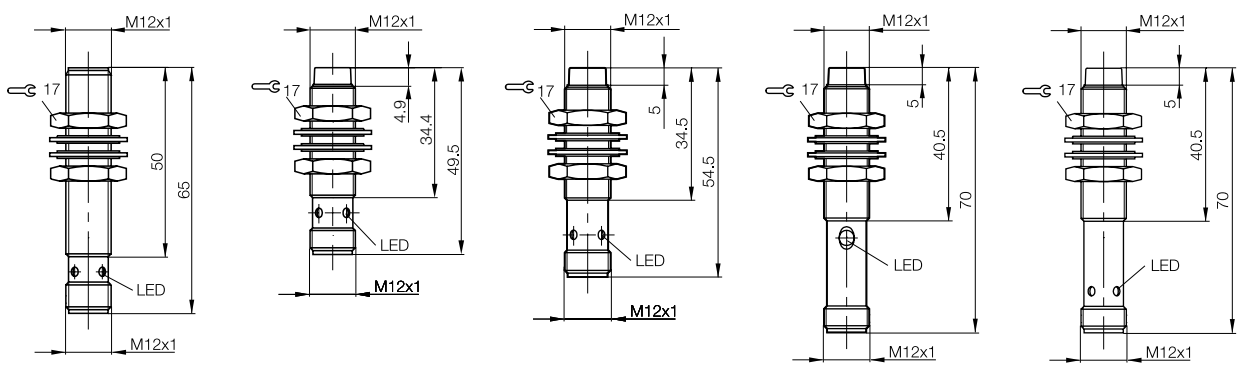
Tubular housing, M12x1



M12x1	M12x1	M12x1	M12x1	M12x1
Quasi-flush	Non-flush	Non-flush	Non-flush	Non-flush
8 mm	4 mm	4 mm	4 mm	4 mm
0...5.8 mm	0...3.2 mm	0...3.2 mm	0...3.2 mm	0...3.2 mm
4X	1X	1X	1X	1X
BES01ZN	BES00UY		BES02FC	BES01H6
BES M12MI-PSH80B-S04G	BES 516-356-E5-C-S4		BES 515-356-S4-C	BES 516-356-S4-C
	BES00KM		BES018Y	
	BES 516-3019-E5-C-S4		BES 516-3019-S4-C	
				BES0178
				BES 516-131-S4-C
BES01ZY		BES030Z	BES01HE	
BES M12MI-NSH80B-S04G		BES 516-357-E5-Y-S4	BES 516-357-S4-C	
			BES019E	
			BES 516-3030-S4-C	
10...55 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2 V	3.5 V	1.5 V	1.5 V
250 V AC (□)	250 V AC (□)	75 V DC	250 AC (□)	250 V AC (□)
200 mA	200 mA	130 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
0...+60 °C	-25...+70°C	-25...+70°C	-40...+85 °C	-40...+85 °C
300 Hz	2 kHz	400 Hz	1.5 kHz	1.5 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
CE	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Large switching distance				
Brass-coated	Brass-coated	Brass-coated	Stainless steel	Stainless steel
LCP	PBT	PA 12	PA 12	PA 12
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire Tubular housings
- Block housings
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Analog distance measurement
- Special properties
- Special accessories



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M12x1

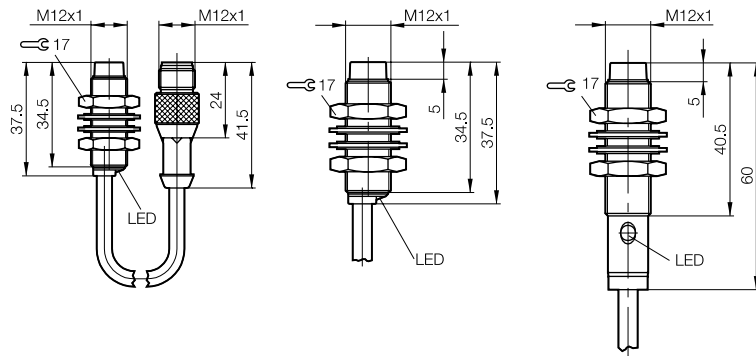


	M12x1	M12x1	M12x1
Housing size	M12x1	M12x1	M12x1
Installation type (observe instructions in the Basic Information chapter)	Non-flush	Non-flush	Non-flush
Rated switching distance s_n	4 mm	4 mm	4 mm
Assured switching distance s_a	0...3.2 mm	0...3.2 mm	0...3.2 mm
Sensing distance	1X	1X	1X
PNP, NO	Ordering code Part number	BES00UT BES 516-356-E4-C-S4-00,3	BES00UL BES 516-356-E4-C-02
PNP, NC	Ordering code Part number		BES01H1 BES 516-356-BO-C-02
NPN, NO	Ordering code Part number	BES00W0 BES 516-357-E4-C-02	BES018P BES 516-3019-BO-C-02
NPN, NC	Ordering code Part number	BES00M0 BES 516-3030-E4-C-02	BES01H7 BES 516-357-BO-C-02
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.	2 V	2 V	1.5 V
Rated insulation voltage U_i (protection class)	250 V AC (II)	250 V AC (II)	250 V AC (II)
Rated operating current I_o	200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70°C	-25...+70°C	-40...+85 °C
Switching frequency f max.	2 kHz	2 kHz	1.2 kHz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
Approvals	CE, cULus	CE, cULus	CE, cULus
Special properties			
Material	Housing: Brass-coated Sensing surface: PBT	Brass-coated PBT	Stainless steel PA 12
Connection	0.3 m PUR cable with M12 connector, 4-pin	2 m PVC cable, 22 AWG	2 m PVC cable, 22 AWG
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020		

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M12x1



SUPERSHORTY™

M12x1	M12x1	M12x1	M12x1	M12x1	
Non-flush	Non-flush	Non-flush	Non-flush	Non-flush	
6 mm	8 mm	10 mm	10 mm	10 mm	
0...4.8 mm	0...6.4 mm	0...8 mm	0...8 mm	0...8 mm	
2X	2X	3X	3X	3X	
BES047L	BES01PN	BES02WK	BES02WR	BES02WR	
BES M12EA-PSC60F-EP00,3-GS04	BES M12EG-PSC80F-S04G	BES M12MC1-PSC10F-S04G	BES M12MF1-PSC10F-S04G	BES M12MF1-PSC10F-S04G	
BES047M			BES02WP	BES02WP	
BES M12EA-POC60F-EP00,3-GS04			BES M12MF1-POC10F-S04G	BES M12MF1-POC10F-S04G	
BES047P		BES02WJ	BES02WN	BES02WN	
BES M12EA-NSC60F-EP00,3-GS04		BES M12MC1-NSC10F-S04G	BES M12MF1-NSC10F-S04G	BES M12MF1-NSC10F-S04G	
BES047N					
BES M12EA-NOC60F-EP00,3-GS04					
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	
2.5 V	2.5 V	2 V	2 V	2 V	
75 V DC	250 V AC (□)	75 V DC	75 V DC	75 V DC	
100 mA	200 mA	200 mA	200 mA	200 mA	
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	
-40...+85 °C	-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C	
1 kHz	1.5 kHz	400 Hz	400 Hz	400 Hz	
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED	
IP 67	IP 68 per BWN Pr. 20	IP 67	IP 67	IP 67	
CE, cULus	CE, cULus	CE	CE	CE	
Short design		Large switching distance	Large switching distance		
Stainless steel	Stainless steel	Brass-coated	Brass-coated		
LCP	PBT	PBT	PBT		
0.3 m PUR cable with M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin		
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

Tubular housings

Block housings

DC 2-wire

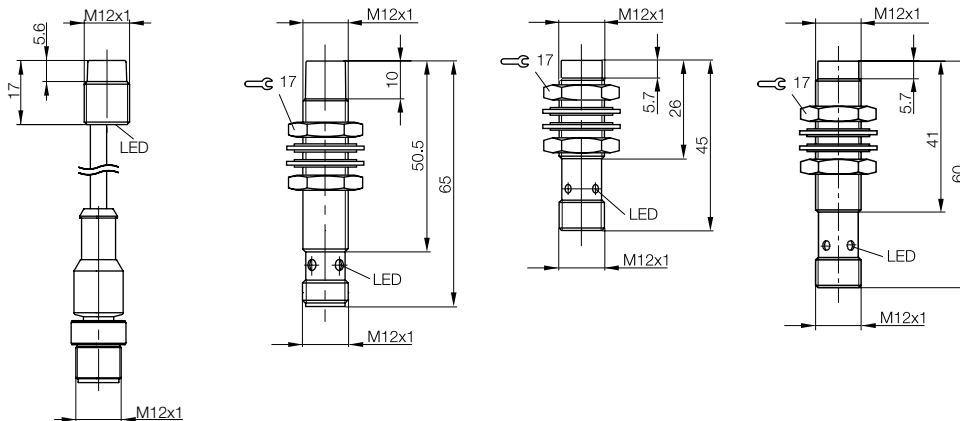
AC/DC 2-wire

AC 2-wire

Analog distance measurement

Special properties

Special accessories



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M18x1

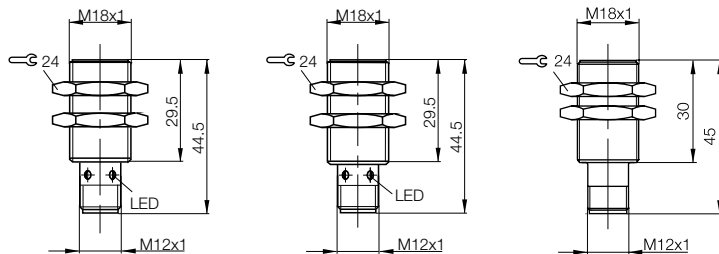


Housing size		M18x1	M18x1	M18x1
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush	Flush
Rated switching distance s_n		5 mm	5 mm	5 mm
Assured switching distance s_a		0...4 mm	0...4 mm	0...4 mm
Sensing distance		1X	1X	1X
PNP, NO	Ordering code	BES00R6		BES02ET
	Part number	BES 516-326-E5-C-S4		BES 515-326-E5-T-S4
PNP, NC	Ordering code		BES00YC	
	Part number		BES 516-367-E5-Y-S4	
PNP, complementary	Ordering code			
	Part number			
NPN, NO	Ordering code		BES00UC	
	Part number		BES 516-355-E5-Y-S4	
NPN, NC	Ordering code			
	Part number			
NPN, complementary	Ordering code			
	Part number			
Supply voltage U_B		10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_a at I_e max.		2 V	3.5 V	3.5 V
Rated insulation voltage U_i (protection class)		75 V DC	75 V DC	75 V DC
Rated operating current I_e		200 mA	130 mA	130 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70°C	-25...+70°C	-40...+105 °C*
Switching frequency f max.		1 kHz	500 Hz	500 Hz
Output function indicator		Yellow LED	Yellow LED	No
Degree of protection as per IEC 60529		IP 67	IP 67	IP 69K, IP 68 as per BWN Pr. 27
Approvals		CE, cULus	CE, cULus	CE, cULus
Special properties				Resistant to high pressure cleaners
Material	Housing	Brass-coated	Brass-coated	Stainless steel
	Sensing surface	PBT	PA 12	PA 12
Connection		M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable		BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

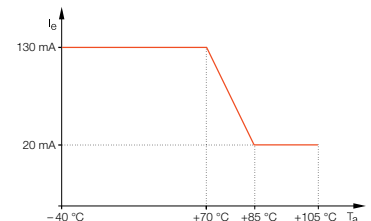
See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



*max. load current over temperature



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M18x1



M18x1	M18x1	M18x1	M18x1	M18x1
Flush	Flush	Flush	Flush	Flush
5 mm	5 mm	5 mm	5 mm	5 mm
0...4 mm	0...4 mm	0...4 mm	0...4 mm	0...4 mm
1X	1X	1X	1X	1X
BES01CW	BES01CZ	BES02EU	BES00R5	BES00R0
BES 516-326-S4-C	BES 516-326-S4-H	BES 515-326-S4-C	BES 516-326-E4-C-S4-00,2	BES 516-326-E4-C-02
BES01JW				
BES 516-367-S4-C				
BES015N				
BES 516-105-S4-C				
BES01H0				
BES 516-355-S4-C				
BES01JU				
BES 516-366-S4-C				
BES015U				
BES 516-111-S4-C				
10...30 V DC	10...55 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	1.5 V	1.5 V	2 V	2 V
250 V AC (□)	250 V AC (□)	250 V AC (□)	75 V DC	75 V DC
200 mA	200 mA	200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70°C	-40...+85 °C	-25...+70°C	-25...+70°C
900 Hz	900 Hz	900 Hz	1 kHz	1 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 67	IP 67
CE, cULus	CE	CE, cULus	CE, cULus	CE, cULus
Brass-coated	Brass-coated	Stainless steel	Brass-coated	Brass-coated
PA 12	PA 12	PA 12	PA 12	PBT
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	0.2 m PUR cable with M12 connector, 4-pin	2 m PVC cable, 22 AWG
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

Tubular housings

Block housings

DC 2-wire

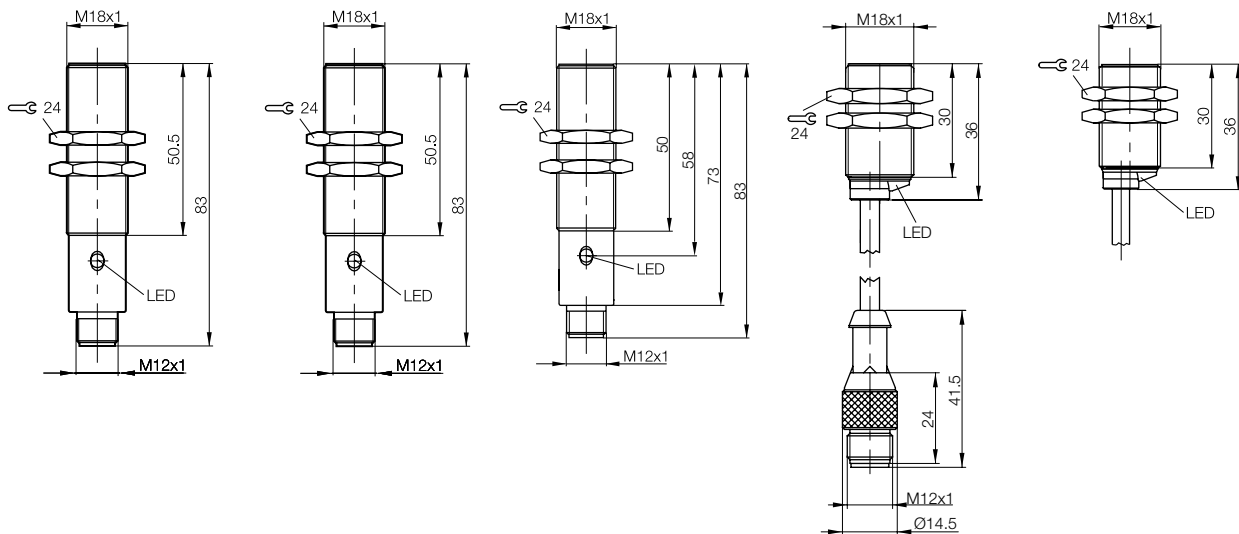
AC/DC 2-wire

AC 2-wire

Analog distance measurement

Special properties

Special accessories



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M18x1

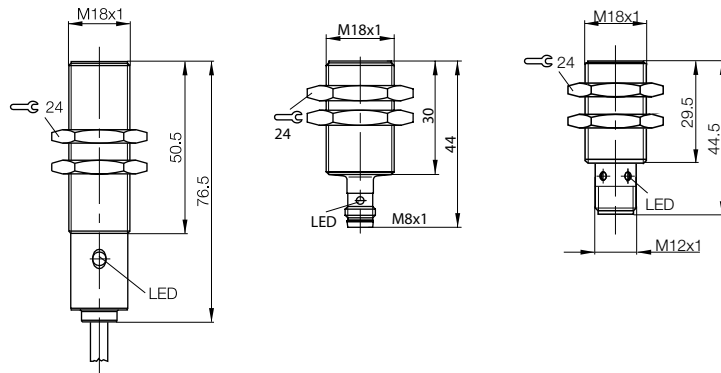


Housing size		M18x1	M18x1	M18x1
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush	Flush
Rated switching distance s_n		5 mm	8 mm	8 mm
Assured switching distance s_a		0...4 mm	0...6.4 mm	0...6.4 mm
Sensing distance		1X	2X	2X
PNP, NO	Ordering code	BES01CE	BES030R	BES00RC
	Part number	BES 516-326-BO-C-02	BES 516-326-G-E5-Y-S49	BES 516-326-G-E5-C-S4
PNP, NC	Ordering code		BES00YK	BES00YJ
	Part number		BES 516-367-G-E5-Y-S49	BES 516-367-G-E5-Y-S4
PNP, complementary	Ordering code			
	Part number			
NPN, NO	Ordering code	BES01JP	BES00UK	BES00UJ
	Part number	BES 516-366-BO-C-02	BES 516-355-G-E5-Y-S49	BES 516-355-G-E5-Y-S4
NPN, NC	Ordering code			
	Part number			
Supply voltage U_B		10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.		2.5 V	3.5 V	3.5 V
Rated insulation voltage U_i (protection class)		250 V AC (II)	75 V DC	75 V DC
Rated operating current I_o		200 mA	130 mA	130 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70°C	-25...+70°C	-25...+70°C
Switching frequency f max.		500 Hz	200 Hz	200 Hz
Output function indicator		Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 68 per BWN Pr. 20	IP 67	IP 67
Approvals		CE, cULus	CE, cULus	CE, cULus
Material	Housing	Brass-coated	Brass-coated	Brass-coated
	Sensing surface	PA 12	PBT	PBT
Connection		2 m PVC cable, 22 AWG	M8 connector, 3-pin	M12 connector, 4-pin
Suggested mating cable			BCC M313-0000-10-001-EX43T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Tubular Sensors

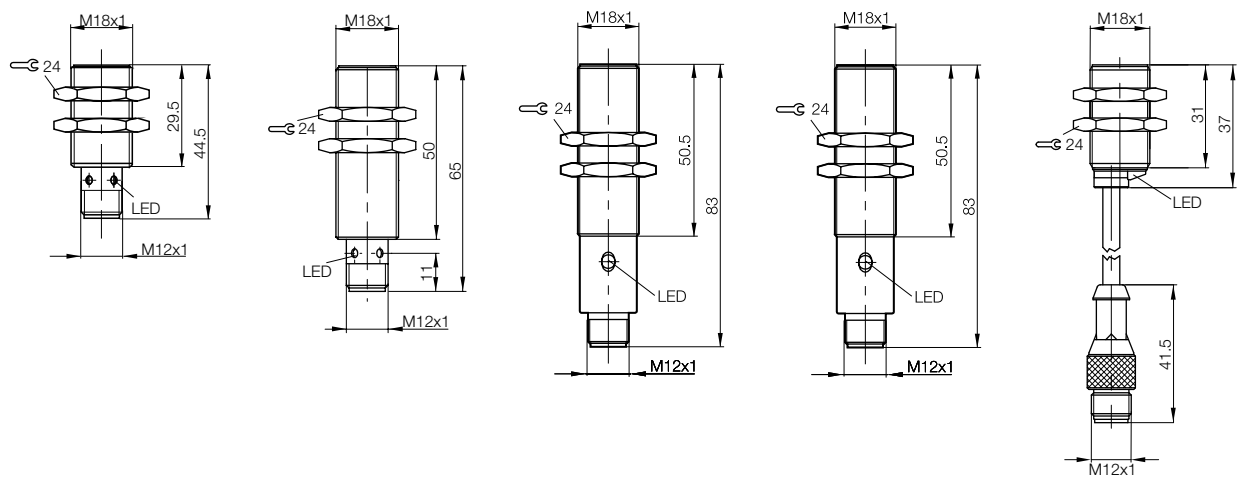
Tubular housing, M18x1



M18x1	M18x1	M18x1	M18x1	M18x1
Flush	Flush	Flush	Flush	Flush
8 mm	8 mm	8 mm	8 mm	8 mm
0...6.3 mm	0...6.4 mm	0...6.4 mm	0...6.4 mm	0...6.4 mm
2X	2X	2X	2X	2X
BES02P3	BES02H0	BES01CT	BES01CU	BES00RA
BES 516-326-SA96-G-E5-Y-S4	BES M18EI-PSC80B-S04G	BES 516-326-G-S4-C	BES 516-326-G-S4-H	BES 516-326-G-E4-C-S4-00,3
	BES02FZ			
	BES M18EI-POC80B-S04G			
			BES015M	
			BES 516-105-G-S4-H	
BES02P4	BES02FY			
BES 516-355-SA96-G-E5-Y-S4	BES M18EI-NSC80B-S04G			
	BES02FW			
	BES M18EI-NOC80B-S04G			
10...30 V DC	10...30 V DC	10...30 V DC	10...55 V DC	10...30 V DC
3.5 V	2.5 V	2.5 V	2.5 V	2.5 V
75 V DC	250 V AC (□)	75 V DC (□)	75 V DC	75 V DC
130 mA	200 mA	200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-40...+85 °C	0...70 °C	0...+70 °C	-25...+70°C
200 Hz	700 Hz	80 Hz	80 Hz	500 Hz
Yellow LED	Yellow LED	Yes	Yellow LED	Yellow LED
IP 67	IP 68 per BWN Pr. 20	IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus	CE	CE, cULus
Brass-coated	Stainless steel	Brass-coated	Brass-coated	Brass-coated
with ceramic coating	PBT	PBT	PBT	PBT
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	0.3 m PUR cable with M12 connector, 4-pin
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire Tubular housings
- Block housings
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Analog distance measurement
- Special properties
- Special accessories



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M18x1

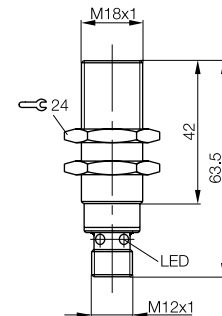
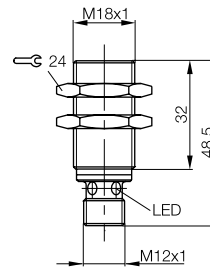
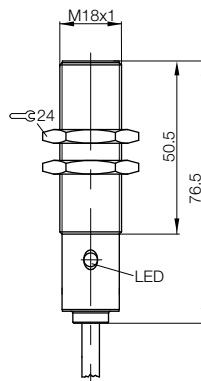


Housing size	M18x1	M18x1	M18x1
Installation type (observe instructions in the Basic Information chapter)	Flush	Quasi-flush	Quasi-flush
Rated switching distance s_n	8 mm	12 mm	12 mm
Assured switching distance s_a	0...6.4 mm	0...9.6 mm	0...9.6 mm
Sensing distance	2X	3X	3X
PNP, NO	Ordering code Part number	BES01CN BES 516-326-G-BO-C-PU-02	BES02Y5 BES M18MD1-PSC12B-S04G
PNP, NC	Ordering code Part number		BES02Y9 BES M18MG1-PSC12B-S04G
NPN, NO	Ordering code Part number	BES02Y4 BES M18MD1-NSC12B-S04G	BES02Y8 BES M18MG1-NSC12B-S04G
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.	2.5 V	2 V	2 V
Rated insulation voltage U_i (protection class)	250 V AC (II)	75 V DC	75 V DC
Rated operating current I_o	200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	0...+70 °C	-25...+70°C	-25...+70°C
Switching frequency f max.	80 Hz	500 Hz	500 Hz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67
Approvals	CE, cULus	CE	CE
Special properties		Large switching distance	Large switching distance
Material	Housing: Brass-coated Sensing surface: PA 12	Brass-coated PBT	Brass-coated PBT
Connection	2 m PUR cable, 22 AWG	M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable		BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M18x1



M18x1	M18x1	M18x1	M18x1	M18x1
Non-flush	Non-flush	Non-flush	Non-flush	Non-flush
8 mm	8 mm	8 mm	8 mm	8 mm
0...6.5 mm	0...6.5 mm	0...6.5 mm	0...6.5 mm	0...6.5 mm
1X	1X	1X	1X	1X
BES00WM	BES02FK	BES02FM	BES03AW	BES01HY
BES 516-360-E5-Y-S4	BES 515-360-E5-T-S4	BES 515-360-SA12-S4-T	BES 516-360-S4-L	BES 516-360-S4-C
BES00LL				BES0193
BES 516-3026-E5-Y-S4				BES 516-3026-S4-C
BES00WT				
BES 516-361-E5-Y-S4				
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
3.5 V	3.5 V	3.5 V	2.5 V	1.5 V
75 V DC	75 DC	75 V DC	250 V AC (□)	250 V AC (□)
130 mA	130 mA	130 mA	400 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/No/No	Yes/Yes/Yes
-25...+70°C	-40...+105 °C*	-40...+85 °C (momentarily 105 °C)	-40...+85 °C	-25...+70°C
200 Hz	200 Hz	200 Hz	200 Hz	600 Hz
Yellow LED	No	No	Yellow LED	Yellow LED
IP 67	IP 69K, IP 68 as per BWN Pr. 27	IP 69K, IP 68 as per BWN Pr. 27	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
	Resistant to high pressure cleaners	Resistant to high pressure cleaners		
Brass-coated	Stainless steel	Stainless steel	Brass-coated	Brass-coated
PA 12	PA 12	PA 12	PA 12	PA 12
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020



Inductive sensors

Global DC 3-wire

DC 3-/4-wire Tubular housings

Block housings

DC 2-wire

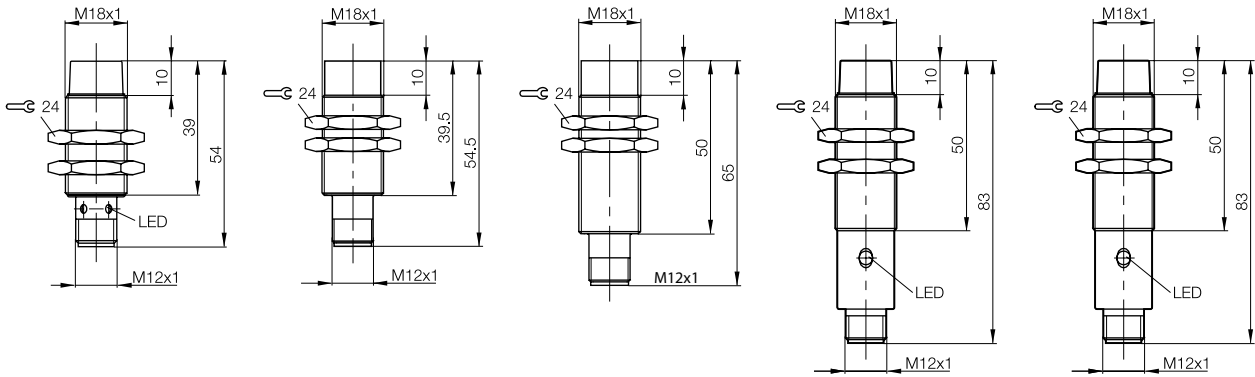
AC/DC 2-wire

AC 2-wire

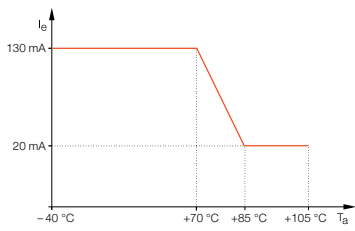
Analog distance measurement

Special properties

Special accessories



*max. load current over temperature



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M18x1

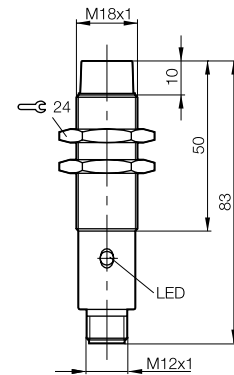
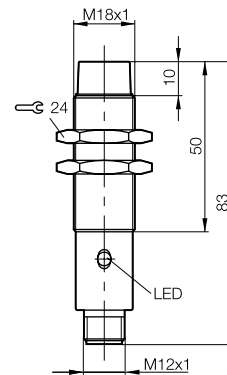
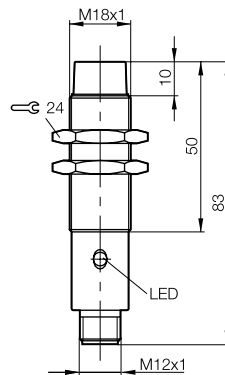


Housing size	M18x1	M18x1	M18x1
Installation type (observe instructions in the Basic Information chapter)	Non-flush	Non-flush	Non-flush
Rated switching distance s_n	8 mm	8 mm	8 mm
Assured switching distance s_a	0...6.5 mm	0...6.5 mm	0...6.5 mm
Sensing distance	1X	1X	1X
PNP, NO	Ordering code		BES02FL
	Part number		BES 515-360-S4-C
PNP, NC	Ordering code		
	Part number		
PNP, complementary	Ordering code	BES016Y	
	Part number	BES 516-123-S4-C	
NPN, NO	Ordering code		BES01J5
	Part number		BES 516-361-S4-C
NPN, NC	Ordering code		BES019H
	Part number		BES 516-3031-S4-C
NPN, complementary	Ordering code		BES0171
	Part number		BES 516-124-S4-C
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_a at I_e max.	2.5 V	2.5 V	1.5 V
Rated insulation voltage U_i (protection class)	250 V AC (□)	250 V AC (□)	250 V AC (□)
Rated operating current I_e	200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-40...+85 °C	-25...+70 °C	-40...+85 °C
Switching frequency f max.	200 Hz	200 Hz	600 Hz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
Approvals	CE, cULus	CE, cULus	CE, cULus
Material			
Housing	Brass-coated	Brass-coated	Stainless steel
Sensing surface	PA 12	PA 12	PA 12
Connection	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Tubular Sensors

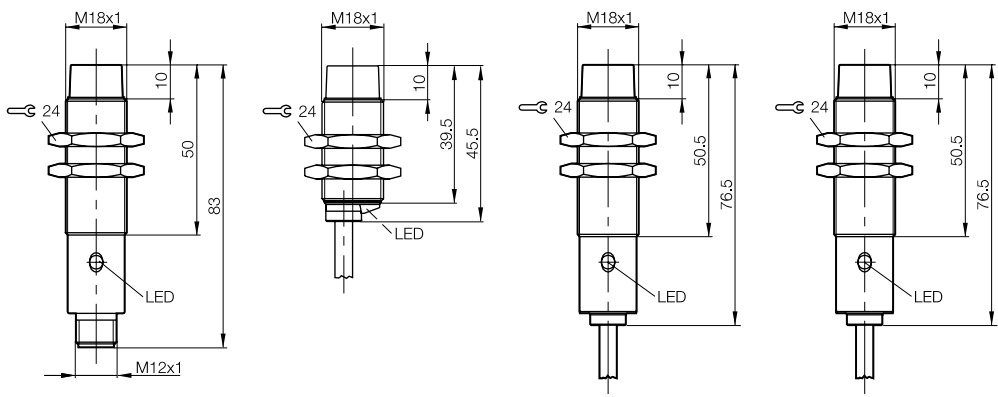
Tubular housing, M18x1



M18x1 Non-flush 8 mm 0...6.5 mm 1X	M18x1 Non-flush 8 mm 0...6.5 mm 1X BES00WH BES 516-360-E4-Y-02	M18x1 Non-flush 8 mm 0...6.5 mm 1X	M18x1 Non-flush 8 mm 0...6.5 mm 1X BES018Z BES 516-3026-BO-C-02	
BES02E1 BES 515-123-S4-C	BES00LH BES 516-3026-E4-Y-02	BES00WN BES 516-361-E4-Y-02	BES01HZ BES 516-361-BO-C-02	
		BES019F BES 516-3031-BO-C-02		
10...30 V DC 2.5 V 250 V AC (□) 200 mA Yes/Yes/Yes -40...+85 °C 200 Hz Yellow LED IP 68 per BWN Pr. 20 CE, cULus Stainless steel PA 12 M12 connector, 4-pin BCC M415-0000-1A-003-EX44T2-020	10...30 V DC 3.5 V 250 V AC (□) 130 mA Yes/Yes/Yes -25...+70°C 200 Hz Yellow LED IP 68 per BWN Pr. 20 CE, cULus Brass-coated PA 12 2 m PVC cable, 22 AWG	10...30 V DC 2.5 V 250 V AC (□) 200 mA Yes/Yes/Yes -25...+70°C 200 Hz Yellow LED IP 67 CE, cULus Brass-coated PA 12 2 m PVC cable, 22 AWG	10...30 V DC 1.5 V 250 V AC (□) 200 mA Yes/Yes/Yes -25...+70°C 600 Hz Yellow LED IP 68 per BWN Pr. 20 CE, cULus Brass-coated PA 12 2 m PVC cable, 22 AWG	



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire Tubular housings
- Block housings
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Analog distance measurement
- Special properties
- Special accessories



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M18x1

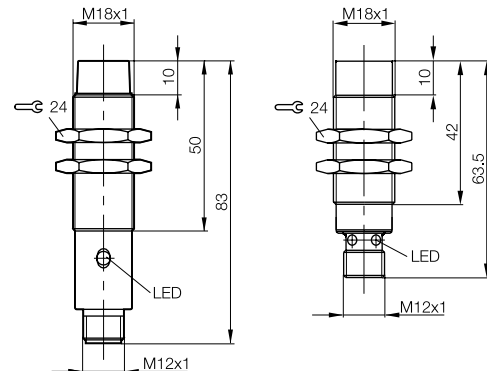


Housing size		M18x1	M18x1
Installation type (observe instructions in the Basic Information chapter)		Non-flush	Non-flush
Rated switching distance s_n		16 mm	20 mm
Assured switching distance s_a		0...13 mm	0...16 mm
Sensing distance		2X	3X
PNP, NO	Ordering code	BES016W	BES02Y7
	Part number	BES 516-123-G-S4-H	BES M18ME1-PSC20F-S04G
PNP, NC	Ordering code	BES01HW	
	Part number	BES 516-360-G-S4-H	
PNP, complementary	Ordering code		
	Part number		
NPN, NO	Ordering code		BES02Y6
	Part number		BES M18ME1-NSC20F-S04G
NPN, complementary	Ordering code		
	Part number		
Supply voltage U_B		10...55 V DC	10...30 V DC
Voltage drop U_d at I_e max.		2.5 V	2 V
Rated insulation voltage U_i (protection class)		250 V AC (II)	75 V DC
Rated operating current I_e		200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70°C	-25...+70°C
Switching frequency f max.		80 Hz	200 Hz
Output function indicator		Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 68 per BWN Pr. 20	IP 67
Approvals		CE	CE
Special properties			Large switching distance
Material	Housing	Brass-coated	Brass-coated
	Sensing surface	PA 12	PBT
Connection		M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable		BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



Monitor rotary speed

Two inductive sensors are used to protect rotary applications from overspeed. Attached to a perforated disk, they determine rotary speed and direction.

- Extremely reliable (EMC, shock)
- For extreme conditions (temperature fluctuations)
- Long service life

DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M30x1.5



Inductive sensors

Global DC 3-wire

DC 3-/4-wire Tubular housings

Block housings

DC 2-wire

AC/DC 2-wire

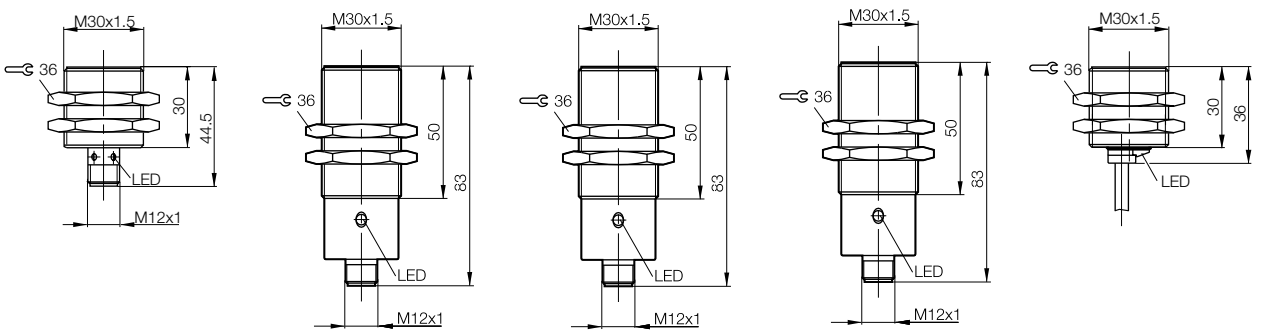
AC 2-wire

Analog distance measurement

Special properties

Special accessories

M30x1.5	M30x1.5	M30x1.5	M30x1.5	M30x1.5
Flush	Flush	Flush	Flush	Flush
10 mm	10 mm	10 mm	10 mm	10 mm
0...8 mm	0...8.1 mm	0...8.1 mm	0...8.1 mm	0...8.1 mm
1X	1X	1X	1X	1X
BES00RP	BES01EE	BES02F1		BES00RF
BES 516-327-E5-Y-S4	BES 516-327-S4-C	BES 515-327-S4-C		BES 516-327-E4-Y-02
BES00LM	BES0195			
BES 516-3028-E5-Y-S4	BES 516-3028-S4-C			
	BES0167		BES02E0	
	BES 516-114-S4-C		BES 515-114-S4-C	
BES00W9	BES01HL			BES00W5
BES 516-359-E5-Y-S4	BES 516-359-S4-C			BES 516-359-E4-Y-02
	BES016J			
	BES 516-120-S4-C			
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
3.5 V	2.5 V	2.5 V	2.5 V	3.5 V
75 V DC	250 V AC (□)	250 V AC (□)	250 V AC (□)	75 V DC
130 mA	200 mA	200 mA	200 mA	130 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70°C	-25...+70°C	-40...+85 °C	-25...+70°C
200 Hz	300 Hz	300 Hz	300 Hz	200 Hz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Brass-coated	Brass-coated	Stainless steel	Stainless steel	Brass-coated
PA 12	PA 12	PA 12	PA 12	PA 12
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	2 m PVC cable, 22 AWG
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M30×1.5

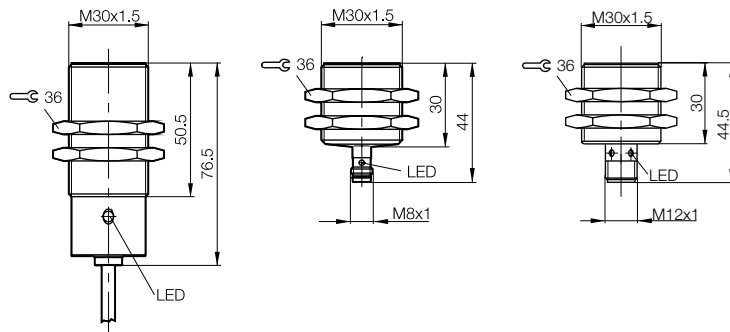


Housing size	M30×1.5	M30×1.5	M30×1.5
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	10 mm	15 mm	15 mm
Assured switching distance s_a	0...8.1 mm	0...12 mm	0...12 mm
Sensing distance	1X	2X	2X
PNP, NO	Ordering code Part number	BES01E3 BES 516-327-BO-C-02	BES00RY BES 516-327-G-E5-Y-S49
PNP, NC	Ordering code Part number		BES00RW BES 516-327-G-E5-Y-S4
PNP, complementary	Ordering code Part number		BES00LU BES 516-3028-G-E5-Y-S4
NPN, NO	Ordering code Part number	BES01HF BES 516-359-BO-C-02	BES00WE BES 516-359-G-E5-Y-S49
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.	2.5 V	3.5 V	3.5 V
Rated insulation voltage U_i (protection class)	250 V AC (□)	75 V DC	75 V DC
Rated operating current I_o	200 mA	130 mA	130 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70°C	-25...+70°C	-25...+70°C
Switching frequency f max.	300 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 68 per BWN Pr. 20
Approvals	CE, cULus	CE, cULus	CE, cULus
Special properties			
Material	Housing Sensing surface	Brass-coated PA 12	Brass-coated PA 12
Connection		M8 connector, 3-pin	M12 connector, 4-pin
Suggested mating cable	2 m PVC cable, 22 AWG	BCC M313-0000-10-001-EX43T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M30x1.5



M30x1.5	M30x1.5	M30x1.5	M30x1.5	M30x1.5	M30x1.5
Flush	Flush	Flush	Quasi-flush	Non-flush	
15 mm	15 mm	15 mm	22 mm	15 mm	
0...12 mm	0...12 mm	0...12 mm	0...17.6 mm	0...12.2 mm	
2X	2X	2X	3X	1X	
BES01EA	BES01EC	BES00RR	BES02YM	BES00Y0	
BES 516-327-G-S4-C	BES 516-327-G-S4-H	BES 516-327-G-E4-Y-02	BES M30MI1-PSC22B-S04G	BES 516-362-E5-Y-S4	
		BES00LN	BES02YL	BES00LZ	
		BES 516-3028-G-E4-Y-02	BES M30MI1-POC22B-S04G	BES 516-3029-E5-Y-S4	
	BES0166			BES00Y4	
	BES 516-114-G-S4-H			BES 516-363-E5-Y-S4	
		BES00WA	BES02YK		
		BES 516-359-G-E4-Y-02	BES M30MI1-NSC22B-S04G		
10...30 V DC	10...55 V DC	10...30 V DC	10...30 V DC	10...30 V DC	
2.5 V	2.5 V	3.5 V	2 V	3.5 V	
250 V AC (□)	250 V AC (□)	75 V DC	75 V DC	75 V DC	
200 mA	200 mA	130 mA	200 mA	130 mA	
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	
-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C	
100 Hz	150 Hz	100 Hz	200 Hz	100 Hz	
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED	
IP 67	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 67	IP 67	
CE, cULus	CE	CE, cULus	CE	CE, cULus	
			Large switching distance		
Brass-coated	Brass-coated	Brass-coated	Brass-coated	Brass-coated	
PA 12	PA 12	PA 12	PBT	PA 12	
M12 connector, 4-pin	M12 connector, 4-pin	2 m PVC cable, 22 AWG	M12 connector, 4-pin	M12 connector, 4-pin	
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020		BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

Tubular housings

Block housings

DC 2-wire

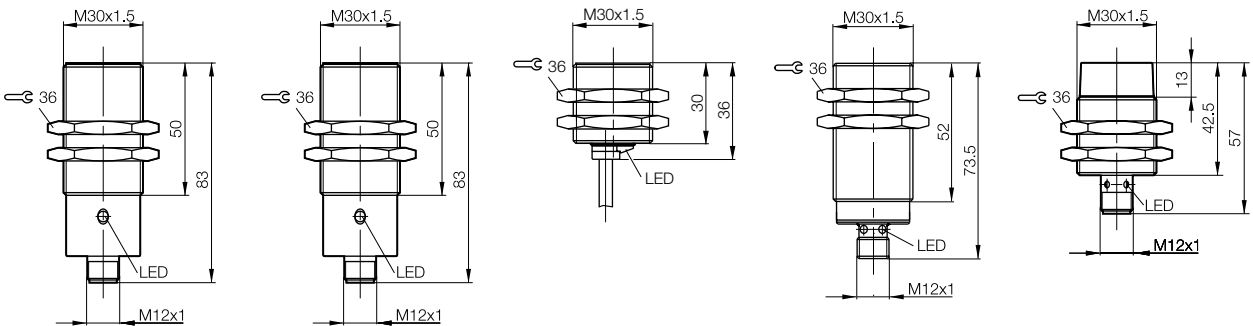
AC/DC 2-wire

AC 2-wire

Analog distance measurement

Special properties

Special accessories



DC 3-/4-wire Inductive Tubular Sensors

Tubular housing, M30×1.5

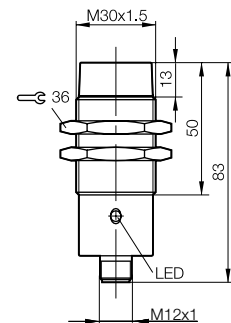
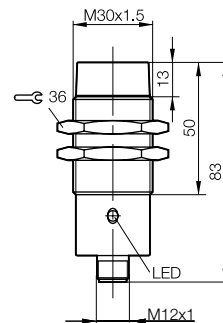
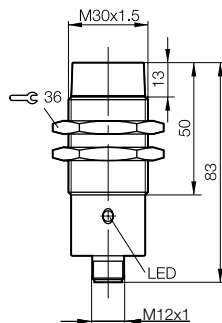


Housing size	M30×1.5	M30×1.5	M30×1.5
Installation type (observe instructions in the Basic Information chapter)	Non-flush	Non-flush	Non-flush
Rated switching distance s_n	15 mm	15 mm	15 mm
Assured switching distance s_a	0...12.2 mm	0...12.2 mm	0...12.2 mm
Sensing distance	1X	1X	1X
PNP, NO	Ordering code Part number	BES01JE BES 516-362-S4-C	BES03AL BES M30ML-PSC15F-S04G-002
PNP, NC	Ordering code Part number	BES0198 BES 516-3029-S4-C	
PNP, complementary	Ordering code Part number	BES0173 BES 516-125-S4-C	
NPN, NO	Ordering code Part number	BES01JN BES 516-363-S4-C	BES03AT BES M30ML-NSC15F-S04G-002
NPN, NC	Ordering code Part number	BES019N BES 516-3033-S4-C	
Supply voltage U_B	10...30 V DC	10...30 V DC	10...55 V DC
Voltage drop U_d at I_o max.	2.5 V	2.5 V	1.5 V
Rated insulation voltage U_i (protection class)	250 V AC (□)	250 V AC (□)	250 V AC (□)
Rated operating current I_o	200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70°C	-25...+70°C	-25...+70°C
Switching frequency f max.	100 Hz	75 Hz	400 Hz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 68 per BWN Pr. 20	IP 67	IP 68 per BWN Pr. 20
Approvals	CE, cULus	CE	CE
Special properties			
Material	Housing Sensing surface	Brass-coated PA 12	Brass-coated PA 12
Connection	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Tubular Sensors

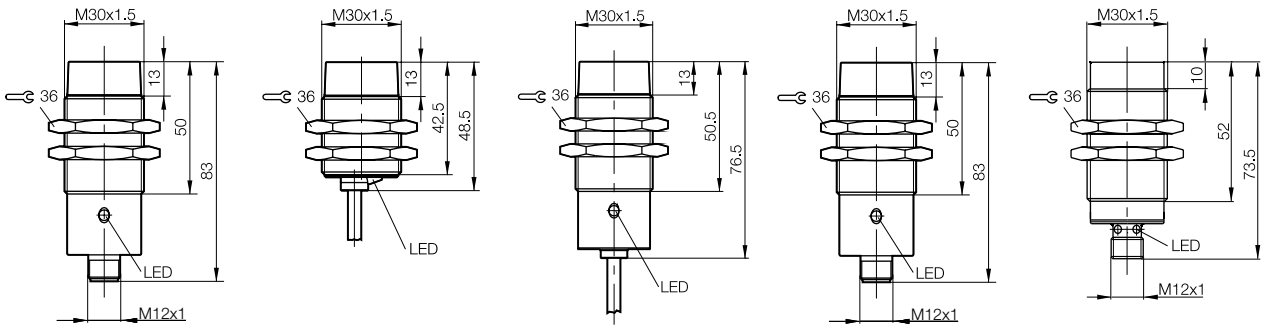
Tubular housing, M30x1.5



M30x1.5	M30x1.5	M30x1.5	M30x1.5	M30x1.5
Non-flush	Non-flush	Non-flush	Non-flush	Non-flush
15 mm	15 mm	15 mm	30 mm	40 mm
0...12.2 mm	0...12.2 mm	0...12.2 mm	0...24.00 mm	0...32 mm
1X	1X	1X	2X	3X
BES02FN	BES00WU	BES01J6	BES01JC	BES02YJ
BES 515-362-S4-C	BES 516-362-E4-Y-02	BES 516-362-BO-C-02	BES 516-362-G-S4-H	BES M30MG1-PSC40F-S04G
	BES00LW			
	BES 516-3029-E4-Y-02			
		BES01JJ		
		BES 516-363-BO-C-02		
	BES00Y1	BES019L		BES02YH
	BES 516-363-E4-Y-02	BES 516-3033-BO-C-02		BES M30MG1-NSC40F-S04G
10...30 V DC	10...30 V DC	10...30 V DC	10...55 V DC	10...30 V DC
2.5 V	3.5 V	2.5 V	2.5 V	2 V
250 V AC (□)	75 V DC	250 V AC (□)	250 V AC	75 V DC
200 mA	130 mA	200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C
100 Hz	100 Hz	100 Hz	70 Hz	100 Hz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 54
CE, cULus	CE, cULus	CE, cULus	CE	CE
				Large switching distance
Stainless steel	Brass-coated	Brass-coated	Brass-coated	Brass-coated
PA 12	PA 12	PA 12	PA 12	PBT
M12 connector, 4-pin	2 m cable PVC, 22 AWG	2 m cable PVC, 22 AWG	M12 connector, 4-pin	M12 connector, 4-pin
BCC M415-0000-1A-003-EX44T2-020			BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire Tubular housings
- Block housings
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Analog distance measurement
- Special properties
- Special accessories

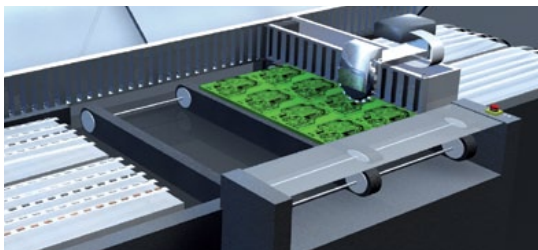


DC 3-/4-wire Inductive Block Sensors

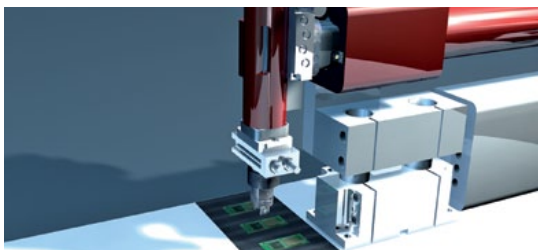
Block housing, 5x5 mm

Five good reasons for using inductive 5x5 sensors

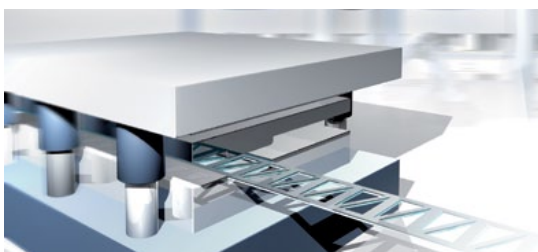
- Rugged, compact metal housing
- Switching variants (can be installed flush): 0.8 mm for high-precision applications, new 1.5 mm for extended range applications
- Connections: Supply (+), Ground (-), Output. Easy to integrate into standard and special controllers.
- Interface variants: PNP or NPN, normally open or normally closed
- Narrow installation design



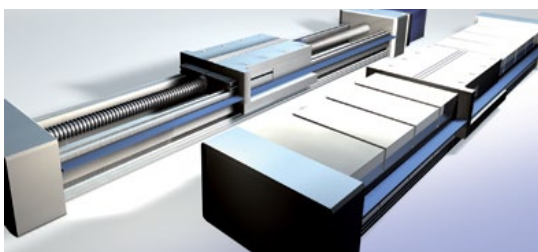
Electronics manufacturing: Applications require miniature sensors. Balluff offers mini.s in the highest degree of precision.



Robotics automation: The trend towards miniaturization continues. Balluff is leading the way.



Punching/reshaping technology: Automated assemblies are getting smaller and smaller. Balluff sensors adapt to this.



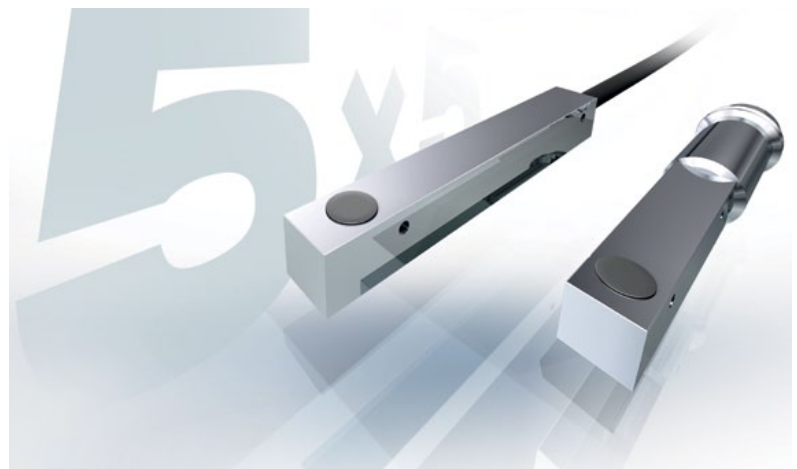
Linear technology: Position detection mini sensor designs achieve precise position with maximum performance.

Housing size	
Installation type (observe instructions in the Basic Information chapter)	
Rated switching distance s_n	
Assured switching distance s_a	
Sensing distance	
PNP, NO	Ordering code
	Part number
PNP, NC	Ordering code
	Part number
NPN, NO	Ordering code
	Part number
NPN, NC	Ordering code
	Part number
Supply voltage U_B	
Voltage drop U_d at I_o max.	
Rated insulation voltage U_i	
Rated operating current I_o	
Polarity reversal protected/transposition protected/short-circuit protected	
Ambient temperature T_a	
Switching frequency f max.	
Output function indicator	
Degree of protection as per IEC 60529	
Approvals	
Special properties	
Material	Housing
	Sensing surface
Connection	
Suggested mating cable	

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.





DC 3-/4-wire Inductive Block Sensors

Block housing, 5x5 mm



5x5 mm	5x5 mm	5x5 mm	5x5 mm	5x5 mm
Flush	Flush	Flush	Flush	Flush
0.8 mm	0.8 mm	0.8 mm	0.8 mm	0.8 mm
0...0.65 mm	0...0.65 mm	0...0.65 mm	0...0.65 mm	0...0.65 mm
1X	1X	1X	1X	1X
BES01RM	BES01ZF	BES019W	BES019T	BES019P
BES Q05AC-PSC08B-S26G	BES 516-3040-I02-C-S49	BES 516-3040-I02-C-S49-00,3	BES 516-3040-I02-C-S4-00,3	BES 516-3040-I02-C-PU-02
BES01RH	BES01ZH			BES01A1
BES Q05AC-POC08B-S26G	BES 516-3042-I02-C-S49			BES 516-3042-I02-C-PU-02
BES01RA	BES01A0			BES019Y
BES Q05AC-NSC08B-S26G	BES 516-3041-I02-C-S49			BES 516-3041-I02-C-PU-02
BES01R6	BES01A5			BES01A3
BES Q05AC-NOC08B-S26G	BES 516-3043-I02-C-S49			BES 516-3043-I02-C-PU-02
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2.5 V	2.5 V	2.5 V	2.5 V
75 V DC	75 DC	75 V DC	75 V DC	75 V DC
100 mA	100 mA	100 mA	100 mA	100 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C
3 kHz	3 kHz	3 kHz	3 kHz	3 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 67	IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Slim design	Slim design	Slim design	Slim design	Slim design
Anodized aluminum	Anodized aluminum	Anodized aluminum	Anodized aluminum	Anodized aluminum
PBT	PBT	PBT	PBT	PBT
M5 connector, 3-pin	M8 connector, 3-pin	0.3 m PUR cable with M8 connector, 3-pin	0.3 m PUR cable with M12 connector, 4-pin	2 m PUR cable, 26 AWG
BKS-B 25-3-PU-03	BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020	BCC M415-0000-1A-003-EX44T2-020	



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

Tubular housings

Block housings

DC 2-wire

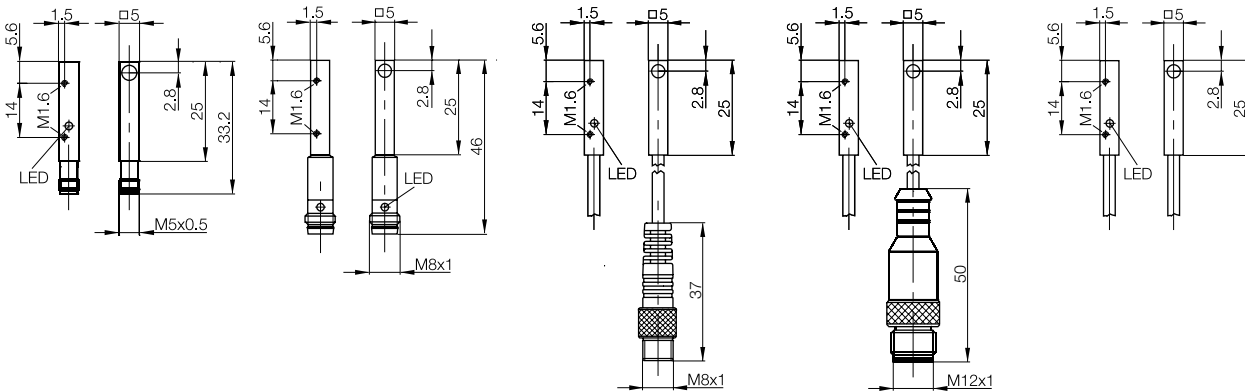
AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories



DC 3-/4-wire Inductive Block Sensors

Block housing, 5x5 mm

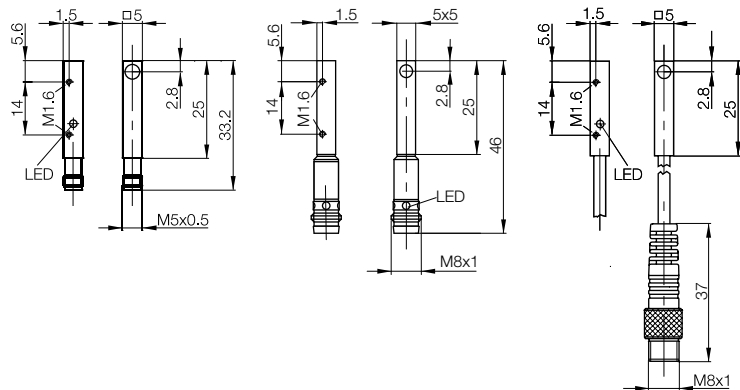


Housing size	5x5 mm	5x5 mm	5x5 mm
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	1.5 mm	1.5 mm	1.5 mm
Assured switching distance s_a	0...1.2 mm	0...1.2 mm	0...1.2 mm
Sensing distance	2X	2X	2X
PNP, NO	Ordering code Part number	BES01RP BES Q05AC-PSC15B-S26G	BES01RR BES Q05AC-PSC15B-S49G
PNP, NC	Ordering code Part number	BES01RK BES Q05AC-POC15B-S26G	BES01RL BES Q05AC-POC15B-S49G
NPN, normally open	Ordering code Part number	BES01RE BES Q05AC-NSC15B-S26G	BES01RF BES Q05AC-NSC15B-S49G
NPN, NC	Ordering code Part number	BES01R8 BES Q05AC-NOC15B-S26G	BES01R9 BES Q05AC-NOC15B-S49G
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.	2.5 V	3 V	3 V
Rated insulation voltage U_i	75 V DC	75 V DC	75 V DC
Rated operating current I_o	100 mA	100 mA	100 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70°C	-25...+70°C	-25...+70°C
Switching frequency f max.	2 kHz	2 kHz	2 kHz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67
Approvals	CE, cULus	CE, cULus	CE, cULus
Special properties	Slim design	Slim design	Slim design
Material	Housing: Stainless steel Sensing surface: PBT	Stainless steel PBT	Stainless steel PBT
Connection	M5 connector, 3-pin	M8 connector, 3-pin	0.3 m PUR cable with M8 connector, 3-pin
Suggested mating cable	BKS-B 25-3-PU-03	BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.





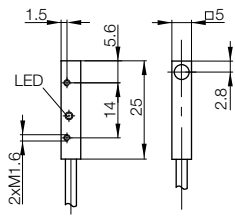
DC 3-/4-wire Inductive Block Sensors

Block housing, 5x5 mm



5x5 mm				
Flush				
1.5 mm				
0...1.2 mm				
2X				
BES01RN				
BES Q05AC-PSC15B-EP02				
BES01RJ				
BES Q05AC-POC15B-EP02				
BES01RC				
BES Q05AC-NSC15B-EP02				
BES01R7				
BES Q05AC-NOC15B-EP02				
10...30 V DC				
3 V				
75 V DC				
100 mA				
Yes/Yes/Yes				
-25...+70°C				
2 kHz				
Yellow LED				
IP 67				
CE, cULus				
Slim design				
Stainless steel				
PBT				
2 m PUR cable, 26 AWG				

- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire**
- Tubular housings
- Block housings
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties
- Analog distance measurement
- Accessories



DC 3-/4-wire Inductive Block Sensors

Block housing, 8×8 mm



SUPERSHORTY™

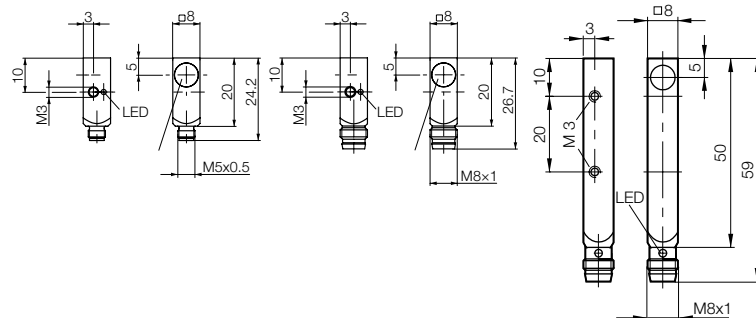
SUPERSHORTY™

Housing size	8×8 mm	8×8 mm	8×8 mm
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	1.5 mm	1.5 mm	1.5 mm
Assured switching distance s_a	0...1.2 mm	0...1.2 mm	0...1.2 mm
Sensing distance	1X	1X	1X
PNP, NO	Ordering code Part number	BES03U1 BES Q08MEC-PSC15B-S26G	BES03Y6 BES Q08MEC-PSC15B-S49G
PNP, NC	Ordering code Part number	BES03YE BES Q08MEC-POC15B-S26G	BES03U0 BES Q08MEC-POC15B-S49G
NPN, NO	Ordering code Part number	BES03Y7 BES Q08MEC-NSC15B-S26G	BES03U8 BES Q08MEC-NSC15B-S49G
NPN, NC	Ordering code Part number	BES03U9 BES Q08MEC-NOC15B-S26G	BES03YC BES Q08MEC-NOC15B-S49G
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.	2.8 V	2.8 V	2.5 V
Rated insulation voltage U_i	75 V DC	75 V DC	75 V DC
Rated operating current I_o	200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70°C	-25...+70°C	-25...+70°C
Switching frequency f max.	3 kHz	3 kHz	5 kHz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67
Approvals	CE, cULus	CE, cULus	CE, cULus
Special properties	Short design	Short design	
Material	Housing: Brass-coated Sensing surface: PBT	Brass-coated PBT	Cast zinc PBT
Connection	M5 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin
Suggested mating cable	BKS-B 25-3-PU-03	BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.





DC 3-/4-wire Inductive Block Sensors

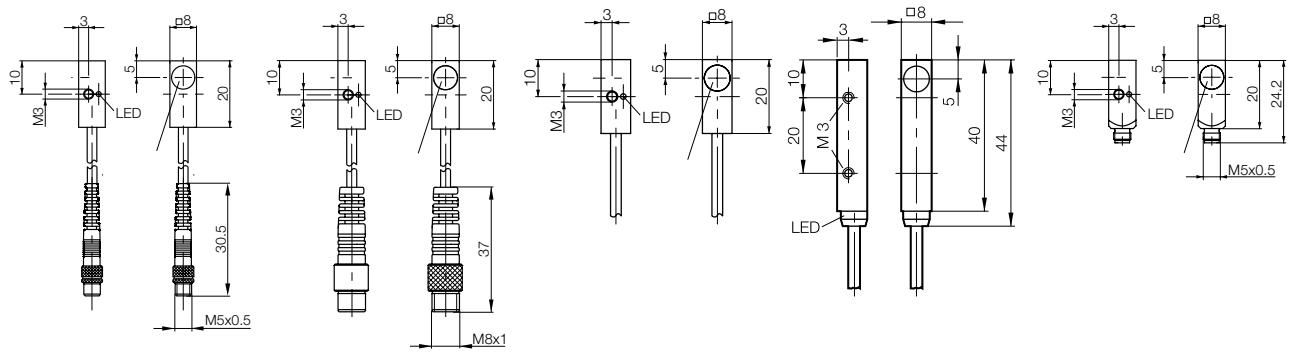
Block housing, 8x8 mm



8x8 mm	8x8 mm	8x8 mm	8x8 mm	8x8 mm
Flush	Flush	Flush	Flush	Flush
1.5 mm	1.5 mm	1.5 mm	1.5 mm	2 mm
0...1.2 mm	0...1.2 mm	0...1.2 mm	0...1.2 mm	0...1.6 mm
1X	1X	1X	1X	2X
BES041J	BES041C	BES03TZ	BES017R	BES03U4
BES Q08MEC-PSC15B-EP00,3-GS26	BES Q08MEC-PSC15B-EP00,3-GS49	BES Q08MEC-PSC15B-EP02	BES 516-300-S166-02	BES Q08MEC-PSC20B-S26G
BES041K	BES041E	BES03Y5		BES03YH
BES Q08MEC-POC15B-EP00,3-GS26	BES Q08MEC-POC15B-EP00,3-GS49	BES Q08MEC-POC15B-EP02		BES Q08MEC-POC20B-S26G
BES041L	BES041F	BES03YA		BES03Y9
BES Q08MEC-NSC15B-EP00,3-GS26	BES Q08MEC-NSC15B-EP00,3-GS49	BES Q08MEC-NSC15B-EP02		BES Q08MEC-NSC20B-S26G
BES041M	BES041H	BES03U7		BES03UE
BES Q08MEC-NOC15B-EP00,3-GS26	BES Q08MEC-NOC15B-EP00,3-GS49	BES Q08MEC-NOC15B-EP02		BES Q08MEC-NOC20B-S26G
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.8 V	2.8 V	2.8 V	2.5 V	2.8 V
75 V DC	75 V DC	75 V DC	75 V DC	75 V DC
200 mA	200 mA	200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C
3 kHz	3 kHz	3 kHz	3 kHz	3 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 67	IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Short design	Short design	Short design		Short design
Brass-coated	Brass-coated	Brass-coated	Cast zinc	Brass-coated
PBT	PBT	PBT	PBT	PBT
0.3 m PUR cable with M5 connector, 3-pin	0.3 m PUR cable with M8 connector, 3-pin	2 m PUR cable, 26 AWG	2 m PVC cable, 26 AWG	M5 connector, 3-pin
BKS-B 25-3-PU-03	BCC M313-0000-10-001-EX43T2-020			BKS-B 25-3-PU-03



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- Tubular housings
- Block housings
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties
- Analog distance measurement
- Accessories



DC 3-/4-wire Inductive Block Sensors

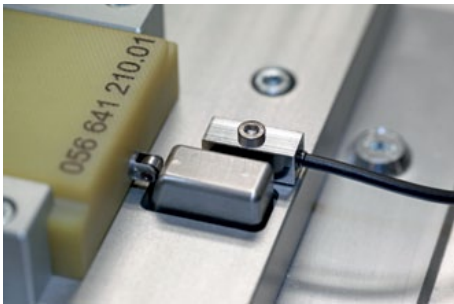
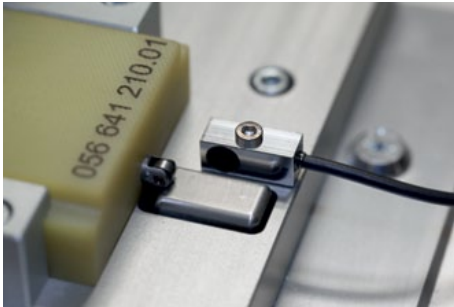
Block housing, 8x8 mm

Supershorty inductive sensors

- Thanks to the miniature housing size, position sensing is now also possible when minimum space is required
- Assemblies can be shrunk even further, since the sensors require less space
- Ideal price/performance ratio
- Robust due to high-quality metal housing

Common application examples

- Linear units
- Machine position
- Part presence
- Robotics and automation
- Vibrating conveyor
- Error proofing



Housing size		
Installation type (observe instructions in the Basic Information chapter)		
Rated switching distance s_n		
Assured switching distance s_a		
Sensing distance		
PNP, NO	Ordering code	
	Part number	
PNP, NC	Ordering code	
	Part number	
NPN, normally open	Ordering code	
	Part number	
NPN, NC	Ordering code	
	Part number	
Supply voltage U_B		
Voltage drop U_d at I_o max.		
Rated insulation voltage U_i		
Rated operating current I_o		
Polarity reversal protected/transposition protected/short-circuit protected		
Ambient temperature T_a		
Switching frequency f max.		
Output function indicator		
Degree of protection as per IEC 60529		
Approvals		
Special properties		
Material	Housing	
	Sensing surface	
Connection		
Suggested mating cable		

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Block Sensors

Block housing, 8x8 mm



SUPERSHORTY™		SUPERSHORTY™		SUPERSHORTY™	
8x8 mm	8x8 mm	8x8 mm	8x8 mm	8x8 mm	8x8 mm
Flush	Flush	Flush	Flush	Flush	Flush
2 mm	2 mm	2 mm	2 mm	2 mm	2 mm
0...1.6 mm	0...1.6 mm	0...1.6 mm	0...1.6 mm	0...1.6 mm	0...1.6 mm
2X	2X	2X	2X	2X	2X
BES03Y8	BES01U2	BES01UW	BES041U	BES041N	
BES Q08MEC-PSC20B-S49G	BES Q08ZC-PSC20B-S49G	BES Q08ZE-PSC20B-S49G	BES Q08MEC-PSC20B-EP00,3-GS26	BES Q08MEC-PSC20B-EP00,3-GS49	
BES03U3	BES01TF	BES01UK	BES041W	BES041P	
BES Q08MEC-POC20B-S49G	BES Q08ZC-POC20B-S49G	BES Q08ZE-POC20B-S49G	BES Q08MEC-POC20B-EP00,3-GS26	BES Q08MEC-POC20B-EP00,3-GS49	
BES03UC	BES01T3	BES01UC	BES041Y	BES041R	
BES Q08MEC-NSC20B-S49G	BES Q08ZC-NSC20B-S49G	BES Q08ZE-NSC20B-S49G	BES Q08MEC-NSC20B-EP00,3-GS26	BES Q08MEC-NSC20B-EP00,3-GS49	
BES03YJ	BES01RW	BES01U6	BES041Z	BES041T	
BES Q08MEC-NOC20B-S49G	BES Q08ZC-NOC20B-S49G	BES Q08ZE-NOC20B-S49G	BES Q08MEC-NOC20B-EP00,3-GS26	BES Q08MEC-NOC20B-EP00,3-GS49	
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	
2.8 V	2.5 V	2.5 V	2.8 V	2.8 V	
75 V DC	75 V DC	75 V DC	75 V DC	75 V DC	
200 mA	200 mA	200 mA	200 mA	200 mA	
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	
-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C	
3 kHz	3 kHz	3 kHz	3 kHz	3 kHz	
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED	
IP 67	IP 67	IP 67	IP 67	IP 67	
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus	
Short design			Short design	Short design	
Brass-coated	Cast zinc	Cast zinc	Brass-coated	Brass-coated	
PBT	PBT	PBT	PBT	PBT	
M8 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin	0.3 m PUR cable with M5 connector, 3-pin	0.3 m PUR cable with M8 connector, 3-pin	
BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020	BKS-B 25-3-PU-03	BCC M313-0000-10-001-EX43T2-020	



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

Tubular housings

Block housings

DC 2-wire

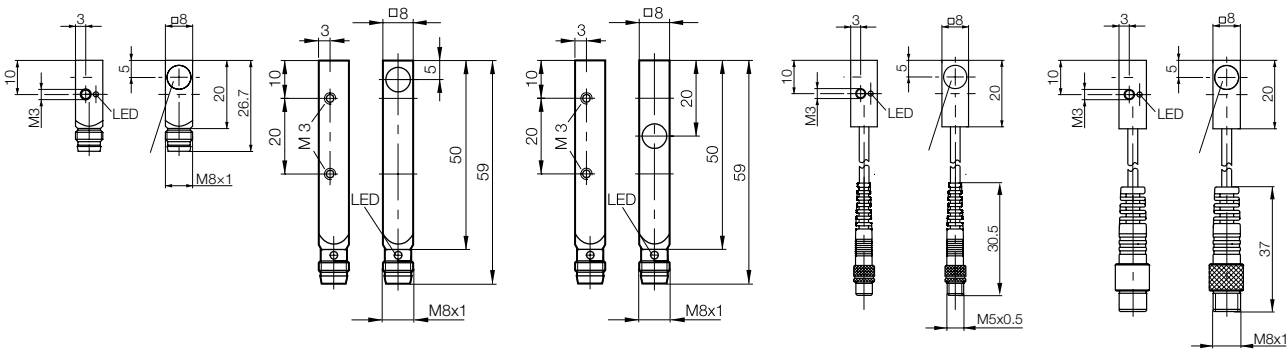
AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories



DC 3-/4-wire Inductive Block Sensors

Block housing, 8×8 mm



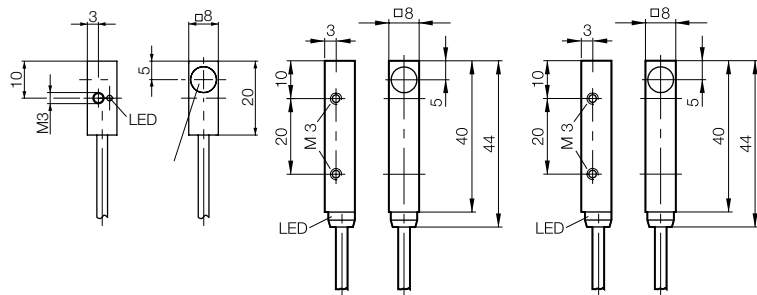
SUPERSHORTY™

Housing size		8×8 mm	8×8 mm	8×8 mm
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush	Flush
Rated switching distance s_n		2 mm	2 mm	2 mm
Assured switching distance s_a		0...1.6 mm	0...1.6 mm	0...1.6 mm
Sensing distance		2X	2X	2X
PNP, NO	Ordering code	BES03U2	BES01TZ	BES01TN
	Part number	BES Q08MEC-PSC20B-EP02	BES Q08ZC-PSC20B-BV02	BES Q08ZC-PSC20B-BP02
PNP, NC	Ordering code	BES03YK	BES01TA	BES01T7
	Part number	BES Q08MEC-POC20B-EP02	BES Q08ZC-POC20B-BV02	BES Q08ZC-POC20B-BP02
NPN, NO	Ordering code		BES01T2	BES01RZ
	Part number		BES Q08ZC-NSC20B-BV02	BES Q08ZC-NSC20B-BP02
NPN, NC	Ordering code	BES03UA	BES01RU	BES01TL
	Part number	BES Q08MEC-NOC20B-EP02	BES Q08ZC-NOC20B-BV02	BES Q08ZC-NOC20B-BP02
Supply voltage U_B		10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.		2.8 V	2.5 V	2.5 V
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC
Rated operating current I_o		200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70°C	-25...+70°C	-25...+70°C
Switching frequency f max.		3 kHz	3 kHz	3 kHz
Output function indicator		Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67	IP 67
Approvals		CE, cULus	CE, cULus	CE, cULus
Special properties				
Material	Housing	Brass-coated	Cast zinc	Cast zinc
	Sensing surface	PBT	PBT	PBT
Connection		2 m PUR cable, 26 AWG	2 m PVC cable, 26 AWG	2 m PUR cable, 26 AWG
Suggested mating cable				

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.





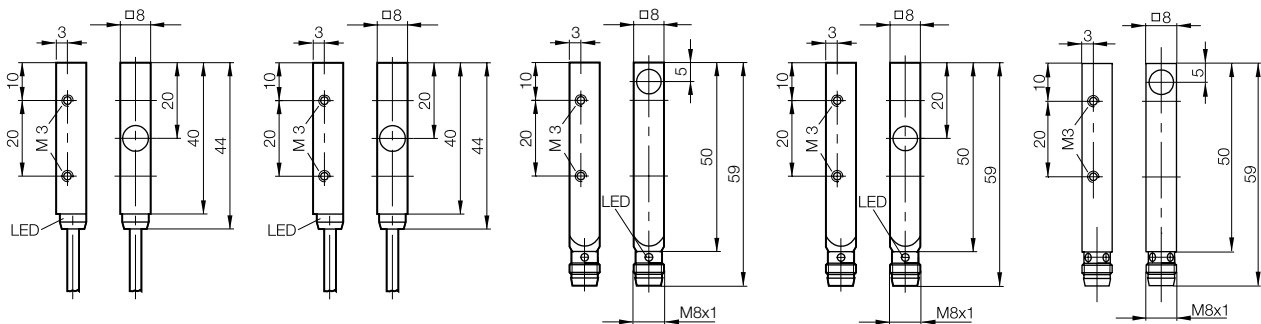
DC 3-/4-wire Inductive Block Sensors

Block housing, 8x8 mm



8x8 mm	8x8 mm	8x8 mm	8x8 mm	8x8 mm
Flush	Flush	Flush	Flush	Quasi-flush
2 mm	2 mm	2.5 mm	2.5 mm	3 mm
0...1.6 mm	0...1.6 mm	0...2 mm	0...2 mm	0...2.4 mm
2X	2X	2X	2X	3X
BES01UR	BES01UM	BES01U3	BES01UY	BES01U4
BES Q08ZE-PSC20B-BV02	BES Q08ZE-PSC20B-BP02	BES Q08ZC-PSC25B-S49G	BES Q08ZE-PSC25B-S49G	BES Q08ZC-PSC30B-S49G
BES01UH	BES01UE			
BES Q08ZE-POC20B-BV02	BES Q08ZE-POC20B-BP02			
BES01UA	BES01U7			
BES Q08ZE-NSC20B-BV02	BES Q08ZE-NSC20B-BP02			
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2.5 V	2.5 V	2.5 V	2 V
75 V DC	75 V DC	75 V DC	75 V DC	75 V DC
200 mA	200 mA	200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70°C	0...+70 °C	0...+70 °C	-25...+70°C
3 kHz	3 kHz	2 kHz	2 kHz	1 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 67	IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE
				Long range
Cast zinc	Cast zinc	Cast zinc	Cast zinc	Brass-coated
PBT	PBT	PBT	PBT	PBT
2 m PVC cable, 26 AWG	2 m PUR cable, 26 AWG	M8 connector, 3-pin BCC M313-0000-10-001-EX43T2-020	M8 connector, 3-pin BCC M313-0000-10-001-EX43T2-020	M8 connector, 3-pin BCC M313-0000-10-001-EX43T2-020

- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- Tubular housings
- Block housings
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties
- Analog distance measurement
- Accessories



DC 3-/4-wire Inductive Block Sensors

Block housings, 8×16×4 mm R04

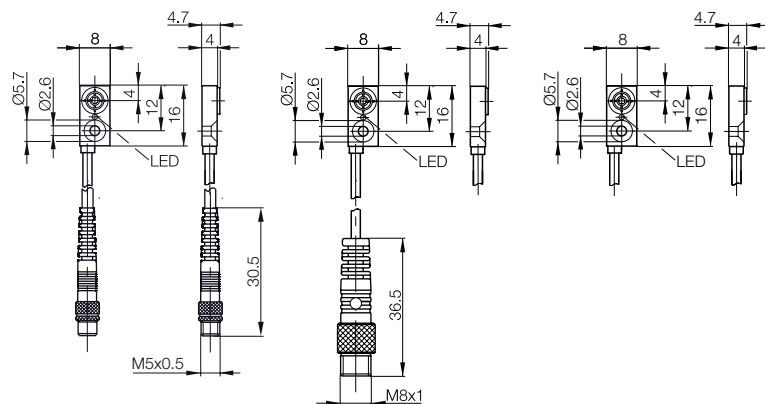


Housing size	8×16×4.7 mm R04	8×16×4.7 mm	8×16×4.7 mm R04
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	1.5 mm	1.5 mm	1.5 mm
Assured switching distance s_a	0...1.2 mm	0...1.2 mm	0...1.2 mm
Sensing distance	1X	1X	1X
PNP, NO	Ordering code Part number	BES01YC BES R04KC-PSC15B-EP00,2-GS26	BES01YE BES R04KC-PSC15B-EP00,3-GS49
PNP, NC	Ordering code Part number	BES01Y7 BES R04KC-POC15B-EP00,2-GS26	BES01Y8 BES R04KC-POC15B-EP00,3-GS49
NPN, normally open	Ordering code Part number		BES01YJ BES R04KC-PSC15B-EV02
NPN, NC	Ordering code Part number		BES03J1 BES R04KC-POC15B-EV02
			BES01Y3 BES R04KC-NSC15B-EV02
			BES01WZ BES R04KC-NOC15B-EV02
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.	1.5 V	1.5 V	1.8 V
Rated insulation voltage U_i	75 V DC	75 V DC	75 V DC
Rated operating current I_o	100 mA	100 mA	100 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70°C	-25...+70°C	-25...+70°C
Switching frequency f max.	600 Hz	600 Hz	2.5 kHz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67
Approvals	CE, cULus	CE, cULus	CE, cULus
Material	Housing: PA 6 Sensing surface: PA 6/GF 30	PA 6 PA 6/GF 30	PA 6 PA 6/GF 30
Connection	0.2 m PUR cable with M5 connector, 3-pin	0.3 m PUR cable with M8 connector, 3-pin	2 m PVC cable, 28 AWG
Suggested mating cable	BKS-B 25-3-PU-03	BCC M813-0000-10-001-EX43T2-020	

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Block Sensors

Block housings, 8x16x4 mm R04



8x16x4.7 mm R04	8x16x4.7 mm R04	8x16x4.7 mm R04	8x16x4.7 mm R04	8x16x4.7 mm R04
Flush	Flush	Flush	Flush	Non-flush
1.5 mm	2 mm	2 mm	2 mm	2.5 mm
0...1.2 mm	0...1.6 mm	0...1.6 mm	0...1.6 mm	0...2.2 mm
1X	2X	2X	2X	2X
BES01YF	BES03UN	BES048E	BES049E	BES01YM
BES R04KC-PSC15B-EP02	BES R04MC-PSC20B-EP02	BES R04MC-PSC20B-EP00,2-GS49	BES R04MC-PSC20B-EP00,2-GS49-107	BES R04KC-PSC25F-EP00,3-GS49
				BES0447
				BES R04KC-POC25F-EP00,3-GS49
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2.5 V	2.5 V	2.5 V	2.5 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
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C
2.5 kHz	5,000 Hz	5,000 Hz	5,000 Hz	3 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 67	IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
PA 6	CuZn Ni-free coating	CuZn Ni-free coating	CuZn Ni-free coating	PA 6
PA 6/GF 30	PBT	PBT	Ceramic	PA 6/GF 30
2 m PUR cable, 26 AWG	2 m PUR cable, 26 AWG	0.2 m PUR cable with M8 connector, 3-pin BCC M313-0000-10-001-EX43T2-020	0.2 mm silicon rubber cable with M8 connector, 3-pin BCC M313-0000-10-001-EX43T2-020	0.3 m PUR cable with M8 connector, 3-pin BCC M313-0000-10-001-EX43T2-020



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

Tubular housings

Block housings

DC 2-wire

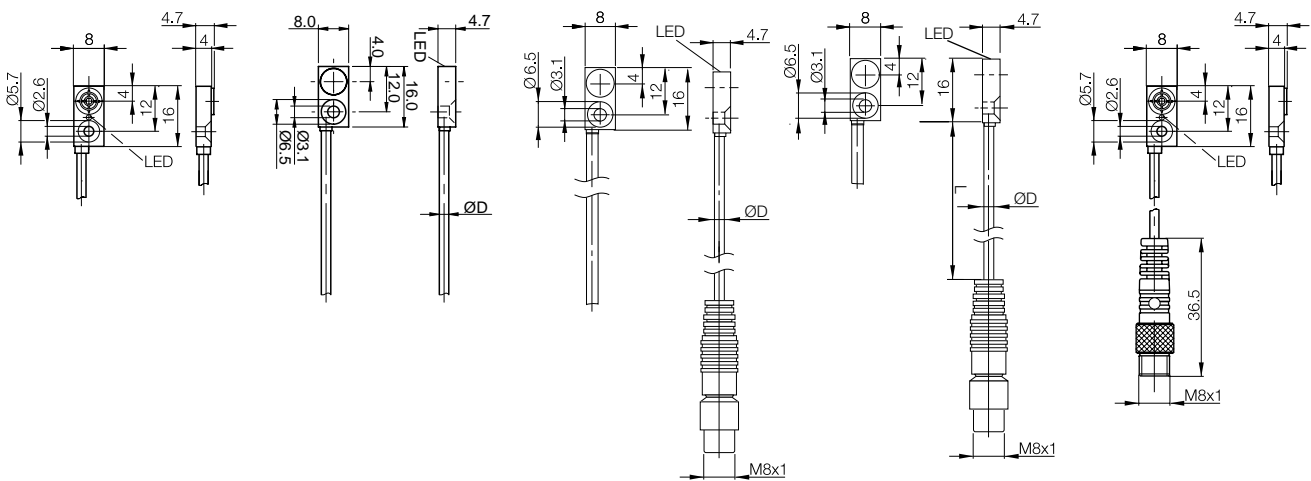
AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories



DC 3-/4-wire Inductive Block Sensors

Block housings, 8×16×4 mm R04

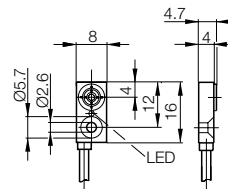


Housing size	8×16×4 mm R04	
Installation type (observe instructions in the Basic Information chapter)	Non-flush	
Rated switching distance s_n	2.5 mm	
Assured switching distance s_a	0...2 mm	
Sensing distance	2X	
PNP, NO	Ordering code	BES01YT
	Part number	BES R04KC-PSC25F-EV02
PNP, NC	Ordering code	
	Part number	
NPN, normally open	Ordering code	
	Part number	
NPN, NC	Ordering code	
	Part number	
Supply voltage U_B	10...30 V DC	
Voltage drop U_d at I_e max.	2.5 V	
Rated insulation voltage U_i	75 V DC	
Rated operating current I_e	100 mA	
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	
Ambient temperature T_a	-25...+70°C	
Switching frequency f max.	150 Hz	
Output function indicator	Yellow LED	
Degree of protection as per IEC 60529	IP 67	
Approvals	CE, cULus	
Material	Housing	PA 6
	Sensing surface	PA 6/GF 30
Connection	2 m PVC cable, 28 AWG	

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.





DC 3-/4-wire Inductive Block Sensors

Block housings, 8×16×4 mm R04



8×16×4 mm R04	
Non-flush	
2.5 mm	
0...2.2 mm	
2X	
BES01YN	
BES R04KC-PSC25F-EP02	
BES03R8	
BES R04KC-NSC25F-EP02	
10...30 V DC	
2.5 V	
75 V DC	
100 mA	
Yes/Yes/Yes	
-25...+70°C	
3 kHz	
Yellow LED	
IP 67	
CE, cULus	
PA 6	
PA 6/GF 30	
2 m PUR cable, 26 AWG	



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

Tubular housings

Block housings

DC 2-wire

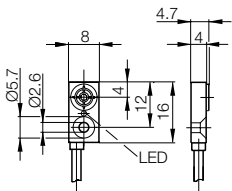
AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories



DC 3-/4-wire Inductive Block Sensors

Block housings, 10×30×6 mm R03

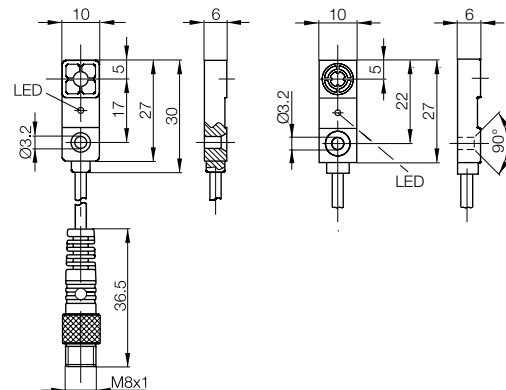


Housing size		10×30×6 mm R03	10×30×6 mm R03
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush
Rated switching distance s_n		3 mm	3 mm
Assured switching distance s_a		0...2.4 mm	0...2.4 mm
Sensing distance		1X	1X
PNP, NO	Ordering code	BES01WP	BES01WR
	Part number	BES R03KC-PSC30B-BP00,3-GS49	BES R03KC-PSC30B-EP02
NPN, normally open	Ordering code	BES045C	
	Part number	BES R03KC-NSC30B-BP00,3-GS49	
Supply voltage U_B		10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.		1.8 V	2.5 V
Rated insulation voltage U_i		75 V DC	75 V DC
Rated operating current I_e		100 mA	100 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70°C	-25...+70°C
Switching frequency f max.		3 kHz	3 kHz
Output function indicator		Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67
Approvals		CE, cULus	CE, cULus
Material	Housing	PA 6	PA 6
	Sensing surface	PA 6	PA 6
Connection		0.3 m PUR cable with M8 connector, 3-pin	2 m cable TPU, 26 AWG
Suggested mating cable		BCC M313-0000-10-001-EX43T2-020	

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.





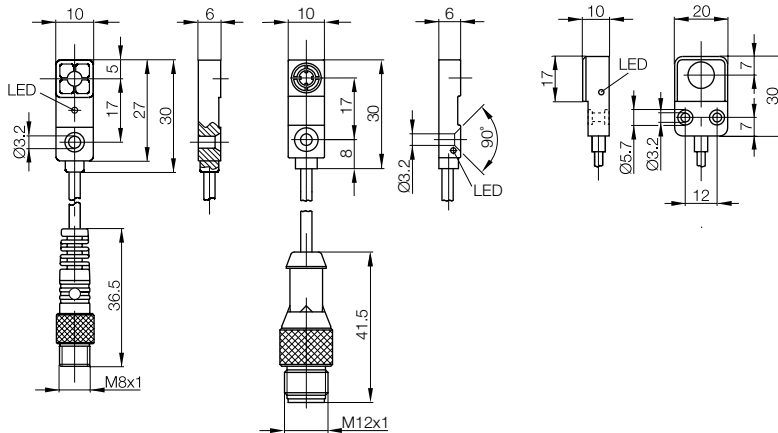
DC 3-/4-wire Inductive Block Sensors

Block housings, 10×30×6 mm R03, 30×20×10 mm



10×30×6 mm R03	10×30×6 mm R03	30×20×10 mm		
Non-flush	Non-flush	Flush		
3 mm	3 mm	2 mm		
0...2.4 mm	0...2.4 mm	0...1.6 mm		
1X	1X	1X		
BES02ZN	BES0397	BES033J		
BES R03KC-PSC30F-BV00.2-GS49	BES R03KC-PSC30F-BV00.3-GS04	BES 516-300-S279		
		BES033H		
		BES 516-300-S255		
10...30 V DC	10...30 V DC	10...30 V DC		
1.5 V	1.5 V	0.5 V		
75 V DC	75 V DC	75 V DC		
100 mA	100 mA	50 mA		
No/No/Yes	No/No/Yes	Yes/No/No		
-25...+70°C	-25...+70°C	-25...+70°C		
500 Hz	500 Hz	1.5 kHz		
Yellow LED	Yellow LED	Yes/No		
IP 67	IP 67	IP 65		
PA 6	PA 6	Anodized GD-Al		
PA 6	PA 6	PBT		
0.2 m PVC cable with M8 connector, 3-pin	0.3 m PVC cable with M12 connector, 3-pin	5 m PVC cable, 26 AWG		
BCC M313-0000-10-001-EX43T2-020	BCC M415-0000-1A-003-EX44T2-020			

- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- Tubular housings
- Block housings
- DC 2-wire
- AC/DC 2-wire
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- Special properties
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- Accessories



DC 3-/4-wire Inductive Block Sensors

Block housings, 16×30×10 mm

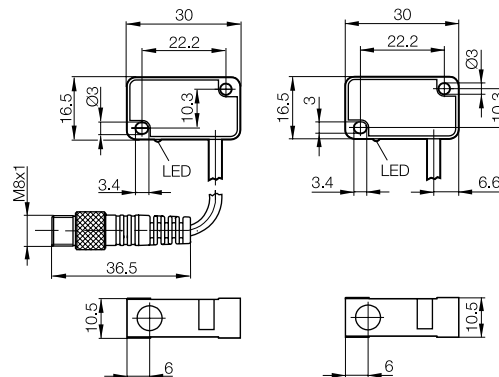


Housing size		16×30×10 mm	16×30×10 mm	
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush	
Rated switching distance s_n		2 mm	2 mm	
Assured switching distance s_a		0...1.6 mm	0...1.6 mm	
Sensing distance		1X	1X	
PNP, NO	Ordering code	BES01NA	BES01N4	
	Part number	BES 517-398-NO-C-S49-00,2	BES 517-398-NO-C-02	
PNP, NC	Ordering code	BES01MT	BES01ML	
	Part number	BES 517-351-NO-C-S49-00,2	BES 517-351-NO-C-02	
NPN, NO	Ordering code	BES01NM	BES01NF	
	Part number	BES 517-399-NO-C-S49-00,2	BES 517-399-NO-C-02	
NPN, NC	Ordering code		BES01MY	
	Part number		BES 517-352-NO-C-02	
NPN, complementary	Ordering code			
	Part number			
Supply voltage U_B		10...30 V DC	10...30 V DC	
Voltage drop U_d at I_e max.		2 V	2 V	
Rated insulation voltage U_i		75 V DC	75 V DC	
Rated operating current I_e		200 mA	200 mA	
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	
Ambient temperature T_a		-25...+70°C	-25...+70°C	
Switching frequency f max.		2.5 kHz	2.5 kHz	
Output function indicator		Yellow LED	Yellow LED	
Degree of protection as per IEC 60529		IP 65	IP 65	
Approvals		CE	CE	
Material	Housing	PBT	PBT	
	Sensing surface	PBT	PBT	
Connection		0.2 m PUR cable with M8 connector, 3-pin	2 m PVC cable, 26 AWG	
Suggested mating cable		BCC M313-0000-10-001-EX43T2-020		

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Block Sensors

Block housings, 20×32×8 mm R01



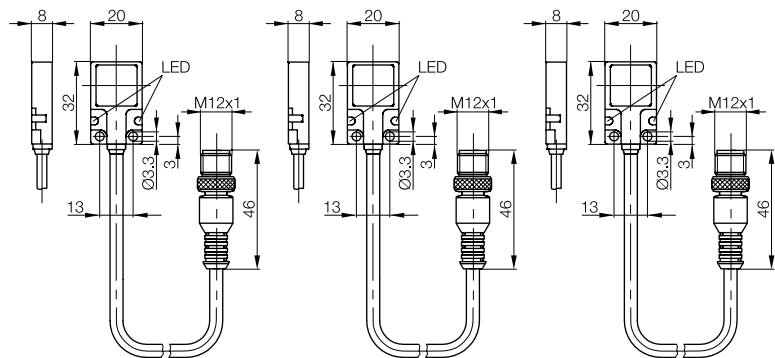
Housing size		20×32×8 mm R01	20×32×8 mm R01	20×32×8 mm R01
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush	Flush
Rated switching distance s_n		7 mm	7 mm	7 mm
Assured switching distance s_a		0...5.6 mm	0...5.6 mm	0...5.6 mm
Sensing distance		1X	1X	1X
PNP, NO	Ordering code	BES02PT		
	Part number	BES R01ZC-PSC70B-BP00.2-GS04-101		
PNP, complementary	Ordering code		BES01W2	BES0314
	Part number		BES R01ZC-PAC70B-BP00.2-GS04	BES R01ZC-PAC70B-BP00.2-GS04-107
NPN, complementary	Ordering code		BES01UZ	
	Part number		BES R01ZC-NAC70B-BP00.2-GS04	
Supply voltage U_B		10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.		2.5 V	2.5 V	2.5 V
Rated insulation voltage U_i (protection class)		75 V DC	75 V DC	75 V DC
Rated operating current I_e		200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70°C	-25...+70°C	-25...+70°C
Switching frequency f max.		150 Hz	150 Hz	150 Hz
Output function indicator		Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67	IP 67
Approvals		CE, cULus	CE, cULus	CE, cULus
Material	Housing	Cast zinc	Cast zinc	Cast zinc
	Sensing surface	With ceramic coating	PA 12	With ceramic coating
Connection		0.2 m PUR cable with M12 connector, 4-pin	0.2 m PVC cable with M12 connector, 4-pin	0.2 m PUR cable with M12 connector, 4-pin
Suggested mating cable		BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.

Note: R01 Steelface sensors are located on page 669.





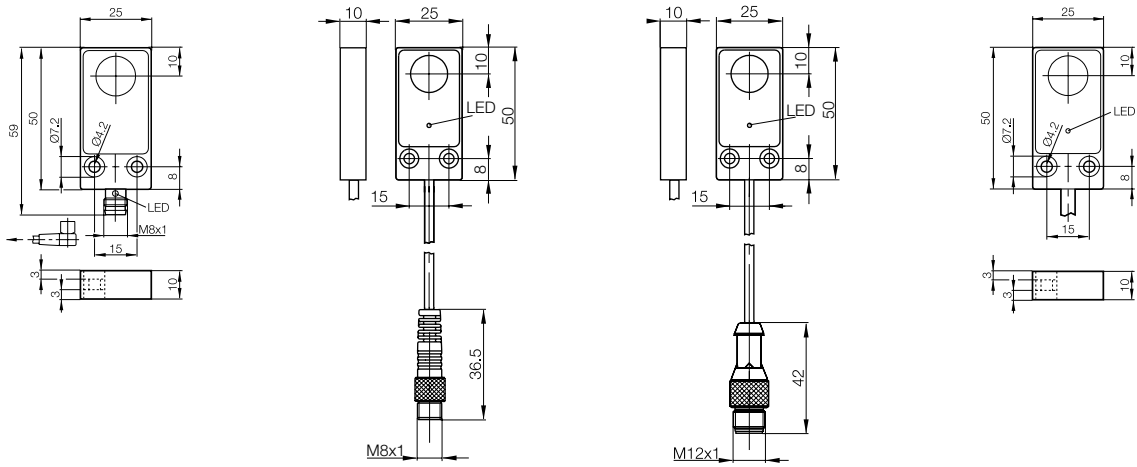
DC 3-/4-wire Inductive Block Sensors

Block housings 20x50x10mm



20x50x10 mm	20x50x10 mm	20x50x10 mm	20x50x10 mm
Flush	Flush	Flush	Flush
5 mm	5 mm	5 mm	5 mm
0...4.1 mm	0...4.1 mm	0...4.1 mm	0...4.1 mm
1X	1X	1X	1X
BES01FR	BES01FT	BES01FN	BES01FH
BES 516-347-M0-C-S49	BES 516-347-M0-C-S49-00,2	BES 516-347-M0-C-S4-00,2	BES 516-347-M0-C-02
		BES0153	BES0179
		BES 516-133-M0-C-S4-00,2	BES 516-133-M0-C-02
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2.5 V	2.5 V	2.5 V
75 V DC	75 V DC	75 V DC	75 V DC
200 mA	200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C
500 Hz	500 Hz	500 Hz	500 Hz
Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus	CE, cULus
Cast aluminum	Cast aluminum	Cast aluminum	Cast aluminum
PBT	PBT	PBT	PBT
M8 connector, 3-pin	0.2 m PUR cable with M8 connector, 3-pin	0.2 m PUR cable with M12 connector, 4-pin	2 m PVC cable, 22 AWG
BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020	BCC M415-0000-1A-003-EX44T2-020	

- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- Tubular housings
- Block housings
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties
- Analog distance measurement
- Accessories



DC 3-/4-wire Inductive Block Sensors

Block housings, 26×40×12 mm R05

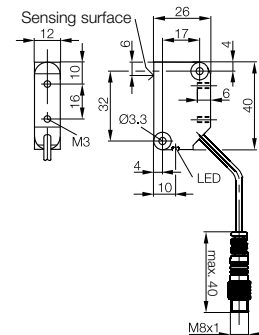
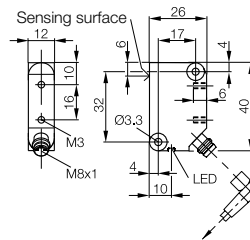


		26×40×12 mm R05	26×40×12 mm R05
Housing size		26×40×12 mm R05	26×40×12 mm R05
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush
Rated switching distance s_n		2 mm	2 mm
Assured switching distance s_a		0...1.6 mm	0...1.6 mm
Sensing distance		1X	1X
PNP, NO	Ordering code	BES01Z7	BES01Z3
	Part number	BES R05KB-PSC20B-S49A	BES R05KB-PSC20B-BP00,3-GS49
PNP, NC	Ordering code		
	Part number		
NPN, NO	Ordering code		
	Part number		
NPN, NC	Ordering code		
	Part number		
Supply voltage U_B		10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.		2.5 V	2.5 V
Rated insulation voltage U_i (protection class)		75 V DC	75 V DC
Rated operating current I_o		200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70°C	-25...+70°C
Switching frequency f max.		400 Hz	400 Hz
Output function indicator		Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67
Approvals		CE, cULus	CE, cULus
Material	Housing	PA 12	PA 12
	Sensing surface	PA 12	PA 12
Connection		M8 connector, 3-pin	0.3 m PUR cable with M8 connector, 3-pin
Suggested mating cable		BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Block Sensors

Block housings, 26×40×12 mm R05



26×40×12 mm R05	26×40×12 mm R05	26×40×12 mm R05	26×40×12 mm R05
Flush	Flush	Flush	Flush
2 mm	4 mm	4 mm	4 mm
0...1.6 mm	0...3.2 mm	0...3.2 mm	0...3.2 mm
1X	1X	1X	1X
BES01Z4	BES01ZE	BES01Z8	BES01ZA
BES R05KB-PSC20B-EP02	BES R05KB-PSC40B-S49A	BES R05KB-PSC40B-EP00.3-GS04	BES R05KB-PSC40B-EV02
	BES01Z2		
	BES R05KB-POC40B-S49A		
	BES01Z1		
	BES R05KB-NSC40B-S49A		
			BES01YW
			BES R05KB-NOC40B-EV02
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2.5 V	2.5 V	2.5 V
250 V AC (□)	75 V DC	250 V AC (□)	250 V AC (□)
200 mA	200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C
400 Hz	400 Hz	400 Hz	400 Hz
Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus	CE, cULus
PA 12	PA 12	PA 12	PA 12
PA 12	PA 12	PA 12	PA 12
2 m PUR cable, 22 AWG	M8 connector, 3-pin BCC M313-0000-10-001-EX43T2-020	0.3 m PUR cable with M12 connector, 4-pin BCC M415-0000-1A-003-EX44T2-020	2 m PVC cable, 22 AWG



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

Tubular housings

Block housings

DC 2-wire

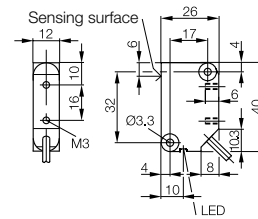
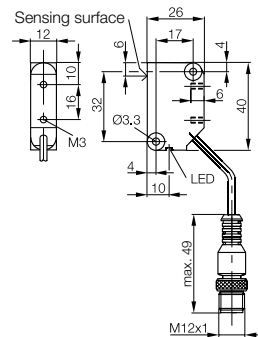
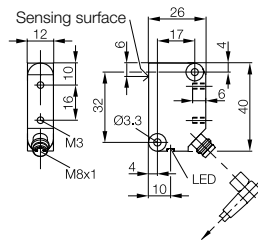
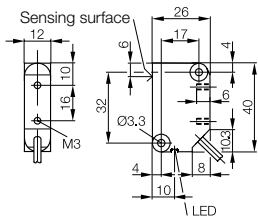
AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories



DC 3-/4-wire Inductive Block Sensors

Block housings, 42×48×22 mm

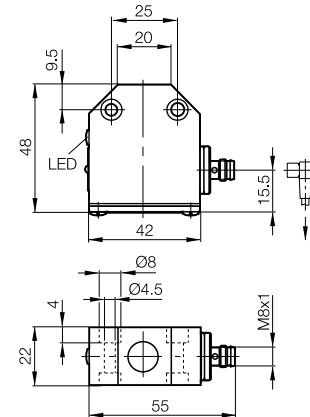
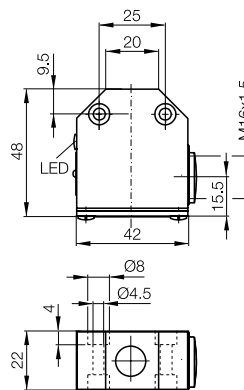


		42×48×22 mm	42×48×22 mm
Housing size		42×48×22 mm	42×48×22 mm
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush
Rated switching distance s_n		5 mm	5 mm
Assured switching distance s_a		0...4.1 mm	0...4.1 mm
Sensing distance		1X	1X
PNP, NO	Ordering code	BES01FC	BES01FF
	Part number	BES 516-346-H2-Y	BES 516-346-H2-Y-S49
PNP, NC	Ordering code	BES01EU	
	Part number	BES 516-341-H2-Y	
PNP, complementary	Ordering code		
	Part number		
NPN, NO	Ordering code	BES01ZK	
	Part number	BES 516-344-H2-Y	
NPN, NC	Ordering code	BES01ET	
	Part number	BES 516-340-H2-Y	
Supply voltage U_B		10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.		3.5 V	3.5 V
Rated insulation voltage U_i		75 V DC	75 V DC
Rated operating current I_e		130 mA	130 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70°C	-25...+70°C
Switching frequency f max.		500 Hz	500 Hz
Output function indicator		Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67
Approvals		CE	CE
Material	Housing	Cast aluminum	Cast aluminum
	Sensing surface	PA 12	PA 12
Connection		Screw terminals up to 13 AWG	M8 connector, 3-pin
Suggested mating cable			BCC M313-0000-10-001-EX43T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.





DC 3-/4-wire Inductive Block Sensors

Block housings, 42×48×22 mm, 74×60.5×28 mm



42×48×22 mm	74×60.5×28 mm		
Flush	Flush		
5 mm	7 mm		
0...4.1 mm	0...5.7 mm		
1X	1X		
BES01FE			
BES 516-346-H2-Y-S4			
BES01EW			
BES 516-341-H2-Y-S4			
	BES017M		
	BES 516-161-H3-L		
10...30 V DC	10...30 V DC		
3.5 V	1.5 V		
75 V DC	75 V DC		
130 mA	400 mA		
Yes/Yes/Yes	Yes/No/No		
-25...+70°C	-25...+70°C		
500 Hz	300 Hz		
Yellow LED	Yellow LED		
IP 67	IP 67		
CE	CE		
Cast aluminum	Cast aluminum		
PA 12	PA 12		
M12 connector, 4-pin	Screw terminals up to 13 AWG		
BCC M415-0000-1A-003-EX44T2-020			



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

Tubular housings

Block housings

DC 2-wire

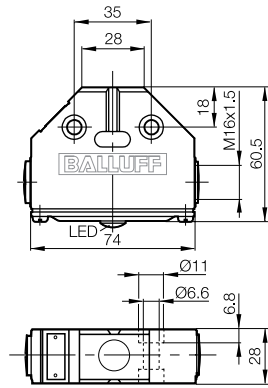
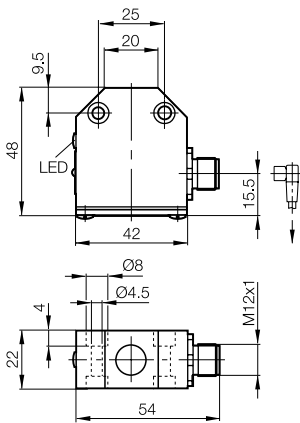
AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories



DC 3-/4-wire Inductive Block Sensors

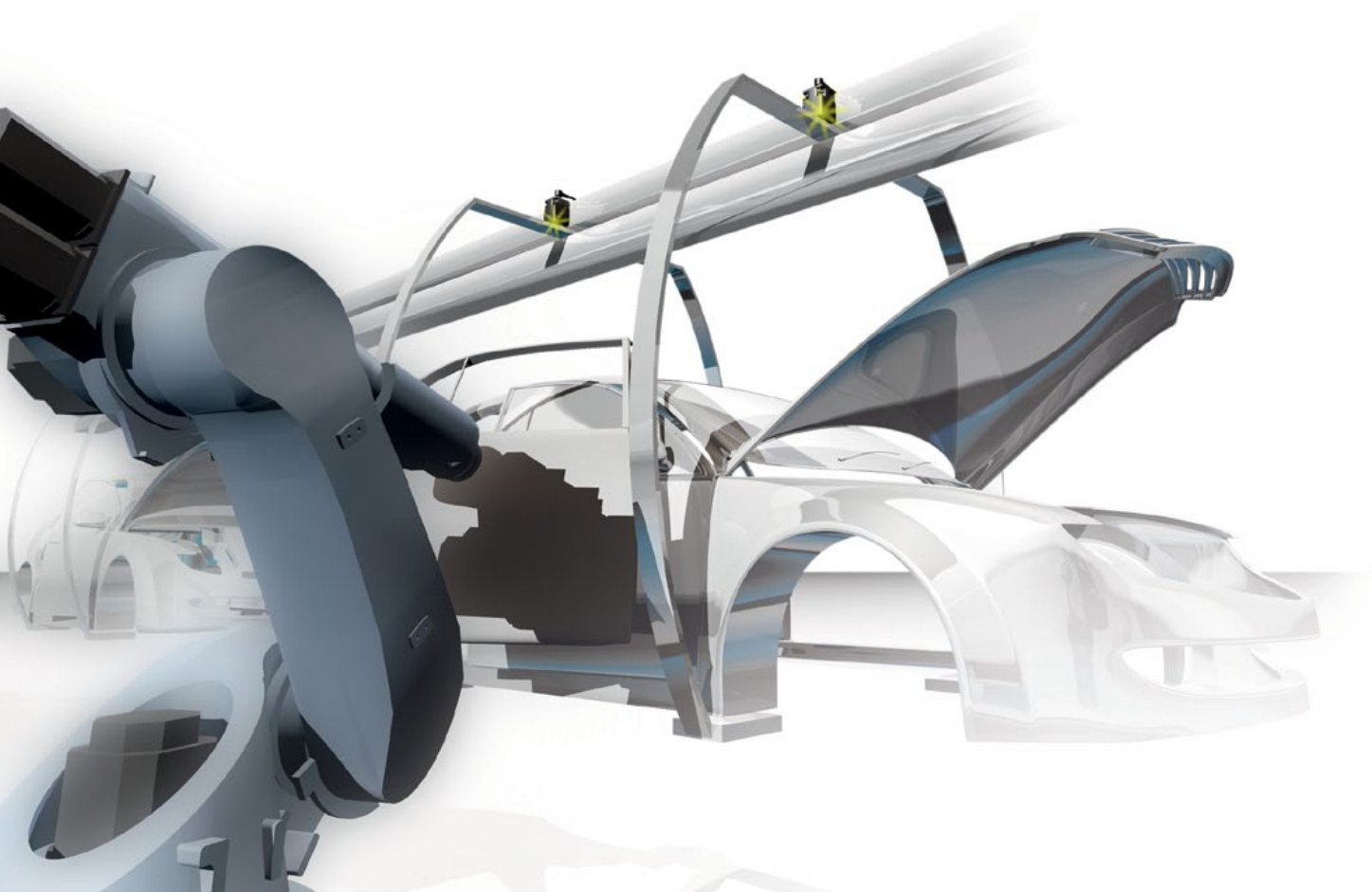
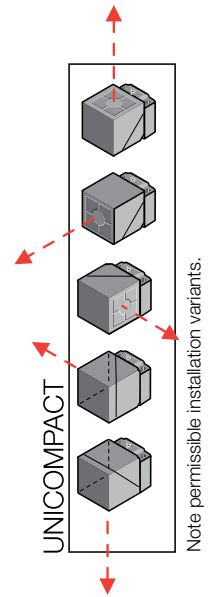
Block housing, 40×40 mm Unicompat

Unicompat Block Sensors

Balluff's 40 x 40 compact block sensor is a flexible sensor for versatile applications found in industrial automation processes.

The sensing surface and connection can be rotated to accommodate application position.

Compact sensor designs with large switching distances are required in material handling technology.



DC 3-/4-wire Inductive Block Sensors

Block housing, 40×40 mm Unicompat



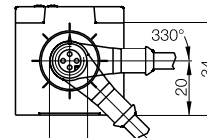
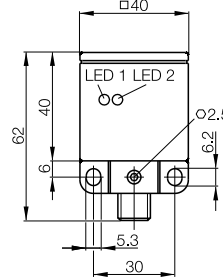
Inductive sensors
Global DC 3-wire
DC 3-/4-wire
Tubular housings
Block housings
DC 2-wire
AC/DC 2-wire
AC 2-wire
Special properties
Analog distance measurement
Accessories

Housing size	40×40 mm Unicompat	
Installation type (observe instructions in the Basic Information chapter)	Flush	
Rated switching distance s_n	20 mm	
Assured switching distance s_a	0...16 mm	
Sensing distance	1X	
PNP, NO	Ordering code	BES021W
	Part number	BES Q40KFU-PSC20B-S04G
PNP, complementary	Ordering code	BES0217
	Part number	BES Q40KFU-PAC20B-S04G
Supply voltage U_B	10...30 V DC	
Voltage drop U_d at I_o max.	2.5 V	
Rated insulation voltage U_i (protection class)	250 V AC (II)	
Rated operating current I_o	200 mA	
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	
Ambient temperature T_a	-25...+70°C	
Switching frequency f max.	50 Hz	
Output function indicator	Yellow LED	
Degree of protection as per IEC 60529	IP 67	
Approvals	CE, cULus	
Material	Housing	PBT
	Sensing surface	PBT
Possible installation variations	Fig. 1...8	
Connection	M12 connector, 4-pin	
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	

See technical section (page 963-966) for installation instructions.

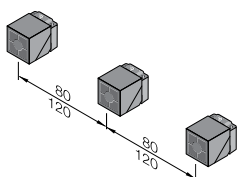
For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.

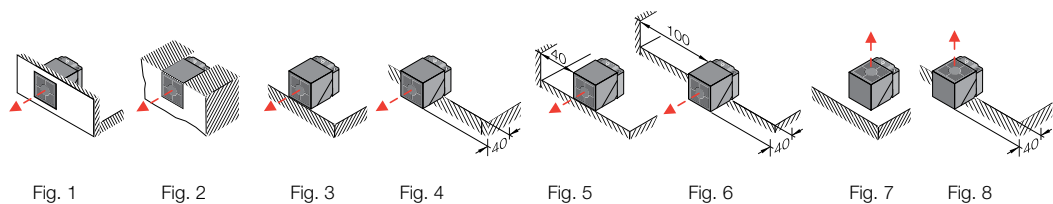


Row mounting

Flush 80 mm
Ø 120 mm non-flush



Permissible installation options



DC 3-/4-wire Inductive Block Sensors

Block housing, 40×40 mm Unicomact

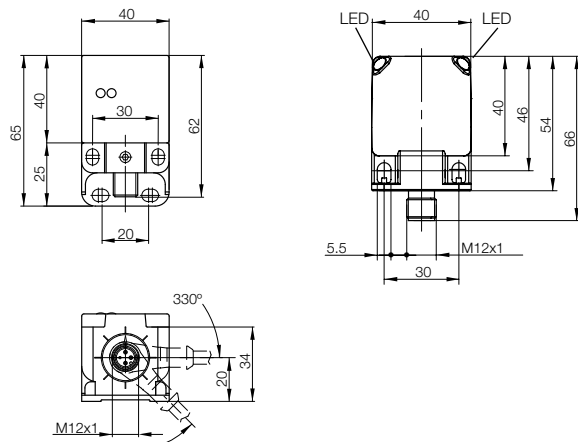


Housing size	40×40 mm Unicomact	40×40 mm Unicomact	
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	
Rated switching distance s_n	20 mm	20 mm	
Assured switching distance s_a	0...16 mm	0...16.2 mm	
Sensing distance	1X	1X	
PNP, NO	Ordering code		BES0306
	Part number		BES Q40KFU-PSC20B-S04G-012
PNP, complementary	Ordering code	BES03PN	
	Part number	BES Q40KHU-PAC20B-S04G	
NPN, complementary	Ordering code		
	Part number		
Supply voltage U_B	10...30 V DC	10...30 V DC	
Voltage drop U_d at I_o max.	2.5 V	2.5 V	
Rated insulation voltage U_i (protection class)	250 V AC (□)	250 V AC (□)	
Rated operating current I_o	200 mA	200 mA	
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	
Ambient temperature T_a	-25...+70°C	-25...+70°C	
Switching frequency f max.	50 Hz	100 Hz	
Output function indicator	Yellow LED	Yellow LED	
Degree of protection as per IEC 60529	IP 67	IP 67	
Approvals	CE, cULus	CE, cULus	
Material	Housing: PBT/Cast zinc	PA	
	Sensing surface: PBT	PA	
Possible installation variations	Fig. 1...8	Fig. 1...8	
Connection	M12 connector, 4-pin	M12 connector, 4-pin	
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



Housing optimized for material handling technology

- Highly visible corner LEDs
- Sensor head can be mounted in five positions
- Connector outlet set to position within a 270° range



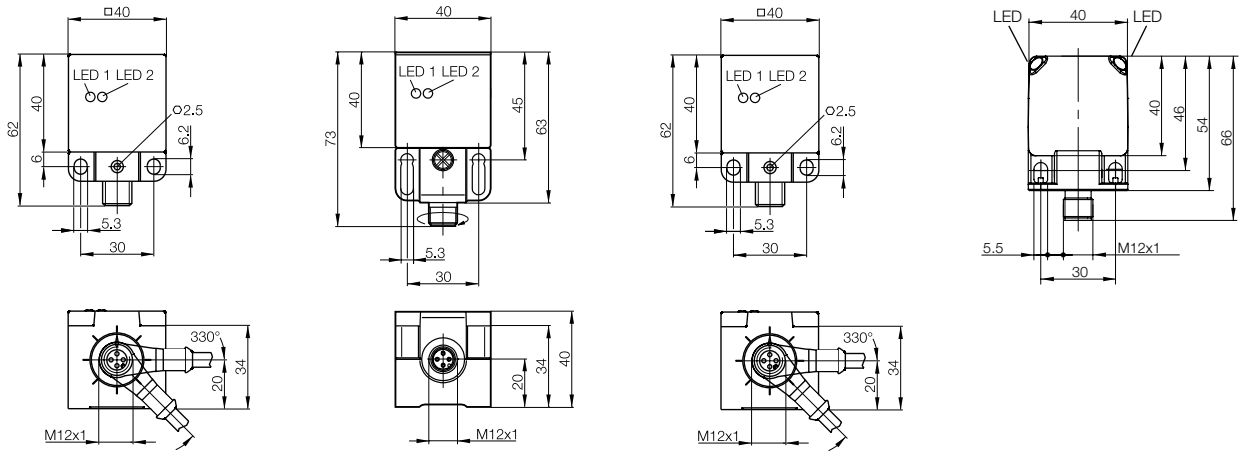
DC 3-/4-wire Inductive Block Sensors

Block housing, 40x40 mm Unicompat



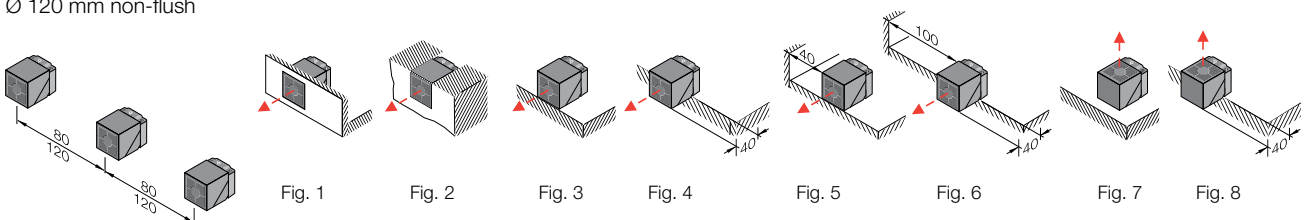
40x40 mm Unicompat	40x40 mm Unicompat	40x40 mm Unicompat	40x40 mm Unicompat
Non-flush	Non-flush	Non-flush	Non-flush
25 mm	25 mm	30 mm	40 mm
0...20 mm	0...20 mm	0...24 mm	0...32.4 mm
1X	1X	1X	2X
		BES021Z	BES0308
		BES Q40KFU-PSC30F-S04G	BES Q40KFU-PSC40F-S04G-012
	BES0210	BES021E	
	BES Q40KEU-PAH25F-S04G	BES Q40KFU-PAC30F-S04G	
BES022J			
BES Q40KFU-NAC25F-S04G			
10...30 V DC	10...55 V DC	10...30 V DC	10...30 V DC
2.5 V	2.5 V	2.5 V	2.5 V
250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)
200 mA	200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C
50 Hz	50 Hz	50 Hz	60 Hz
Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 67	IP 67	IP 67
CE, cULus	CE	CE, cULus	CE, cULus
PBT	PBT/Cast zinc	PBT	PA
PBT	PBT	PBT	PA
Fig. 3...8	Fig. 3...8	Fig. 3...8	Fig. 3...8
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- Tubular housings
- Block housings
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties
- Analog distance measurement
- Accessories



Row mounting
 Flush 80 mm
 Ø 120 mm non-flush

Permissible installation options

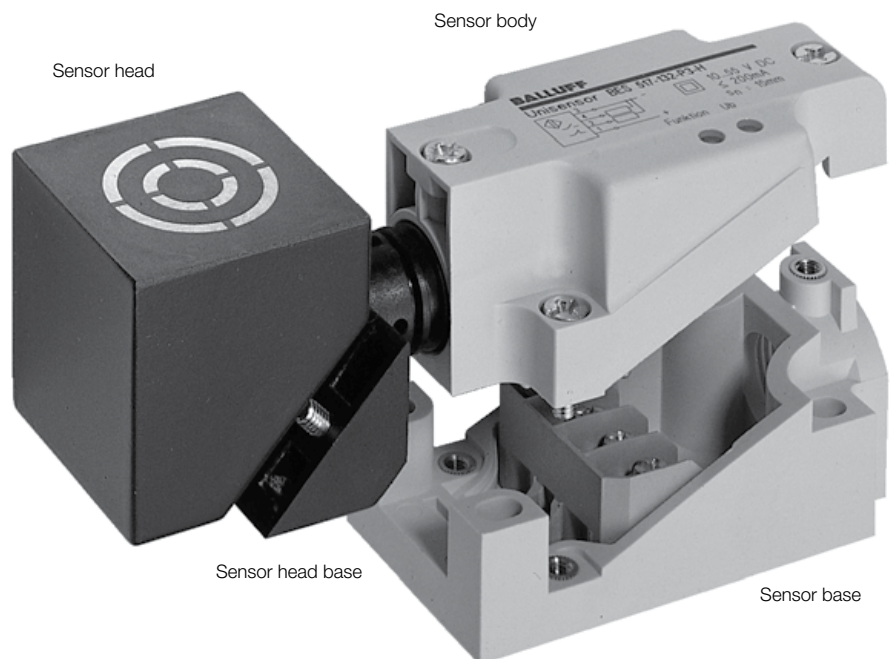
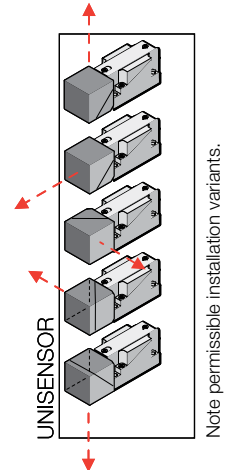


DC 3-/4-wire Inductive Block Sensors

Block housing, 40×40 mm Unisensor

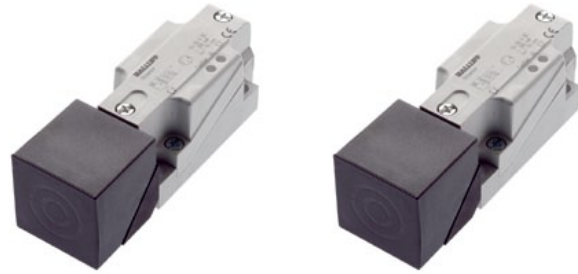
The Unisensor – multiple uses

- The Unisensor is made up of three modular components: sensor head including sensor head base, sensor body and sensor base.
- Easily removable pin contacts join sensor head and sensor body, e.g. easy interchange of the modules without wiring.
- Sensor base with wiring terminals, self-lifting pressure plates and ample wiring room.
- Sensor head rotatable in five different positions for multiple application installations (see installation drawings).
- PBT plastic housing.
- Mounting dimensions and values are based on DIN EN 60947-5-2
- LED for supply voltage and output function indicator



DC 3-/4-wire Inductive Block Sensors

Block housing, 40x40 mm Unisensor



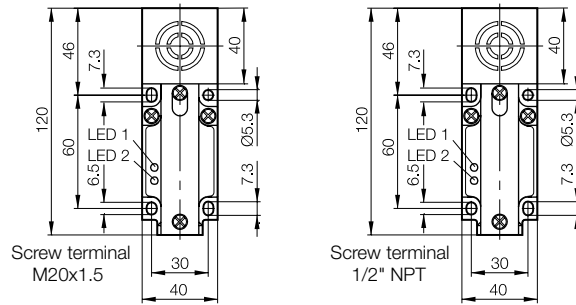
Inductive sensors
Global DC 3-wire
DC 3-/4-wire
Tubular housings
Block housings
DC 2-wire
AC/DC 2-wire
AC 2-wire
Special properties
Analog distance measurement
Accessories

	40x40x120 mm Unisensor	40x40x120 mm Unisensor
Housing size	40x40x120 mm Unisensor	40x40x120 mm Unisensor
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush
Rated switching distance s_n	15 mm	15 mm
Assured switching distance s_a	0...12 mm	0...12 mm
Sensing distance	1X	1X
PNP, complementary	Ordering code Part number	BES0201 BES 517-132-M3-H
		BES023F BES 517-132-U3-H
Supply voltage U_B	10...55 V DC	10...55 V DC
Voltage drop U_d at I_e max.	2.5 V	2.5 V
Rated insulation voltage U_i (protection class)	250 V AC (II)	250 V AC
Rated operating current I_e	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70°C	-25...+70°C
Switching frequency f max.	100 Hz	100 Hz
Output function indicator	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 67
Approvals	CE	CE
Material	Housing: PBT Sensing surface: PBT	PBT
Possible installation variations	Fig. 1...5	Fig. 1...5
Connection	Screw terminal, M20x1.5	Screw terminal, 1/2" NPT

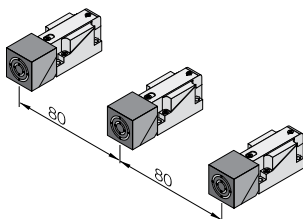
See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

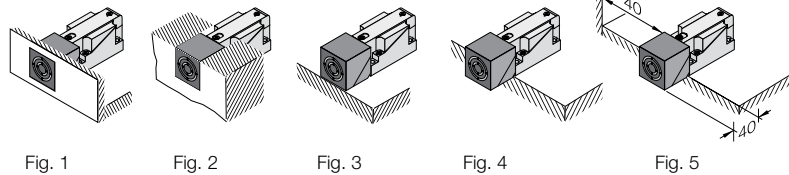
Additional cable lengths and PUR cable jacket material available on request.



Row mounting

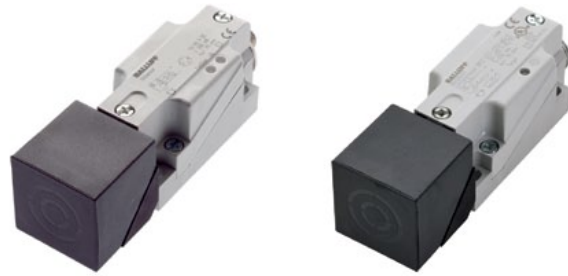


Installation variations



DC 3-/4-wire Inductive Block Sensors

Block housing, 40×40 mm Unisensor

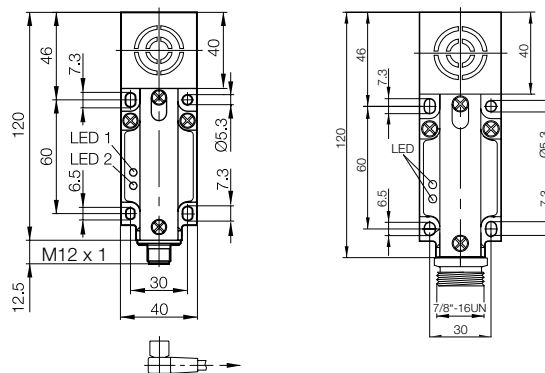


Housing size		40×40×120 mm Unisensor	40×40×120 mm Unisensor
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush
Rated switching distance s_n		15 mm	15 mm
Assured switching distance s_a		0...12 mm	0...12 mm
Sensing distance		1X	1X
PNP, complementary	Ordering code	BES0202	BES023J
	Part number	BES 517-132-M3-H-S4	BES 517-132-U3-H-S5
NPN, complementary	Ordering code	BES020H	
	Part number	BES 517-134-M3-H-S4	
Supply voltage U_B		10...55 V DC	10...55 V DC
Voltage drop U_d at I_e max.		2.5 V	2.5 V
Rated insulation voltage U_i (protection class)		250 V AC (□)	250 V AC
Rated operating current I_e		200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70°C	-25...+70°C
Switching frequency f max.		100 Hz	100 Hz
Output function indicator		Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67
Approvals		CE, cULus	CE
Material	Housing	PBT	PBT
	Sensing surface	PBT	PBT
Possible installation variations		Fig. 1...5	Fig. 1...5
Connection		M12 connector, 4-pin	7/8" 16UN plug connector, 5-pin
Suggested mating cable		BCC M415-0000-1A-003-EX44T2-020	BCC A314-0000-10-003-EX44W6-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.





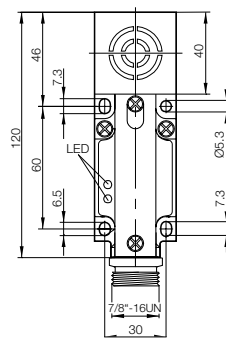
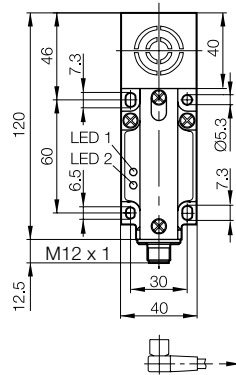
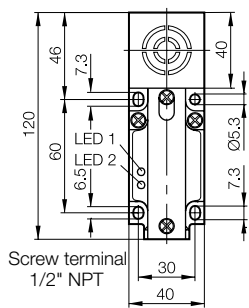
DC 3-/4-wire Inductive Block Sensors

Block housing, 40×40 mm Unisensor

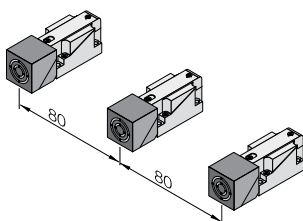


40×40×120 mm Unisensor	40×40×120 mm Unisensor	40×40×120 mm Unisensor	
Flush	Flush	Flush	
20 mm	20 mm	20 mm	
0...16 mm	0...16 mm	0...16 mm	
1X	1X	1X	
BES023L	BES020A		
BES 517-132-U6-H	BES 517-132-M6-H-S4		
	BES020N	BES020P	
	BES 517-134-M6-H-S4	BES 517-134-M6-H-S5	
10...55 V DC	10...55 V DC	10...55 V DC	
2.5 V	2.5 V	2.5 V	
250 V AC (□)	250 V AC (□)	250 V AC (□)	
200 mA	200 mA	200 mA	
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	
-25...+70°C	-25...+70°C	-25...+70°C	
50 Hz	50 Hz	50 Hz	
Yellow LED	Yellow LED	Yellow LED	
IP 67	IP 67	IP 67	
CE	CE	CE	
PBT/aluminum	PBT	PBT	
PBT	PBT	PBT	
Fig. 1...5	Fig. 1...5	Fig. 1...5	
Screw terminal, 1/2" NPT	M12 connector, 4-pin BCC M415-0000-1A-003-EX44T2-020	7/8" 16UN plug connector, 5-pin BCC A314-0000-10-003-EX44W6-020	

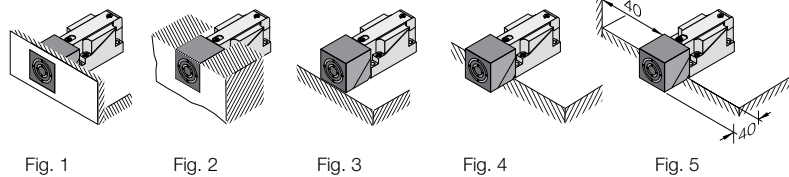
- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- Tubular housings
- Block housings
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties
- Analog distance measurement
- Accessories



Row mounting



Installation variations



DC 3-/4-wire Inductive Block Sensors

Block housing, 40x40 mm Unisensor

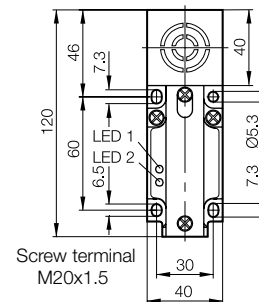


Housing size	40x40x120 mm Unisensor	
Installation type (observe instructions in the Basic Information chapter)	Non-flush	
Rated switching distance s_n	20 mm	
Assured switching distance s_a	0...16 mm	
Sensing distance	1X	
PNP, NO	Ordering code	
	Part number	
PNP, complementary	Ordering code	BES0204
	Part number	BES 517-132-M4-H
NPN, complementary	Ordering code	BES020J
	Part number	BES 517-134-M4-H
Supply voltage U_{B_s}	10...55 V DC	
Voltage drop U_d at I_o max.	2.5 V	
Rated insulation voltage U_i (protection class)	250 V AC (II)	
Rated operating current I_o	200 mA	
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	
Ambient temperature T_a	-25...+70°C	
Switching frequency f max.	100 Hz	
Output function indicator	Yellow LED	
Degree of protection as per IEC 60529	IP 67	
Approvals	CE	
Material	Housing	PBT
	Sensing surface	PBT
Possible installation variations	Fig. 3...5	
Connection	Screw terminal, M20x1.5	
Suggested mating cable		

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.





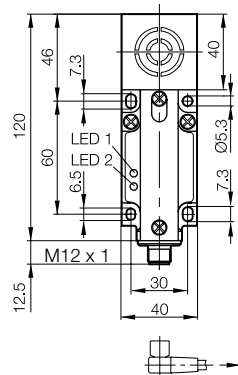
DC 3-/4-wire Inductive Block Sensors

Block housing, 40×40 mm Unisensor

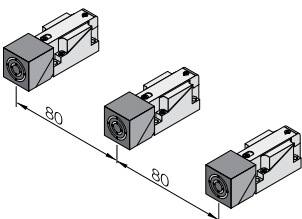


- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire**
- Tubular housings
- Block housings
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties
- Analog distance measurement
- Accessories

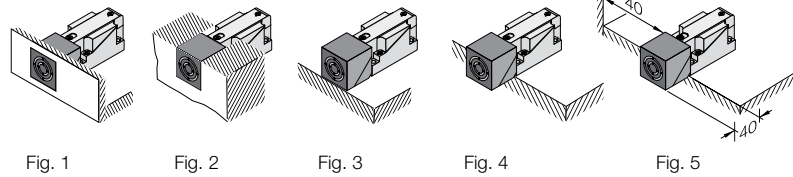
40×40×120 mm Unisensor	
Non-flush	
20 mm	
0...16 mm	
1X	
BES0205	
BES 517-132-M4-H-S4	
10...55 V DC	
2.5 V	
250 V AC (□)	
200 mA	
Yes/Yes/Yes	
-25...+70°C	
100 Hz	
Yellow LED	
IP 67	
CE	
PBT	
PBT	
Fig. 3...5	
M12 connector, 4-pin	
BCC M415-0000-1A-003-EX44T2-020	



Row mounting

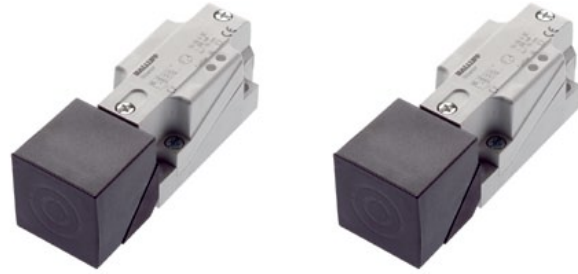


Installation variations



DC 3-/4-wire Inductive Block Sensors

Block housing, 40×40 mm Unisensor

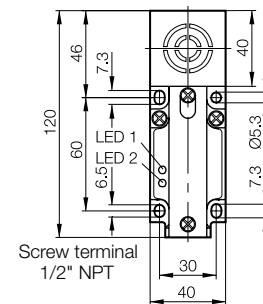
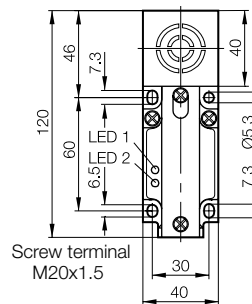


Housing size	40×40×120 mm Unisensor	40×40×120 mm Unisensor	
Installation type (observe instructions in the Basic Information chapter)	Non-flush	Non-flush	
Rated switching distance s_n	30 mm	30 mm	
Assured switching distance s_a	0...24 mm	0...24 mm	
Sensing distance	1X	1X	
PNP, NO	Ordering code	BES0206	
	Part number	BES 517-132-M5-H	
PNP, complementary	Ordering code		
	Part number		
NPN, complementary	Ordering code	BES020K	BES023N
	Part number	BES 517-134-M5-H	BES 517-134-U5-H
Supply voltage U_B	10...55 V DC	10...55 V DC	
Voltage drop U_d at I_e max.	2.5 V	2.5 V	
Rated insulation voltage U_i (protection class)	250 V AC (□)	250 V AC (□)	
Rated operating current I_e	200 mA	200 mA	
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	
Ambient temperature T_a	-25...+70°C	-25...+70°C	
Switching frequency f max.	60 Hz	60 Hz	
Output function indicator	Yellow LED	Yellow LED	
Degree of protection as per IEC 60529	IP 67	IP 67	
Approvals	CE	CE	
Material	Housing	PBT	PBT/aluminum
	Sensing surface	PBT	PBT
Possible installation variations	Fig. 3...5	Fig. 3...5	
Connection	Screw terminal, M20x1.5	Screw terminal, 1/2" NPT	
Suggested mating cable			

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

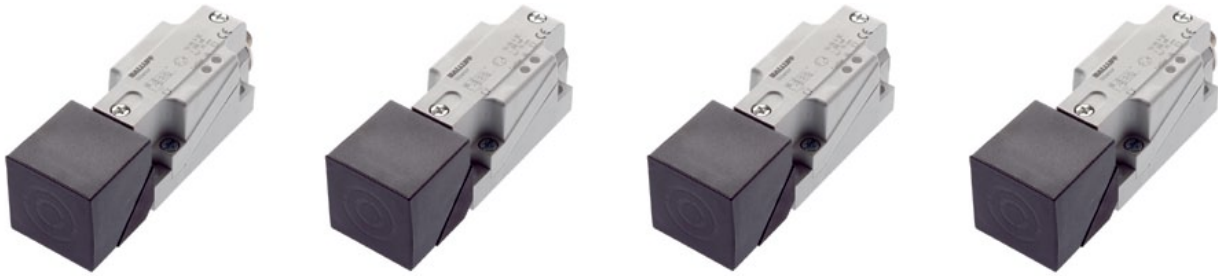
Additional cable lengths and PUR cable jacket material available on request.





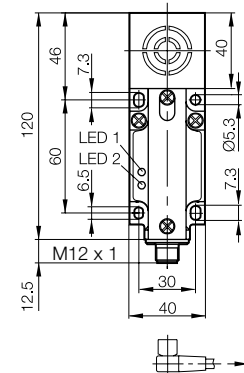
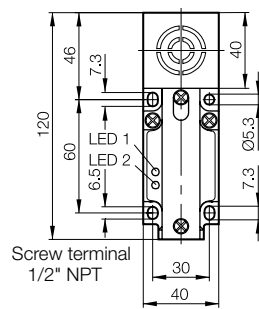
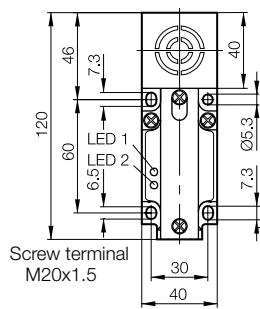
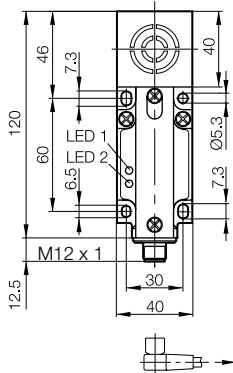
DC 3-/4-wire Inductive Block Sensors

Block housing, 40x40 mm Unisensor

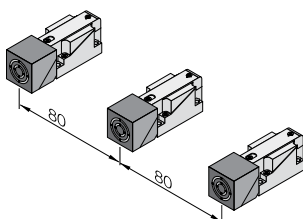


40x40x120 mm Unisensor	40x40x120 mm Unisensor	40x40x120 mm Unisensor	40x40x120 mm Unisensor
Non-flush	Non-flush	Non-flush	Non-flush
30 mm	40 mm	40 mm	40 mm
0...24 mm	0...32 mm	0...32 mm	0...32 mm
1X	1X	1X	1X
BES0207	BES020C	BES023M	BES020E
BES 517-132-M5-H-S4	BES 517-132-M7-H	BES 517-132-U7-H	BES 517-132-M7-H-S4
10...55 V DC	10...55 V DC	10...55 V DC	10...55 V DC
2.5 V	2.5 V	2.5 V	2.5 V
250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)
200 mA	200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C
60 Hz	50 Hz	50 Hz	50 Hz
Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 67	IP 67	IP 67
CE	CE	CE	CE
PBT	PBT	PBT/aluminum	PBT
PBT	PBT	PBT	PBT
Fig. 3...5	Fig. 3...5	Fig. 3...5	Fig. 3...5
M12 connector, 4-pin	Screw terminal, M20x1.5	Screw terminal, 1/2" NPT	M12 connector, 4-pin
BCC M415-0000-1A-003-EX44T2-020			BCC M415-0000-1A-003-EX44T2-020

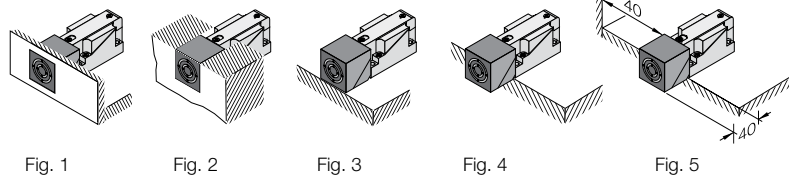
- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- Tubular housings
- Block housings
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties
- Analog distance measurement
- Accessories



Row mounting



Installation variations



DC 3-/4-wire Inductive Block Sensors

Block housing, 80×80 mm Maxisensor

Flush mount

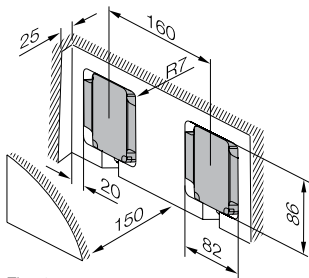


Fig. 1

Non-flush mount

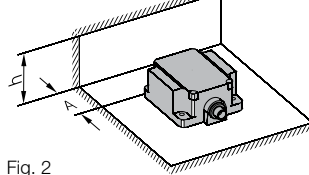


Fig. 2

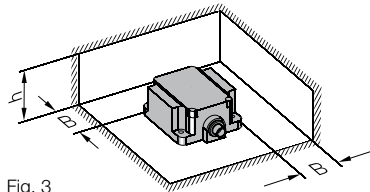


Fig. 3

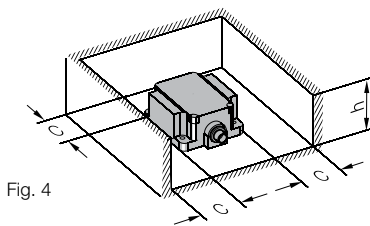


Fig. 4

Minimum distances with steel

h	A	B	C
40 mm	70 mm	80 mm	90 mm
70 mm	80 mm	90 mm	100 mm

Minimum distances with aluminum

h	A	B	C
40 mm	0 mm	10 mm	10 mm
70 mm	10 mm	20 mm	20 mm

The change of the real switching distance s_r is $\leq 10\%$ with these installation dimensions.

Mounting in steel

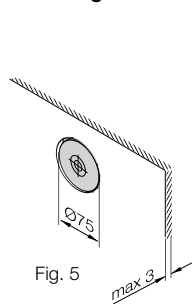


Fig. 5

Mounting in non-ferrous metals

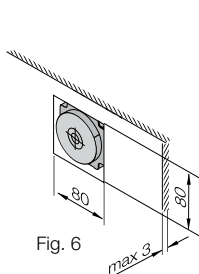


Fig. 6

Mounting in steel/non-ferrous metals

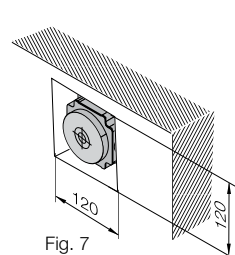


Fig. 7

Mounting on steel/non-ferrous metals

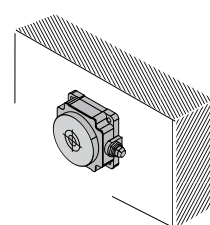


Fig. 8



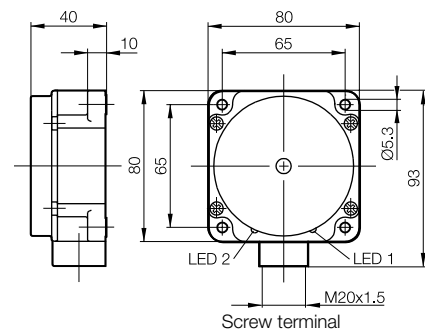
CE

Housing size	80×80×40 mm Maxisensor	
Installation type (observe instructions in the Basic Information chapter)	Flush	
Rated switching distance s_n	40 mm	
Assured switching distance s_a	0...32 mm	
Sensing distance	1X	
PNP, NO	Ordering code	
	Part number	
PNP, complementary	Ordering code	BES023P
	Part number	BES 517-139-M4-H
NPN, complementary	Ordering code	
	Part number	
Supply voltage U_B	10...55 V DC	
Voltage drop U_d at I_b max.	2.5 V	
Rated insulation voltage U_i (protection class)	250 V AC (II)	
Rated operating current I_b	200 mA	
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	
Ambient temperature T_a	-15...+70 °C	
Switching frequency f max.	50 Hz	
Output function indicator	Yellow LED	
Degree of protection as per IEC 60529	IP 67	
Approvals	CE	
Material	Housing	PBT
	Sensing surface	PBT
Possible installation variations	Fig. 5...8	
Connection	Screw terminal, M20x1.5	
Suggested mating cable		

See technical section (page 963) for installation notes on 2X, 3X, and 4X long range sensors.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 3-/4-wire Inductive Block Sensors

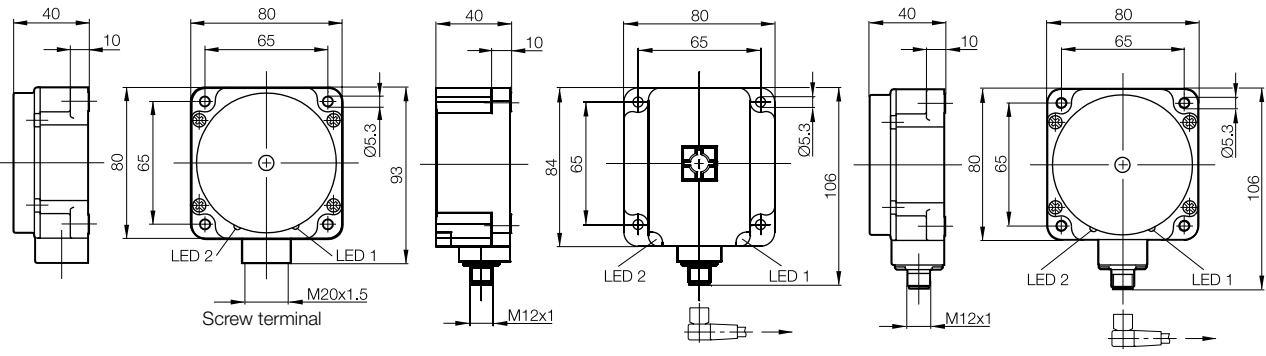
Block housing, 80×80 mm Maxisensor



80×80×40 mm Maxisensor	80×84×40 mm Maxisensor	80×80×40 mm Maxisensor
Flush	Flush	Flush
40 mm	40 mm	40 mm
0...32 mm	0...32 mm	0...32 mm
1X	1X	1X
	BES0227	
	BES Q80KA-PSH40B-S04Q	
	BES0225	
	BES Q80KA-PAH40B-S04Q	
BES020R		BES020T
BES 517-140-M4-H		BES 517-140-M4-H-S4
10...55 V DC	10...55 V DC	10...55 V DC
2.5 V	2.5 V	2.5 V
250 V AC (□)	250 V AC (□)	250 V AC (□)
200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70°C	-25...+70 °C	-25...+70°C
50 Hz	50 Hz	50 Hz
Yellow LED	Yellow LED	Yellow LED
IP 67	IP 67	IP 67
CE	CE	CE
PBT	PBT	PBT
PBT	PBT	PBT
Fig. 5...8	Fig. 1	Fig. 5...8
Screw terminal, M20x1.5	M12 connector, 4-pin BCC M415-0000-1A-003-EX44T2-020	M12 connector, 4-pin BCC M415-0000-1A-003-EX44T2-020



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- Tubular housings
- Block housings
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties
- Analog distance measurement
- Accessories



DC 3-/4-wire Inductive Block Sensors

Block housing, 80×80 mm Maxisensor

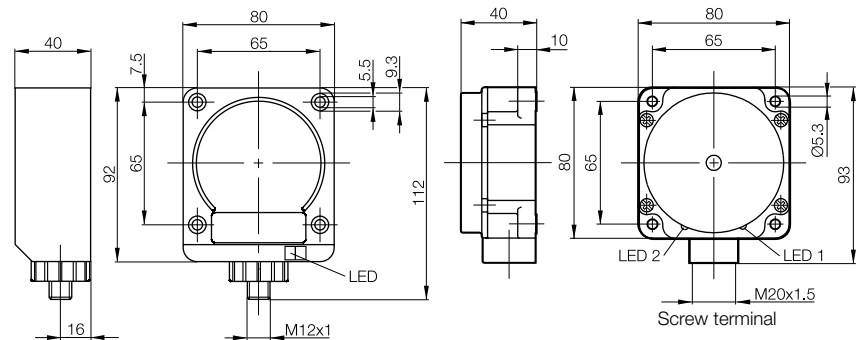


Housing size		80×92×40 mm Maxisensor	80×80×40 mm Maxisensor
Installation type (observe instructions in the Basic Information chapter)		Flush	Non-flush
Rated switching distance s_n		50 mm	50 mm
Assured switching distance s_a		0...40.5 mm	0...40 mm
Sensing distance		1X	1X
PNP, NO	Ordering code		
	Part number		
PNP, complementary	Ordering code	BES030C	BES023R
	Part number	BES Q80KA-PAC50B-S04Q-U	BES 517-139-M5-H
NPN, complementary	Ordering code		BES020U
	Part number		BES 517-140-M5-H
Supply voltage U_B		10...36 V DC	10...55 V DC
Voltage drop U_d at I_e max.		2.5 V	2.5 V
Rated insulation voltage U_i (protection class)		250 V AC (□)	250 V AC (□)
Rated operating current I_e		250 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...70 °C	-25...70 °C
Switching frequency f max.		70 Hz	100 Hz
Output function indicator		Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67
Approvals		CE, cULus	CE
Material	Housing	PPE	PBT
	Sensing surface	PPE	PBT
Possible installation variations			Fig. 7, 8 (see page 588)
Connection		M12 connector, 4-pin	Screw terminal, M20x1.5
Suggested mating cable		BCC M415-0000-1A-003-EX44T2-020	

See technical section (page 963) for installation notes on 2X, 3X, and 4X long range sensors.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.





DC 3-/4-wire Inductive Block Sensors

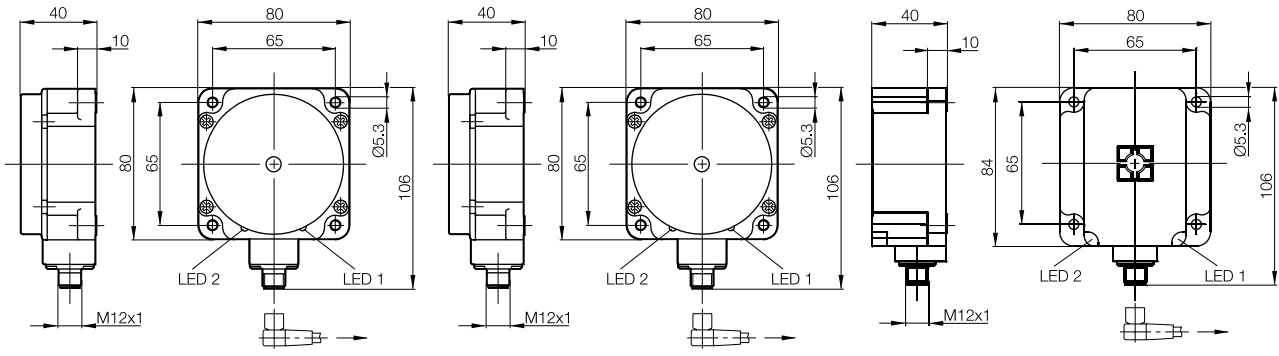
Block housing, 80×80 mm Maxisensor

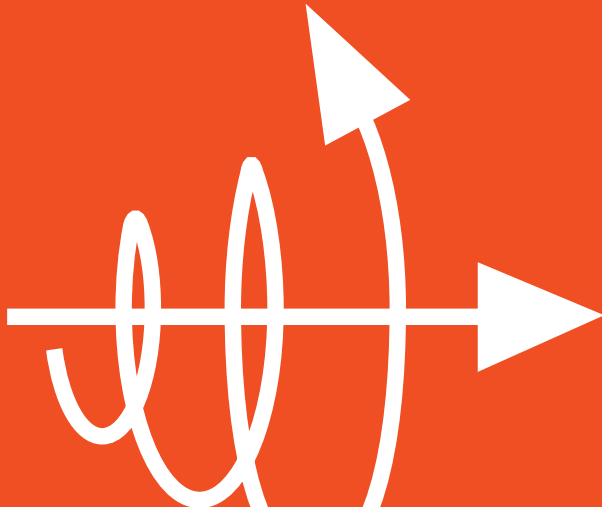


80×80×40 mm Maxisensor	80×80×40 mm Maxisensor	80×84×40 mm Maxisensor
Non-flush	Non-flush	Non-flush
50 mm	50 mm	50 mm
0...40 mm	0...40 mm	0...40 mm
1X	1X	1X
	BES023W	BES0228
	BES 517-139-U5-H-S4	BES Q80KA-PSH50F-S04Q
		BES0226
		BES Q80KA-PAH50F-S04Q
BES020W		
BES 517-140-M5-H-S4		
10...55 V DC	10...55 V DC	10...55 V DC
2.5 V	2.5 V	2.5 V
250 V AC (□)	250 V AC (□)	250 V AC (□)
200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...70 °C	-25...70 °C	-25...+70°C
100 Hz	100 Hz	50 Hz
Yellow LED	Yellow LED	Yellow LED
IP 67	IP 67	IP 67
CE	CE, cULus	CE
PBT	PBT	PBT
PBT	PBT	PBT
Fig. 7, 8 (see page 588)	Fig. 7, 8 (see page 588)	Fig. 2...4 (see page 588)
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- Tubular housings
- Block housings
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties
- Analog distance measurement
- Accessories





Inductive Sensors

DC 2-wire inductive sensors

This extensive line of DC 2-wire sensors are offered in tubular and block housings to meet a wide variety of applications.

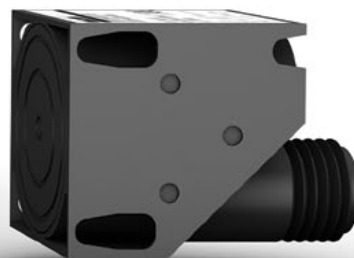
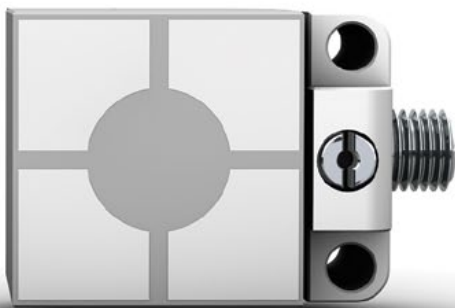


Tubular housing

M8×1	595
M12×1	597
M18×1	600
M30×1.5	603

Block housing

20×32×8 mm (R01)	606
26×26×26 mm (Z03)	607
40×66×40 mm (Unicompact)	608
40×121×40 mm (Unisensor)	609
80×92×40 mm (maxi-sensor)	610



DC 2-wire Inductive Sensors

DC-2-wire Tubular Sensors

Popular in many "New Domestic" automotive plants and automotive tier suppliers, Balluff's 2-wire DC tubular sensors are offered in Polarized and Non-Polarized configurations, flush and non-flush mounting, in standard and extended sensing ranges. Some models are also available with PTFE-coated housings to help repel welding spatter.



Housing size	
Installation type (observe instructions in Basic Information chapter)	
Rated switching distance s_n	
Assured switching distance s_a	
Sensing distance	
Polarized, NO	Ordering code
	Part number
Polarized, NC	Ordering code
	Part number
Non-polarized, NO	Ordering code
	Part number
Non-polarized, NC	Ordering code
	Part number
Supply voltage U_B	
Voltage drop U_d at I_o max.	
Rated insulation voltage U_i	
Rated operating current I_o	
Minimum operating current I_m	
Residual current I_r max.	
Permissible load capacitance max.	
Polarity reversal protected/transposition protected/short-circuit protected	
Ambient temperature T_a	
Switching frequency f max.	
Output function indicator	
Degree of protection as per IEC 60529	
Approvals	
Material	Housing
	Sensing surface
Connection	
Suggested mating cable	

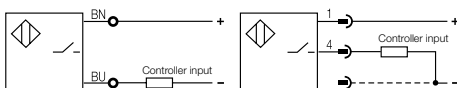
See technical section (page 963-966) for installation instructions.

For standard DC 2-wire connection information see page 958.

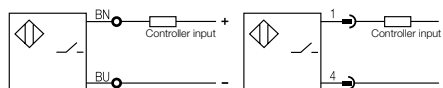
Additional cable lengths and PUR cable jacket material available on request.

Recommendation for connection wiring for polarized sensors on 3-wire controllers

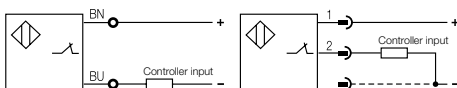
PNP, NO



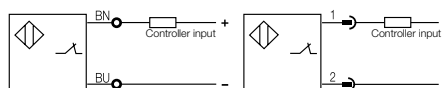
NPN, NO



PNP, NC



NPN, NC





DC 2-wire Inductive Sensors

Tubular housings, M8x1



M8x1	M8x1	M8x1	M8x1	
Flush	Flush	Flush	Flush	
2 mm	2 mm	1.5 mm	2 mm	
0 to 1.6 mm	0 to 1.4 mm	0 to 1.2 mm	0 to 1.6 mm	
2X	2X	1X	2X	
BES0022	BES00C0		BES001Z	
BES M08ME1-GSC20B-S04G	BES M08ME1-GSC20B-S04G-101		BES M08MG-GSC20B-BP00,3-GS04	
BES024N			BES03H8	
BES M08ME1-GOC20B-S04G			BES M08MG-GOC20B-BP00,3-GS04	
BES001Y				
BES M08ME1-USC20B-S04G				
BES024P		BES031N		
BES M08ME1-UOC20B-S04G		BES 516-527-S4-H		
10...36 V DC	10...30 V DC	10...55 V DC	10...36 V DC	
5 V	5 V	5 V	5 V	
75 V DC	75 V DC	75 V DC	75 V DC	
100 mA	100 mA	130 mA	100 mA	
5 mA	5 mA	5 mA	5 mA	
600 µA	600 µA	500 µA	600 µA	
1 µF	1 µF	1 µF	1 µF	
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	
-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C	
1.5 kHz	1.5 kHz	3 kHz	1.5 kHz	
Yellow LED	Yellow LED	Yellow LED	Yellow LED	
IP 67	IP 67	IP 67	IP 67	
CE, cULus	CE, cULus	CE, cULus	CE, cULus	
Brass-coated	Brass-coated	Stainless steel	Brass-coated	
PBT	With ceramic coating	PBT	PBT	
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	0.3 m PUR cable with M12 connector, 4-pin	
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

Tubular housings

Block housings

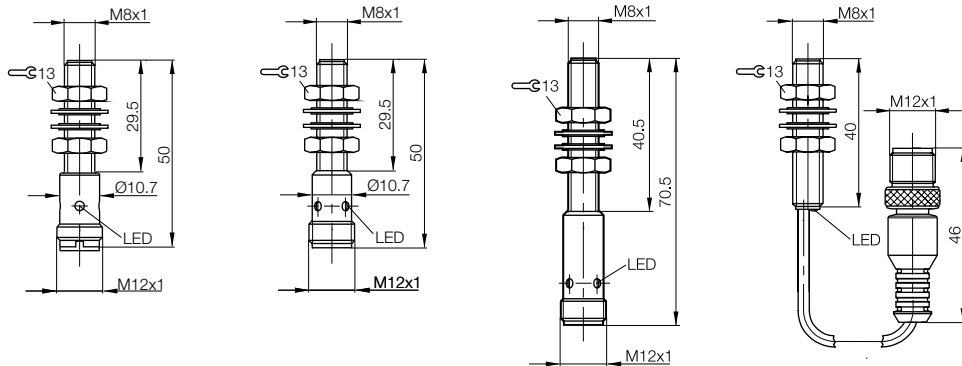
AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories



DC 2-wire Inductive Sensors

Tubular housings, M8x1

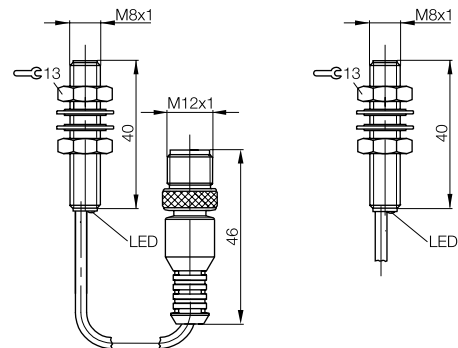


Housing size		M8x1	M8x1
Installation type (observe instructions in Basic Information chapter)		Flush	Flush
Rated switching distance s_n		2 mm	2 mm
Assured switching distance s_a		0 to 1.4 mm	0 to 1.6 mm
Sensing distance		2X	2X
Polarized, NO	Ordering code	BES0324	BES001L
	Part number	BES M08MG-GSC20B-BP00,3-GS04-101	BES M08MG-GSC20B-BV02
Polarized, NC	Ordering code		BES024R
	Part number		BES M08MG-GOC20B-BV02
Non-polarized, NO	Ordering code		BES001T
	Part number		BES M08MG-USC20B-BV02
Non-polarized, NC	Ordering code		BES024T
	Part number		BES M08MG-UOC20B-BV02
Supply voltage U_B		10...30 V DC	10...36 V DC
Voltage drop U_d at I_e max.		5 V	5 V
Rated insulation voltage U_i		75 V DC	75 V DC
Rated operating current I_e		100 mA	100 mA
Minimum operating current I_m		5 mA	5 mA
Residual current I_r max.		600 μ A	600 μ A
Permissible load capacitance max.		1 μ F	1 μ F
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70 °C	-25...+70 °C
Switching frequency f max.		1.5 kHz	1.5 kHz
Output function indicator		Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67
Approvals		CE, cULus	CE, cULus
Material	Housing	Brass-coated	Brass-coated
	Sensing surface	With ceramic coating	PBT
Connection		0.3 m PUR cable with M12 connector, 4-pin	2 m PVC cable, 26 AWG
Suggested mating cable		BCC M415-0000-1A-003-EX44T2-020	

See technical section (page 963-966) for installation instructions.

For standard DC 2-wire connection information see page 958.

Additional cable lengths and PUR cable jacket material available on request.





DC 2-wire Inductive Sensors

Tubular housings, M8×1, M12×1



Global



Global



M12×1	M12×1	M12×1		
Flush	Flush	Flush		
3 mm	3 mm	3 mm		
0 to 2.4 mm	0 to 2.2 mm	0 to 2.4 mm		
2X	2X	2X		
BES003Z	BES00C1			
BES M12MF-GSC30B-S04G	BES M12MF-GSC30B-S04G-101			
BES024J				
BES M12MF-GOC30B-S04G				
		BES0041		
		BES M12MF-USC30B-S04G		
		BES024K		
		BES M12MF-UOC30B-S04G		
10...36 V DC	10...30 V DC	10...36 V DC		
4 V	5 V	5 V		
75 V DC	75 V DC	75 V DC		
100 mA	100 mA	100 mA		
5 mA	5 mA	5 mA		
600 µA	600 µA	600 µA		
1 µF	1 µF	1 µF		
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes		
-25...+70 °C	-25...+70 °C	-25...+70 °C		
1.3 kHz	1.5 kHz	1.3 kHz		
Yellow LED	Yellow LED	Yellow LED		
IP 67	IP 67	IP 67		
CE, cULus	CE, cULus	CE, cULus		
Brass-coated	Brass-coated	Brass-coated		
PA 12	With ceramic coating	PA 12		
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin		
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020		



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

Tubular housings

Block housings

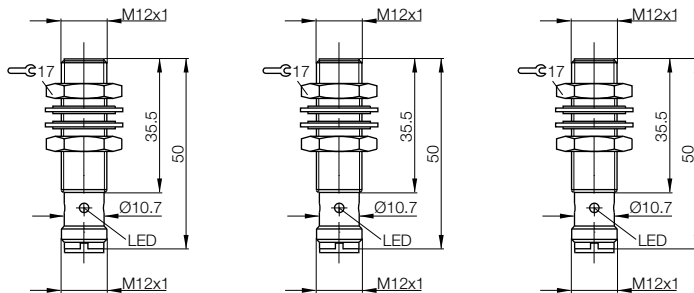
AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories



DC 2-wire Inductive Sensors

Tubular housing, M12x1



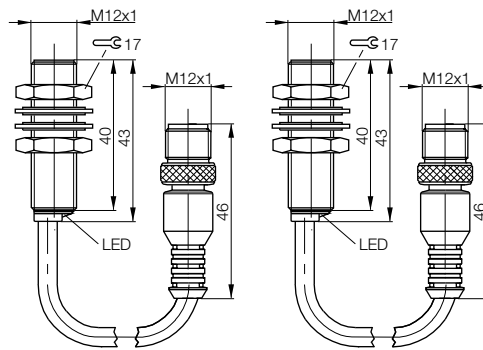
Global

Housing size	M12x1	M12x1		
Installation type (observe instructions in Basic Information chapter)	Flush	Flush		
Rated switching distance s_n	3 mm	3 mm		
Assured switching distance s_a	0...2.4 mm	0...2.2 mm		
Sensing distance	2X	2X		
Polarized, NO	Ordering code	BES0042	BES0326	
	Part number	BES M12MG-GSC30B-BP00,3-GS04	BES M12MG-GSC30B-BP00,3-GS04-101	
Polarized, NC	Ordering code	BES03HK		
	Part number	BES M12MG-GOC30B-BP00,3-GS04		
Non-polarized, NO	Ordering code			
	Part number			
Non-polarized, NC	Ordering code			
	Part number			
Supply voltage U_B	10...36 V DC	10...30 V DC		
Voltage drop U_d at I_o max.	4 V	4 V		
Rated insulation voltage U_i (protection class)	75 V DC	75 V DC		
Rated operating current I_o	100 mA	100 mA		
Minimum operating current I_m	5 mA	5 mA		
Residual current I_r max.	600 μ A	600 μ A		
Permissible load capacitance max.	1 μ F	1 μ F		
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes		
Ambient temperature T_a	-25...+70 °C	-25...+70 °C		
Switching frequency f max.	1.3 kHz	1.3 kHz		
Output function indicator	Yellow LED	Yellow LED		
Degree of protection as per IEC 60529	IP 67	IP 67		
Approvals	CE, cULus	CE, cULus		
Material	Housing	Brass-coated	Brass-coated	
	Sensing surface	PA 12	With ceramic coating	
Connection	0.3 m PUR cable with M12 connector, 4-pin	0.3 m PUR cable with M12 connector, 4-pin		
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020		

See technical section (page 963-966) for installation instructions.

For standard DC 2-wire connection information see page 958.

Additional cable lengths and PUR cable jacket material available on request.





DC 2-wire Inductive Sensors

Tubular housing, M12x1



M12x1	M12x1	M12x1		
Flush	Flush	Flush		
3 mm	3 mm	3 mm		
0...2.4 mm	0...2.4 mm	0...2.4 mm		
2X	2X	2X		
BES0045				
BES M12MG-GSC30B-BV02				
BES024L				
BES M12MG-GOC30B-BV02				
		BES004U		
		BES M12MG-USC30B-BV03		
	BES024M			
	BES M12MG-UOC30B-BV02			
10...36 V DC	10...36 V DC	10...55 V DC		
4 V	5 V	5 V		
75 V DC	75 V DC	75 V DC		
100 mA	100 mA	100 mA		
5 mA	5 mA	5 mA		
600 µA	600 µA	600 µA		
1 µF	1 µF	1 µF		
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes		
-25...+70 °C	-25...+70 °C	-25...+70 °C		
1.3 kHz	1.3 kHz	1.3 kHz		
Yellow LED	Yellow LED	Yellow LED		
IP 67	IP 67	IP 67		
CE, cULus	CE, cULus	CE		
Brass-coated	Brass-coated	Brass-coated		
PA 12	PA 12	PA 12		
2 m PVC cable, 22 AWG	2 m PVC cable, 22 AWG	2 m PVC cable, 22 AWG		



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

Tubular housings

Block housings

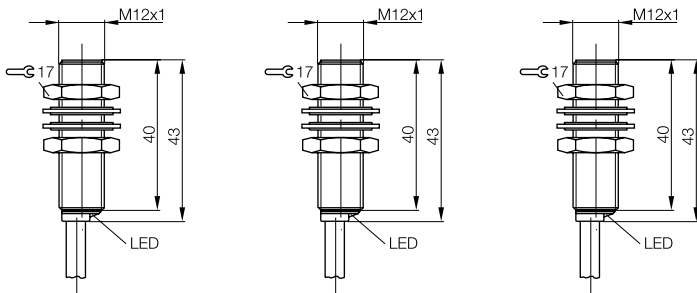
AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories



DC 2-wire Inductive Sensors

Tubular housing, M18x1



Global



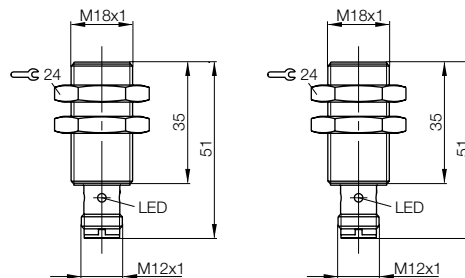
Global

Housing size	M18x1	M18x1		
Installation type (observe instructions in Basic Information chapter)	Flush	Flush		
Rated switching distance s_n	7 mm	7 mm		
Assured switching distance s_a	0...5.6 mm	0...5.6 mm		
Sensing distance	2X	2X		
Polarized, NO	Ordering code	BES0328		
	Part number	BES M18MF-GSC70B-S04G		
Polarized, NC	Ordering code	BES02NL		
	Part number	BES M18MF-GOC70B-S04G		
Non-polarized, NO	Ordering code		BES02NR	
	Part number		BES M18MF-USC70B-S04G	
Non-polarized, NC	Ordering code		BES02NN	
	Part number		BES M18MF-UOC70B-S04G	
Supply voltage U_B	10...36 V DC	10...36 V DC		
Voltage drop U_d at I_e max.	4 V	5 V		
Rated insulation voltage U_i	75 V DC	75 V DC		
Rated operating current I_e	100 mA	100 mA		
Minimum operating current I_m	5 mA	5 mA		
Residual current I_r max.	600 μ A	600 μ A		
Permissible load capacitance max.	1 μ F	1 μ F		
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes		
Ambient temperature T_a	-25...+70 °C	-25...+70 °C		
Switching frequency f max.	600 Hz	600 Hz		
Output function indicator	Yellow LED	Yellow LED		
Degree of protection as per IEC 60529	IP 67	IP 67		
Approvals	CE, cULus	CE, cULus		
Material	Housing	Brass-coated	Brass-coated	
	Sensing surface	PA 12	PA 12	
Connection	M12 connector, 4-pin	M12 connector, 4-pin		
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020		

See technical section (page 963-966) for installation instructions.

For standard DC 2-wire connection information see page 958.

Additional cable lengths and PUR cable jacket material available on request.





DC 2-wire Inductive Sensors

Tubular housing, M18x1



M18x1	M18x1	M18x1		
Flush	Flush	Flush		
7 mm	7 mm	7 mm		
0...5.6 mm	0...5.5 mm	0...5.6 mm		
2X	2X	2X		
BES006C	BES0329	BES00FA		
BES M18MG-GSC70B-BP00,3-GS04	BES M18MG-GSC70B-BP00,3-GS04-101	BES M18MG-GSC70B-BV02		
BES039L		BES02NT		
BES M18MG-GOC70B-BP00,3-GS04		BES M18MG-GOC70B-BV02		
10...36 V DC	10...30 V DC	10...36 V DC		
4 V	4 V	4 V		
75 V DC	75 V DC	75 V DC		
100 mA	100 mA	100 mA		
5 mA	5 mA	5 mA		
600 µA	600 µA	600 µA		
1 µF	1 µF	1 µF		
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes		
-25...+70 °C	-25...+70 °C	-25...+70 °C		
600 Hz	600 Hz	600 Hz		
Yellow LED	Yellow LED	Yellow LED		
IP 67	IP 67	IP 67		
CE, cULus	CE, cULus	CE, cULus		
Brass-coated	Brass-coated	Brass-coated		
PA 12	With ceramic coating	PA 12		
0.3 m PUR cable with M12 connector, 4-pin	0.3 m PUR cable with M12 connector, 4-pin	2 m PVC cable, 22 AWG		
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020			



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

Tubular housings

Block housings

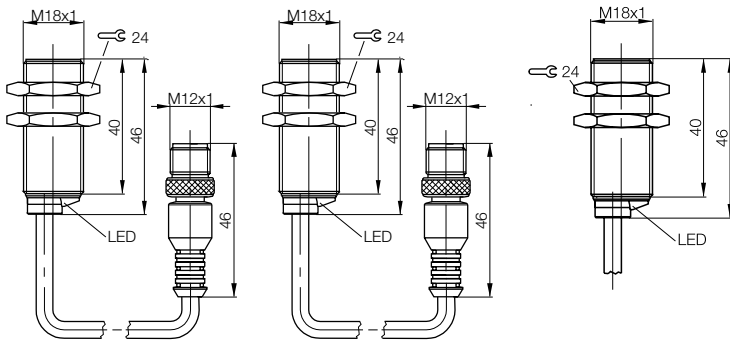
AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories



DC 2-wire Inductive Sensors

Tubular housing, M18x1

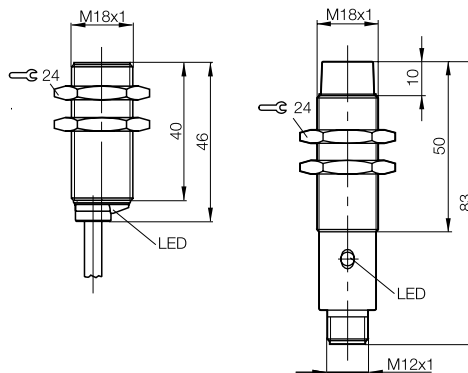


Housing size	M18x1	M18x1		
Installation type (observe instructions in Basic Information chapter)	Flush	Non-flush		
Rated switching distance s_n	7 mm	8 mm		
Assured switching distance s_a	0...5.6 mm	0...6.5 mm		
Sensing distance	2X	1X		
Polarized, NO	Ordering code			
	Part number			
Polarized, NC	Ordering code			
	Part number			
Non-polarized, NO	Ordering code	BES0073		
	Part number	BES M18MG-USC70B-BV02		
Non-polarized, NC	Ordering code	BES02NU	BES0322	
	Part number	BES M18MG-UOC70B-BV02	BES 516-547-S4-H	
Supply voltage U_B	10...36 V DC	10...55 V DC		
Voltage drop U_d at I_e max.	5 V	5 V		
Rated insulation voltage U_i (protection class)	75 V DC	250 V AC (□)		
Rated operating current I_e	100 mA	200 mA		
Minimum operating current I_m	5 mA	5 mA		
Residual current I_r max.	600 μ A	500 μ A		
Permissible load capacitance max.	1 μ F	1 μ F		
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes		
Ambient temperature T_a	-25...+70 °C	-25...+70 °C		
Switching frequency f max.	600 Hz	200 Hz		
Output function indicator	Yellow LED	Yellow LED		
Degree of protection as per IEC 60529	IP 67	IP 68 per BWN Pr. 20		
Approvals	CE, cULus	CE, cULus		
Material	Housing	Brass-coated	Brass-coated	
	Sensing surface	PA 12	PA 12	
Connection		2 m PVC cable, 22 AWG	M12 connector, 4-pin	
Suggested mating cable			BCC M415-0000-1A-003-EX44T2-020	

See technical section (page 963-966) for installation instructions.

For standard DC 2-wire connection information see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 2-wire Inductive Sensors

Tubular housing, M30x1.5



Global

Global

Global

M30x1.5	M30x1.5	M30x1.5	M30x1.5	
Flush	Flush	Flush	Flush	
10 mm	15 mm	15 mm	15 mm	
0...8 mm	0...12 mm	0...12 mm	0...12 mm	
1X	2X	2X	2X	
	BES027L		BES008W	
	BES M30MF-GSC15B-S04G		BES M30MF-GSC15B-S04K	
	BES027C		BES027J	
	BES M30MF-GOC15B-S04G		BES M30MF-GOC15B-S04K	
		BES027E		
		BES M30MF-USC15B-S04G		
		BES027F		
		BES M30MF-UOC15B-S04G		
BES031T				
BES 516-541-S4-H				
10...55 V DC	10...36 V DC	10...36 V DC	10...36 V DC	
5 V	4 V	5 V	4 V	
250 V AC (□)	75 V DC	75 V DC	75 V DC	
200 mA	100 mA	100 mA	100 mA	
5 mA	5 mA	5 mA	5 mA	
500 µA	600 µA	600 µA	600 µA	
1 µF	1 µF	1 µF	1 µF	
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	
-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C	
150 Hz	400 Hz	400 Hz	400 Hz	
Yellow LED	Yellow LED	Yellow LED	Yellow LED	
IP 68 per BWN Pr. 20	IP 67	IP 67	IP 67	
CE, cULus	CE, cULus	CE, cULus	CE, cULus	
Brass-coated	Brass-coated	Brass-coated	Brass-coated	
PA 12	PA 12	PA 12	PA 12	
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

Tubular housings

Block housings

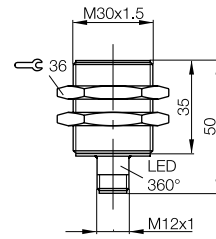
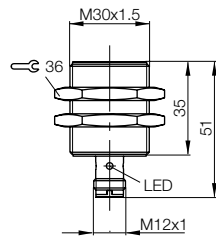
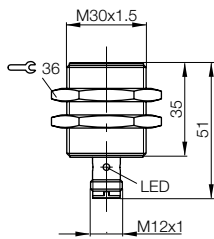
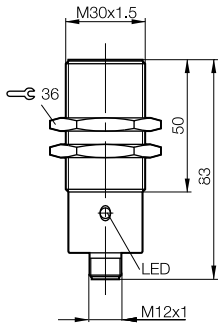
AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories



DC 2-wire Inductive Sensors

Tubular housing, M30×1.5



Global

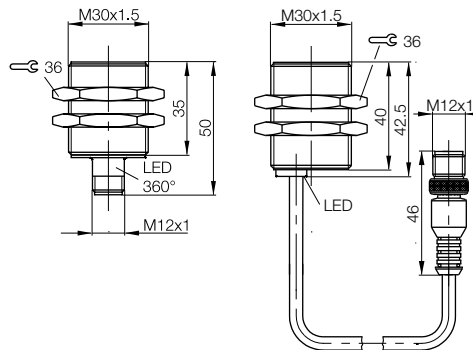


Housing size	M30×1.5	M30×1.5		
Installation type (observe instructions in Basic Information chapter)	Flush	Flush		
Rated switching distance s_n	15 mm	15 mm		
Assured switching distance s_a	0...12 mm	0...12 mm		
Sensing distance	2X	2X		
Polarized, NO	Ordering code		BES032A	
	Part number		BES M30MF-GSC15B-BP00,3-GS04-101	
Polarized, NC	Ordering code			
	Part number			
Non-polarized, NO	Ordering code	BES0094		
	Part number	BES M30MF-USC15B-S04K		
Non-polarized, NC	Ordering code	BES027H		
	Part number	BES M30MF-UOC15B-S04K		
Supply voltage U_B	10...36 V DC	10...36 V DC		
Voltage drop U_d at I_o max.	5 V	4 V		
Rated insulation voltage U_i (protection class)	75 V DC	75 V DC		
Rated operating current I_o	100 mA	100 mA		
Minimum operating current I_m	5 mA	5 mA		
Residual current I_r max.	600 μ A	600 μ A		
Permissible load capacitance max.	1 μ F	1 μ F		
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes		
Ambient temperature T_a	-25...+70 °C	-25...+70 °C		
Switching frequency f max.	400 Hz	400 Hz		
Output function indicator	Yellow LED	Yellow LED		
Degree of protection as per IEC 60529	IP 67	IP 67		
Approvals	CE, cULus	CE, cULus		
Material	Housing	Brass-coated	Brass-coated	
	Sensing surface	PA 12	With ceramic coating	
Connection		M12 connector, 4-pin	0.3 m PUR cable with M12 connector, 4-pin	
Suggested mating cable		BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	

See technical section (page 963-966) for installation instructions.

For standard DC 2-wire connection information see page 958.

Additional cable lengths and PUR cable jacket material available on request.





DC 2-wire Inductive Sensors

Tubular housing, M30×1.5



M30×1.5	M30×1.5	M30×1.5	M30×1.5	
Flush	Flush	Flush	Non-flush	
15 mm	15 mm	15 mm	15 mm	
0...12 mm	0...12 mm	0...12 mm	0...12 mm	
2X	2X	2X	1X	
BES008Y	BES008R			
BES M30MF-GSC15B-BP00,3-GS04	BES M30MF-GSC15B-BV02			
BES03H4	BES0279			
BES M30MF-GOC15B-BP00,3-GS04	BES M30MF-GOC15B-BV02			
		BES0091		
		BES M30MF-USC15B-BV02		
		BES027A	BES0323	
		BES M30MF-UOC15B-BV02	BES 516-549-S4-H	
10...36 V DC	10...36 V DC	10...36 V DC	10...55 V DC	
4 V	4 V	5 V	5 V	
75 V DC	75 V DC	75 V DC	250 V AC (□)	
100 mA	100 mA	100 mA	200 mA	
5 mA	5 mA	5 mA	5 mA	
600 µA	600 µA	600 µA	500 µA	
1 µF	1 µF	1 µF	1 µF	
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	
-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C	
400 Hz	400 Hz	400 Hz	100 Hz	
Yellow LED	Yellow LED	Yellow LED	Yellow LED	
IP 67	IP 67	IP 67	IP 68 per BWN Pr. 20	
CE, cULus	CE, cULus	CE, cULus	CE, cULus	
Brass-coated	Brass-coated	Brass-coated	Brass-coated	
PA 12	PA 12	PA 12	PA 12	
0.3 m PUR cable with M12 connector, 4-pin	2 m PVC cable, 22 AWG	2 m PVC cable, 22 AWG	M12 connector, 4-pin	
BCC M415-0000-1A-003-EX44T2-020			BCC M415-0000-1A-003-EX44T2-020	



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

Tubular housings

Block housings

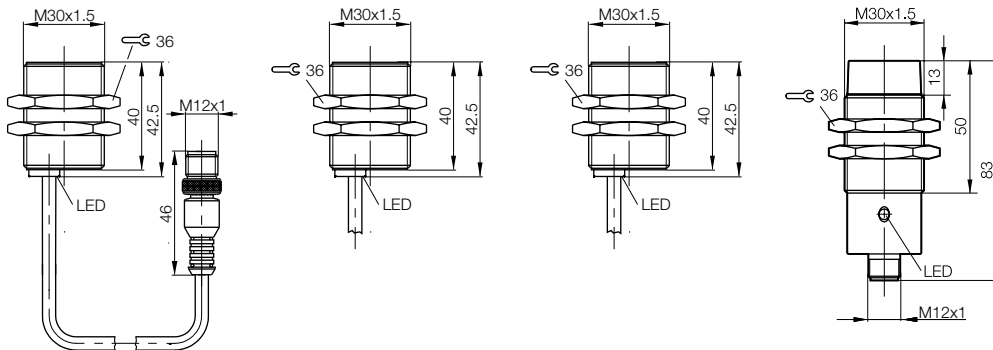
AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories



DC 2-wire Inductive Sensors

Block housings, 20×32×8 mm

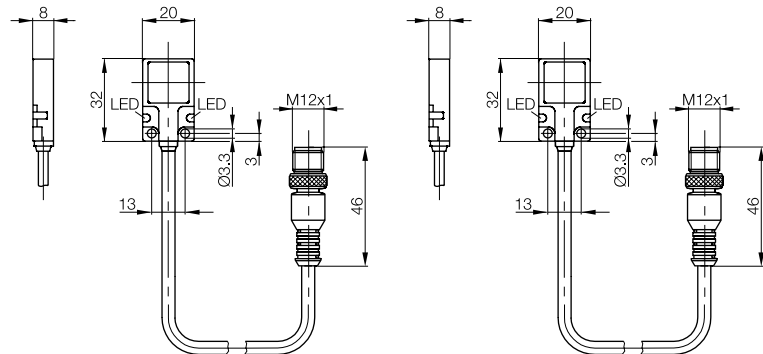


Housing size		20×32×8 mm R01	20×32×8 mm R01
Installation type (observe instructions in Basic Information chapter)		Flush	Flush
Rated switching distance s_n		5 mm	5 mm
Assured switching distance s_a		0...4 mm	0...3.9 mm
Sensing distance		1X	1X
Non-polarized, NO	Ordering code	BES032C	BES03TM
	Part number	BES R01ZC-USC50B-BP00.2-GS04	BES R01ZC-USC50B-BP00.2-GS04-101
Supply voltage U_B		10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.		5 V	5 V
Rated insulation voltage U_i		75 V DC	75 V DC
Rated operating current I_e		100 mA	100 mA
Minimum operating current I_m		5 mA	5 mA
Residual current I_r max.		600 μ A	600 μ A
Permissible load capacitance max.		1 μ F	1 μ F
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70 °C	-25...+70 °C
Switching frequency f max.		300 Hz	300 Hz
Output function indicator		Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67
Approvals		CE, cULus	CE
Material	Housing	Cast zinc	Cast zinc
	Sensing surface	PA 12	With ceramic coating
Connection		0.2 m PUR cable with M12 connector, 4-pin	0.2 m PUR cable with M12 connector, 4-pin
Suggested mating cable		BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For standard DC 2-wire connection information see page 958.

Additional cable lengths and PUR cable jacket material available on request.



DC 2-wire Inductive Sensors

Block housings, 26×26×26 mm



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

Tubular housings

Block housings

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Housing size	26×26×26 mm Z03	26×26×26 mm Z03
Installation type (observe instructions in Basic Information chapter)	Flush	Flush
Rated switching distance s_n	10 mm	10 mm
Assured switching distance s_a	0...8.1 mm	0...8.1 mm
Sensing distance	1X	1X
Polarized, NO	Ordering code	BES030H
	Part number	BES Z03K-GSS10B-S04U-006
		BES030E
		BES Z03K-GSS10B-EP00,15-GS04-006
Supply voltage U_B	10...36 V DC	10...36 V DC
Voltage drop U_d at I_e max.	4.6 V	4.6 V
Rated insulation voltage U_i (protection class)	250 V AC (□)	250 V AC (□)
Rated operating current I_e	100 mA	100 mA
Minimum operating current I_m	2 mA	2 mA
Residual current I_r max.	600 μ A	600 μ A
Permissible load capacitance max.	0.1 μ F	0.1 μ F
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70 °C	-25...+70 °C
Switching frequency f max.	250 Hz	250 Hz
Output function indicator	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 67
Approvals	CE	CE
Material	Housing: PA	PA
	Sensing surface: PA	PA
Connection	M12 connector, 4-pin	0.15 m PUR cable with M12 connector, 4-pin
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For standard DC 2-wire connection information see page 958.

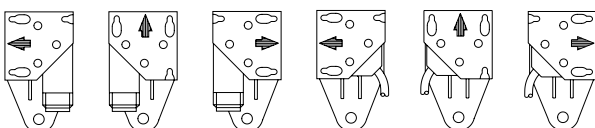
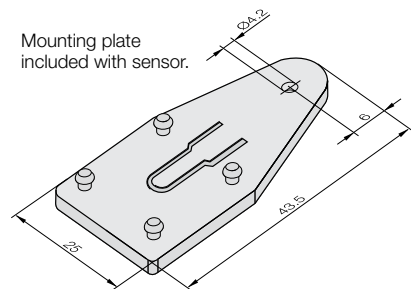
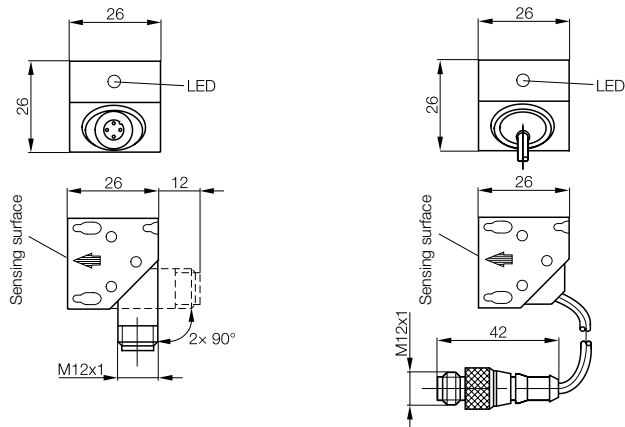
Additional cable lengths and PUR cable jacket material available on request.

Small, compact block sensor with increased switching distance for quick installation

The connector mount can be rotated and the sensing face can be oriented in three directions.

Simple replacement with no loss of position thanks to the fixed mounting plate:

- Cost savings
- No special tools necessary
- Easy to install



DC 2-wire Inductive Sensors

Block housings, 40×66×40 mm

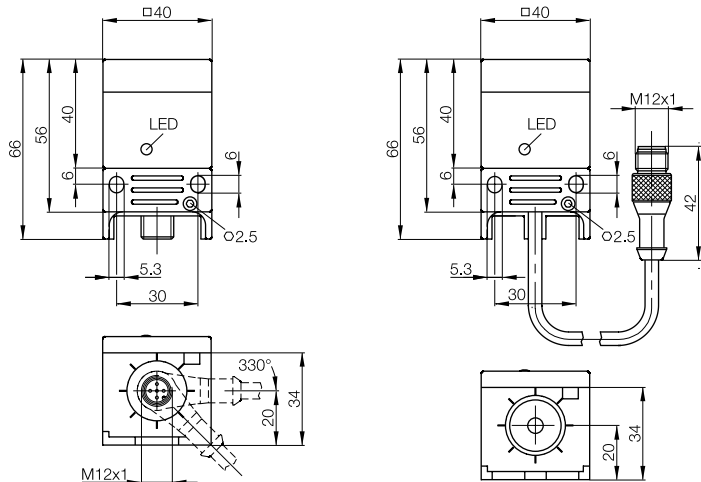


Housing size		40×66×40 mm	40×66×40 mm
Installation type (observe instructions in Basic Information chapter)		Flush	Flush
Rated switching distance s_n		15 mm	15 mm
Assured switching distance s_a		0...12 mm	0...12 mm
Sensing distance		1X	1X
Polarized, NO	Ordering code	BES0303	BES0302
	Part number	BES Q40KFU-GSH15B-S04G	BES Q40KFU-GSH15B-EP00,8-GS04
Polarized, NC	Ordering code		BES0301
	Part number		BES Q40KFU-GOH15B-EP00,8-GS04
Supply voltage U_B		10...55 V DC	10...55 V DC
Voltage drop U_d at I_o max.		4.6 V	4.6 V
Rated insulation voltage U_i (protection class)		250 V AC (□)	250 V AC (□)
Rated operating current I_o		100 mA	100 mA
Minimum operating current I_m		2 mA	5 mA
Residual current I_r max.		800 μ A	800 μ A
Permissible load capacitance max.		1 μ F	1 μ F
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70 °C	-25...+70 °C
Switching frequency f max.		150 Hz	150 Hz
Output function indicator		Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67
Approvals		CE	CE
Material	Housing	PPE, PPS	PPE, PPS
	Sensing surface	PPE	PPE
Connection		M12 connector, 4-pin	0.8 m PUR cable with M12 connector, 4-pin
Suggested mating cable		BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For standard DC 2-wire connection information see page 958.

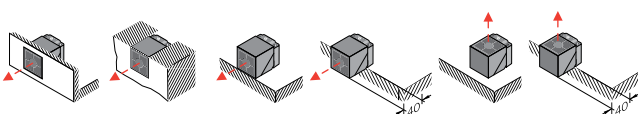
Additional cable lengths and PUR cable jacket material available on request.



40 x 66 x 40

The flexible sensor for mechanical engineering and equipment manufacturing. The detection direction can be adjusted in 5 directions. Long switching distance in compact package.

Permissible installation variations for 40 x 66 x 40 mm block housing



DC 2-wire Inductive Sensors

Block housings, 40×121×40 mm Unisensor



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

Tubular housings

Block housings

AC/DC 2-wire

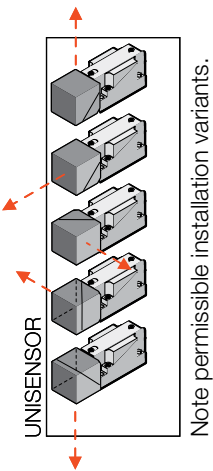
AC 2-wire

Special properties

Analog distance measurement

Accessories

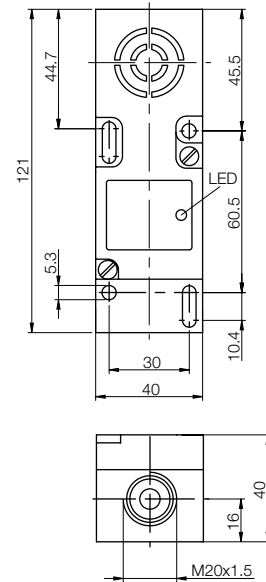
Housing size	40×121×40 mm Unisensor	
Installation type (observe instructions in Basic Information chapter)	Non-flush	
Rated switching distance s_n	20 mm	
Assured switching distance s_a	0...16 mm	
Sensing distance	1X	
Polarized, complementary	Ordering code	BES0309
	Part number	BES Q40KU-GPH20F-KM21
Supply voltage U_B	10...55 V DC	
Voltage drop U_d at I_e max.	4.6 V	
Rated insulation voltage U_i (protection class)	250 V AC (□)	
Rated operating current I_e	400 mA	
Minimum operating current I_m	4 mA	
Residual current I_r max.	1 mA	
Permissible load capacitance max.	1 μ F	
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	
Ambient temperature T_a	-25...+80 °C	
Switching frequency f max.	300 Hz	
Output function indicator	Red LED	
Degree of protection as per IEC 60529	IP 65	
Approvals	CE	
Material	Housing	PPE
	Sensing surface	PPE
Connection	Screw terminal M20x1.5	



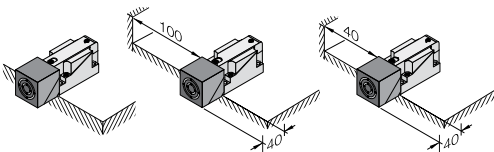
See technical section (page 963-966) for installation instructions.

For standard DC 2-wire connection information see page 958.

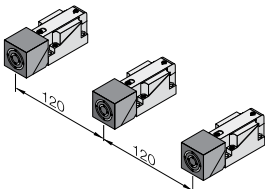
Additional cable lengths and PUR cable jacket material available on request.



Mounting options



Row mounting



DC 2-wire Inductive Sensors

Block housings, 80×92×40 mm



Housing size	80×92×40 mm Maxisensor	
Installation type (observe instructions in Basic Information chapter)	Flush	
Rated switching distance s_n	50 mm	
Assured switching distance s_a	0...40 mm	
Sensing distance	1X	
Polarized, NO	Ordering code	BES030A
	Part number	BES Q80KA-GSH50B-S04Q
Supply voltage U_B	10...55 V DC	
Voltage drop U_d at I_e max.	4.6 V	
Rated insulation voltage U_i (protection class)	250 V AC (II)	
Rated operating current I_e	400 mA	
Minimum operating current I_m	4 mA	
Residual current I_r max.	600 μ A	
Permissible load capacitance max.	1 μ F	
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	
Ambient temperature T_a	-25...+70 °C	
Switching frequency f max.	90 Hz	
Output function indicator	Yellow LED	
Degree of protection as per IEC 60529	IP 67	
Approvals	CE	
Material	Housing	PPE
	Sensing surface	PPE
Connection	M12 connector, 4-pin	
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	

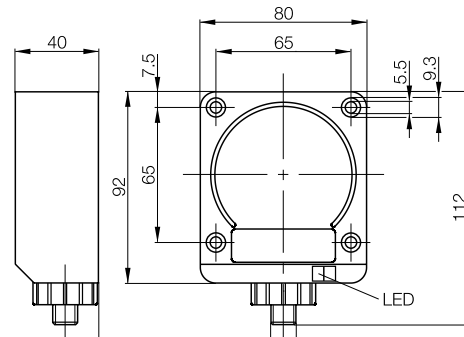
See technical section (page 963-966) for installation instructions.

For standard DC 2-wire connection information see page 958.

Additional cable lengths and PUR cable jacket material available on request.

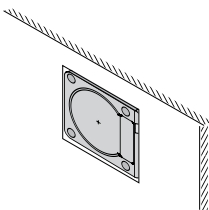
Maxisensor

Long switching distance with low installation height in the detection direction. Ideal for equipment manufacturing and conveyor technology.

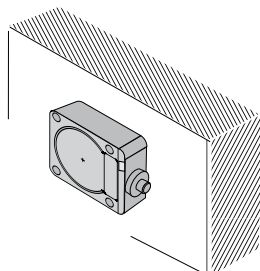


Permissible Maxisensor installation options

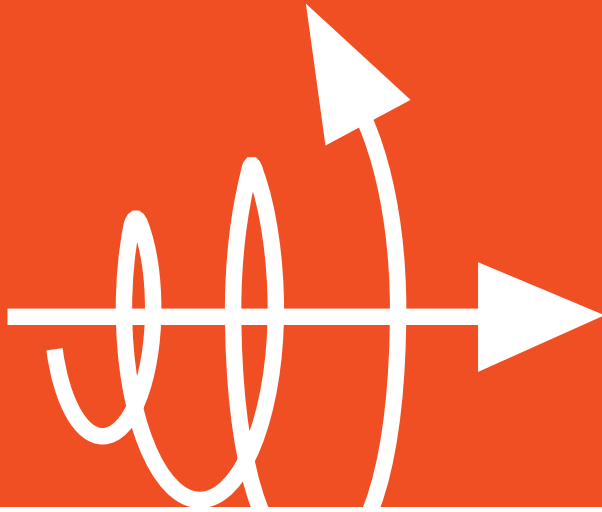
Installation in steel or non-ferrous metals



Installation on steel or non-ferrous metals



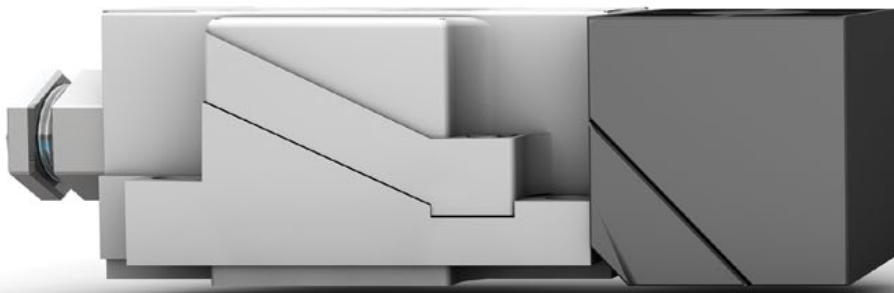
The switching distance is reduced by max. 5.5 mm when not installed flush.



Inductive Sensors

AC/DC 2-wire inductive sensors

Balluff offers something for practically any application in automation with this comprehensive product line of sensors from M12 to 80x80mm. These high-quality sensors are designed and manufactured according to worldwide standards and the latest technology. We inspect absolutely every one of our products, providing you the peace of mind that you are receiving the highest quality sensors.

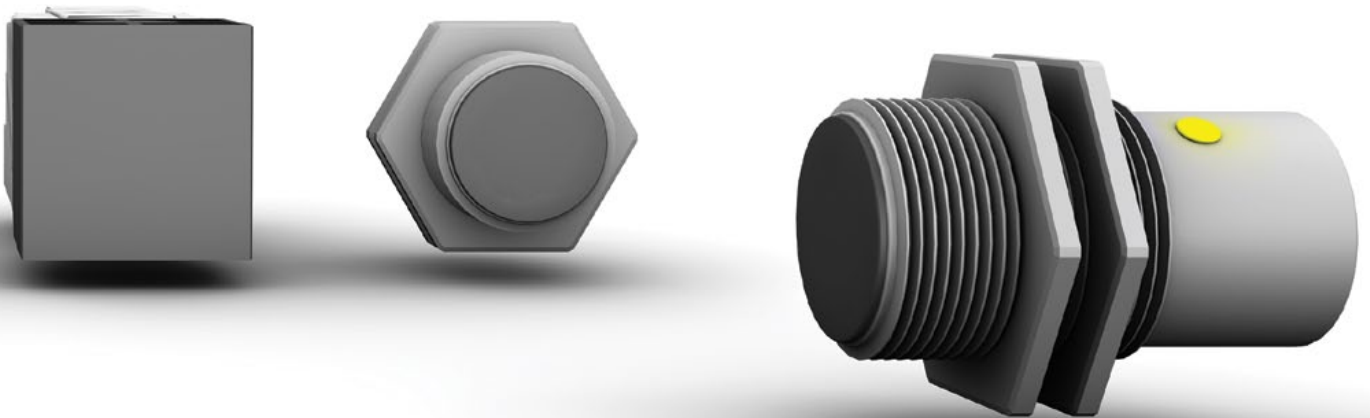


Tubular housings

M12×1	615
M18×1	617
M30×1.5	620

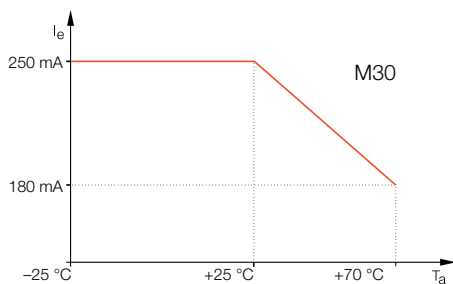
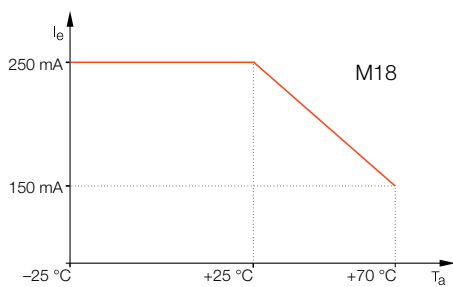
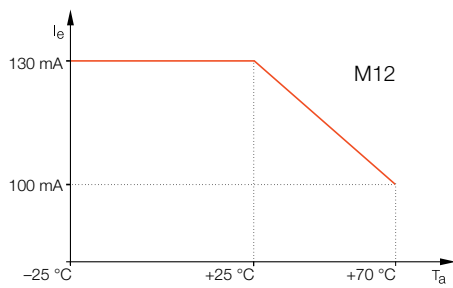
Block housings

26×40×12 mm (R05)	623
40×73×40 mm (Unicompact)	624
40×120×40 mm (Unisensor)	626
80×80×40 mm (Maxisensor)	630





Current reduction as a function of ambient temperature range



Housing size	
Installation type (observe instructions in the Basic Information chapter)	
Rated switching distance s_n	
Assured switching distance s_a	
Sensing distance	
NO	Ordering code
	Part number
NC	Ordering code
	Part number
Rated operating voltage U_e	
Supply voltage U_B	
Voltage drop U_d at I_e max.	
Rated insulation voltage U_i	
Rated operating current I_e	
Minimum operating current I_m	
Residual current I_r max.	
Short-term current carrying capacity I_c /time T	
Short-circuit protected	
Ambient temperature T_a	
Switching frequency f max.	
Utilization category	
Output function indicator	
Degree of protection as per IEC 60529	
Approvals	
Material	Housing
	Sensing surface
Connection	
Suggested mating cable	

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.

AC/DC 2-wire Inductive Sensors

Tubular housing, M12x1



M12x1	M12x1	M12x1		
Flush	Flush	Non-flush		
2 mm	2 mm	4 mm		
0...1.6 mm	0...1.6 mm	0...3.2 mm		
1X	1X	1X		
BES02E3	BES027Y	BES02E4		
BES 515-207-S21-E	BES 516-207-S5-E	BES 515-209-S21-E		
	BES0284			
	BES 516-208-S5-E			
110 V AC	110 V AC	110 V AC		
20...250 V AC/DC	20...250 V AC/DC	20...250 V AC/DC		
11 V	11 V	11 V		
250 V AC	250 V AC	250 V AC		
130 mA	130 mA	130 mA		
5 mA	5 mA	5 mA		
1.7 mA	1.7 mA	1.7 mA		
0.7 A/20 ms	0.7 A/20 ms	0.7 A/20 ms		
Yes	Yes	Yes		
-25...+70 °C	-25...+70 °C	-25...+70 °C		
1 kHz	1 kHz	600 Hz		
AC 140/DC 13	AC 140/DC 13	AC 140/DC 13		
Yellow LED	Yellow LED	Yellow LED		
IP 67	IP 67	IP 67		
CE, cULus	CE, cULus	CE, cULus		
Stainless steel	Stainless steel	Stainless steel		
PA 12	PA 12	PA 12		
1/2" 20UNF-2A plug connector, 3-pin	7/8" 16UN plug connector, 3-pin	1/2"-20UNF-2A plug connector, 3-pin		
C21 AE3-00-TY-060F	BCC A313-0000-10-071-VX43W6-020	C21 AE3-00-TY-060F		



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

Tubular housing

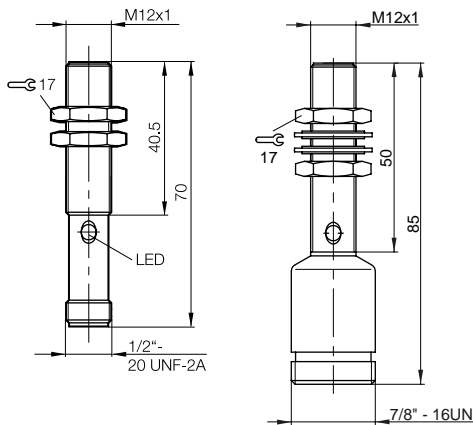
Block housings

AC 2-wire

Special properties

Analog distance measurement

Accessories



AC/DC 2-wire Inductive Sensors

Tubular housings, M12x1, M18x1

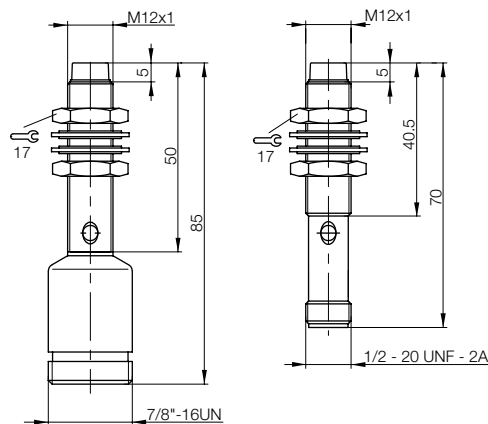


Housing size	M12x1	M12x1		
Installation type (observe instructions in the Basic Information chapter)	Non-flush	Non-flush		
Rated switching distance s_n	4 mm	8 mm		
Assured switching distance s_a	0...3.2 mm	0...6.4 mm		
Sensing distance	1X	2X		
NO	Ordering code	BES028E	BES0289	
	Part number	BES 516-209-S5-E	BES 516-209-G-S21-E	
NC	Ordering code			
	Part number			
Rated operating voltage U_o	110 V AC	110 V AC		
Supply voltage U_B	20...250 V AC/DC	20...250 V AC/DC		
Voltage drop U_d at I_o max.	11 V	11 V		
Rated insulation voltage U_i	250 V AC	250 V AC		
Rated operating current I_o	130 mA	130 mA		
Minimum operating current I_m	5 mA	5 mA		
Residual current I_r max.	1.7 mA	1.7 mA		
Short-term current carrying capacity I_c /time T	0.7 A/20 ms	0.7 A/20 ms		
Short-circuit protected	Yes	Yes		
Ambient temperature T_a	-25...+70 °C	-25...+70 °C		
Switching frequency f max.	600 Hz	600 Hz		
Utilization category	AC 140/DC 13	AC 140/DC 13		
Output function indicator	Yellow LED	Yellow LED		
Degree of protection as per IEC 60529	IP 67	IP 67		
Approvals	CE, cULus	CE, cULus		
Material	Housing	Stainless steel	Stainless steel	
	Sensing surface	PA 12	PA 12	
Connection		7/8" 16UN plug connector, 3-pin	1/2"-20UNF-2A plug connector, 3-pin	
Suggested mating cable		BCC A313-0000-10-071-VX43W6-020	C21 AE3-00-TY-060F	

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



AC/DC 2-wire Inductive Sensors

Tubular housing, M18x1



M18x1	M18x1	M18x1	M18x1	
Flush	Flush	Flush	Flush	
5 mm	5 mm	5 mm	8 mm	
0...4 mm	0...4 mm	0...4 mm	0...6.4 mm	
1X	1X	1X	2X	
BES028P	BES02E5	BES028T	BES02ZE	
BES 516-211-E5-E-S21	BES 515-211-E5-E-S21	BES 516-211-E5-E-S5	BES M18MN-USU80B-S21G	
BES028Z		BES0291		
BES 516-212-E5-E-S21		BES 516-212-E5-E-S5		
110 V AC	110 V AC	110 V AC	110 V AC	
20...250 V AC/DC	20...250 V AC/DC	20...250 V AC/DC	20...300 V AC/DC	
11 V	11 V	11 V	8 V	
250 V AC	250 V AC	250 V AC	250 V AC	
250 mA	250 mA	250 mA	200 mA	
5 mA	5 mA	5 mA	4 mA	
1.7 mA	1.7 mA	1.7 mA	0.8 mA	
1.5 A/20 ms	1.5 A/20 ms	1.5 A/20 ms	1.5 A/20 ms	
Yes	Yes	Yes	Yes	
-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C	
400 Hz	400 Hz	400 Hz	30 Hz	
AC 140/DC 13	AC 140/DC 13	AC 140/DC 13	AC 140/DC 13	
Yellow LED	Yellow LED	Yellow LED	Yellow LED	
IP 67	IP 67	IP 67	IP 67	
CE, cULus	CE, cULus	CE, cULus	CE, cULus	
Brass-coated	Stainless steel	Brass-coated	Brass-coated	
PA 12	PA 12	PA 12	PBT	
1/2"-20UNF-2A plug connector, 3-pin	1/2"-20UNF-2A plug connector, 3-pin	7/8" 16UN plug connector, 3-pin	1/2"-20UNF-2A plug connector, 3-pin	
C21 AE3-00-TY-060F	C21 AE3-00-TY-060F	BCC A313-0000-10-071-VX43W6-020	C21 AE3-00-TY-060F	



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

Tubular housings

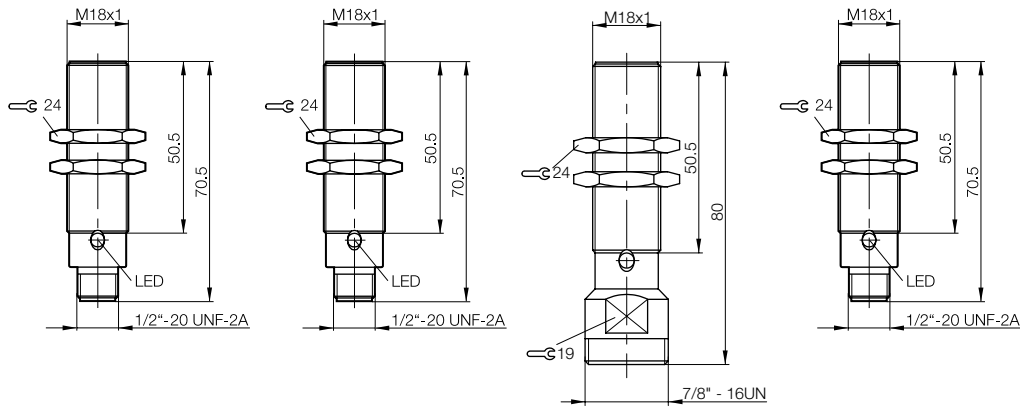
Block housings

AC 2-wire

Special properties

Analog distance measurement

Accessories



AC/DC 2-wire Inductive Sensors

Tubular housing, M18x1

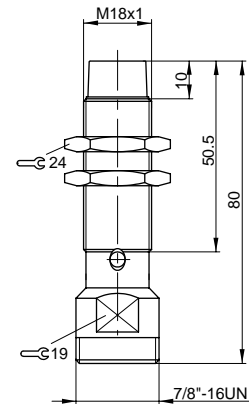
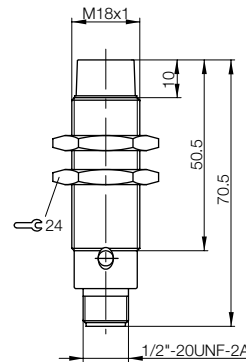
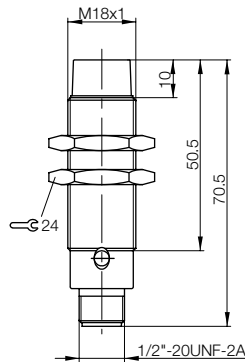


Housing size	M18x1	M18x1	M18x1
Installation type (observe instructions in the Basic Information chapter)	Non-flush	Non-flush	Non-flush
Rated switching distance s_n	8 mm	8 mm	8 mm
Assured switching distance s_a	0...6.4 mm	0...6.4 mm	0...6.4 mm
Sensing distance	1X	1X	1X
NO	Ordering code	BES0296	BES02E7
	Part number	BES 516-213-E5-E-S21	BES 515-213-E5-E-S21
			BES 516-213-E5-E-S5
NC	Ordering code	BES029H	
	Part number	BES 516-214-E5-E-S21	
Rated operating voltage U_o	110 V AC	110 V AC	110 V AC
Supply voltage U_B	20...250 V AC/DC	20...250 V AC/DC	20...250 V AC/DC
Voltage drop U_d at I_o max.	11 V	11 V	11 V
Rated insulation voltage U_i	250 V AC	250 V AC	250 V AC
Rated operating current I_o	250 mA	250 mA	250 mA
Minimum operating current I_m	5 mA	5 mA	5 mA
Residual current I_r max.	1.7 mA	1.7 mA	1.7 mA
Short-term current carrying capacity I_c /time T	1.5 A/20 ms	1.5 A/20 ms	1.5 A/20 ms
Short-circuit protected	Yes	Yes	Yes
Ambient temperature T_a	-25...+70 °C	-25...+70 °C	-25...+70 °C
Switching frequency f max.	250 Hz	250 Hz	250 Hz
Utilization category	AC 140/DC 13	AC 140/DC 13	AC 140/DC 13
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67
Approvals	CE, cULus	CE, cULus	CE, cULus
Material	Housing	Brass-coated	Stainless steel
	Sensing surface	PA 12	PA 12
Connection		1/2"-20UNF-2A plug connector, 3-pin	1/2"-20UNF-2A plug connector, 3-pin
		C21 AE3-00-TY-060F	C21 AE3-00-TY-060F
Suggested mating cable			7/8" 16UN plug connector, 3-pin
			BCC A313-0000-10-071-VX43W6-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



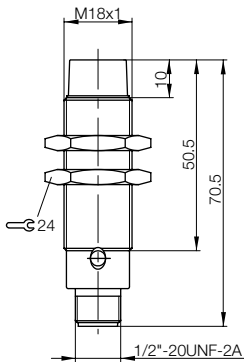


AC/DC 2-wire Inductive Sensors Tubular housings, M18x1



M18x1				
Non-flush				
16 mm				
0...13 mm				
2X				
BES029A				
BES 516-213-G-E5-E-S21				
110 V AC				
20...250 V AC/DC				
11 V				
250 V AC				
250 mA				
5 mA				
1.7 mA				
1.5 A/1 ms				
Yes				
-25...+70 °C				
250 Hz				
AC 140/DC 13				
Yellow LED				
IP 67				
CE, cULus				
Brass-coated				
PA 12				
1/2"-20UNF-2A plug connector, 3-pin				
C21 AE3-00-TY-060F				

- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire**
- Tubular housings
- Block housings
- AC 2-wire
- Special properties
- Analog distance measurement
- Accessories



AC/DC 2-wire Inductive Sensors

Tubular housing, M30x1.5

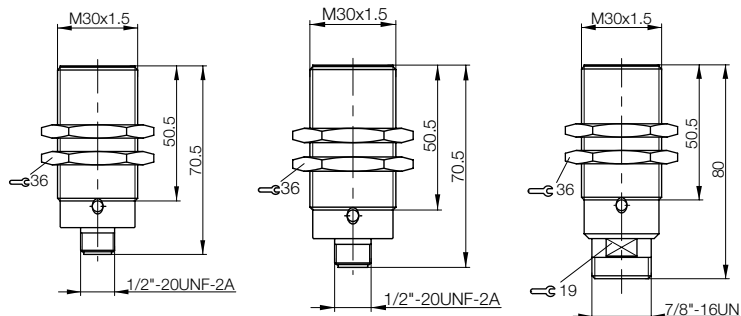


	M30x1.5	M30x1.5	M30x1.5
Housing size	M30x1.5	M30x1.5	M30x1.5
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	10 mm	10 mm	10 mm
Assured switching distance s_a	0...8.1 mm	0...8.1 mm	0...8.1 mm
Sensing distance	1X	1X	1X
NO	Ordering code Part number	BES029T BES 516-215-E5-E-S21	BES029W BES 516-215-E5-E-S5
NC	Ordering code Part number	BES02A2 BES 516-216-E5-E-S21	BES02A4 BES 516-216-E5-E-S5
Rated operating voltage U_o	110 V AC	110 V AC	110 V AC
Supply voltage U_B	20...250 V AC/DC	20...250 V AC/DC	20...250 V AC/DC
Voltage drop U_d at I_o max.	11 V	11 V	11 V
Rated insulation voltage U_i	250 V AC	250 V AC	250 V AC
Rated operating current I_o	250 mA	250 mA	250 mA
Minimum operating current I_m	5 mA	5 mA	5 mA
Residual current I_r max.	1.7 mA	1.7 mA	1.7 mA
Short-term current carrying capacity I_c /time T	3 A/20 ms	3 A/20 ms	3 A/20 ms
Short-circuit protected	Yes	Yes	Yes
Ambient temperature T_a	-25...+70 °C	-25...+70 °C	-25...+70 °C
Switching frequency f max.	150 Hz	150 Hz	150 Hz
Utilization category	AC 140/DC 13	AC 140/DC 13	AC 140/DC 13
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67
Approvals	CE, cULus	CE, cULus	CE, cULus
Material	Housing: Brass-coated Sensing surface: PA 12	Stainless steel PA 12	Brass-coated PA 12
Connection	1/2"-20UNF-2A plug connector, 3-pin	1/2"-20UNF-2A plug connector, 3-pin	7/8" 16UN plug connector, 3-pin
Suggested mating cable	C21 AE3-00-TY-060F	C21 AE3-00-TY-060F	BCC A313-0000-10-071-VX43W6-020

See technical section (page 963-966) for installation instructions.

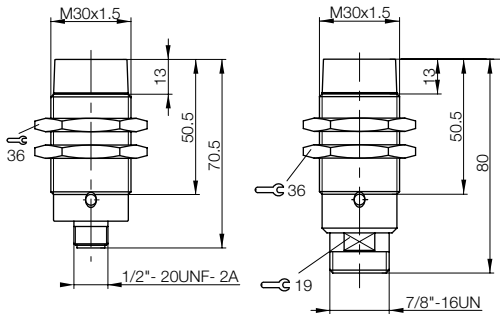
For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.





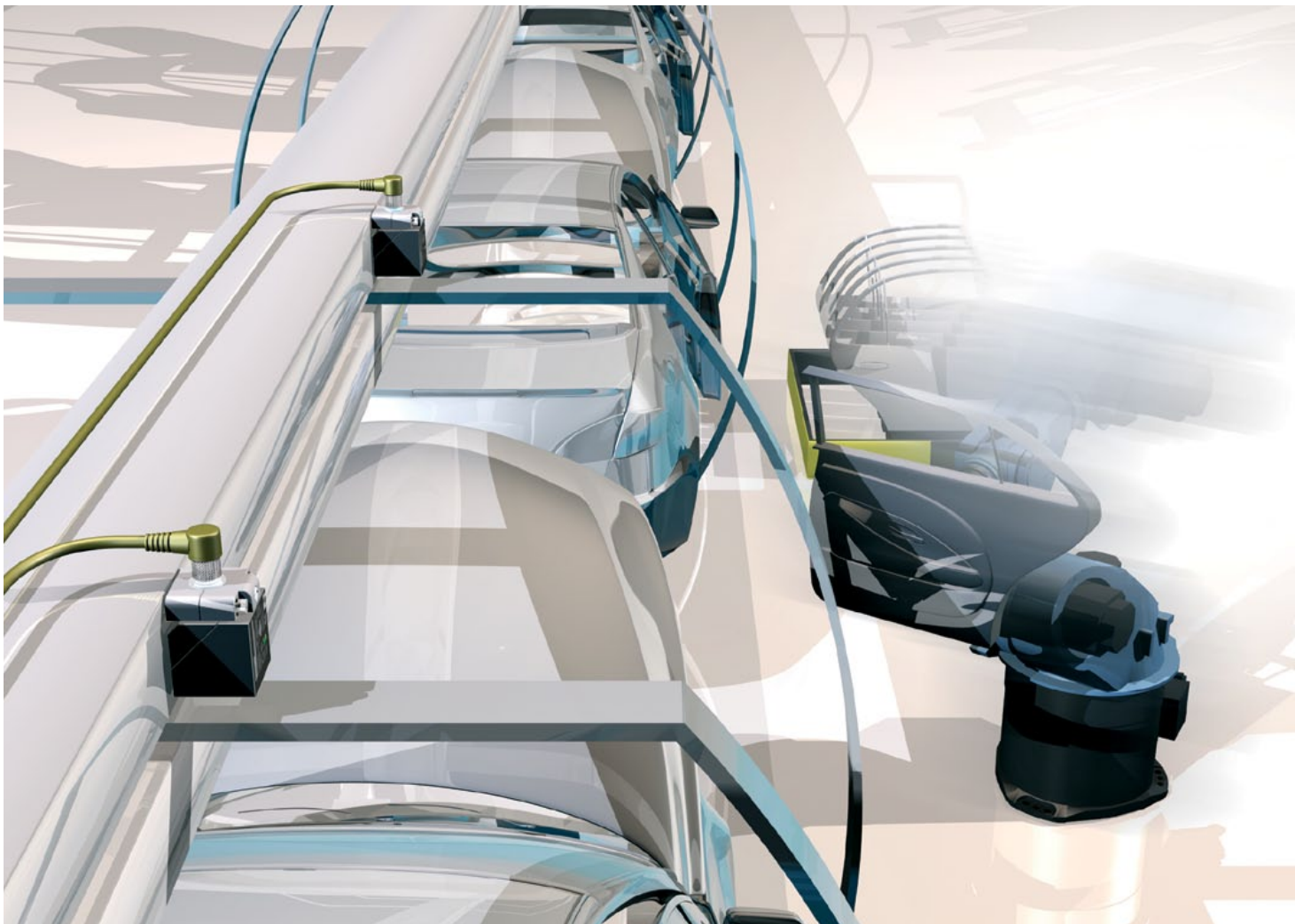
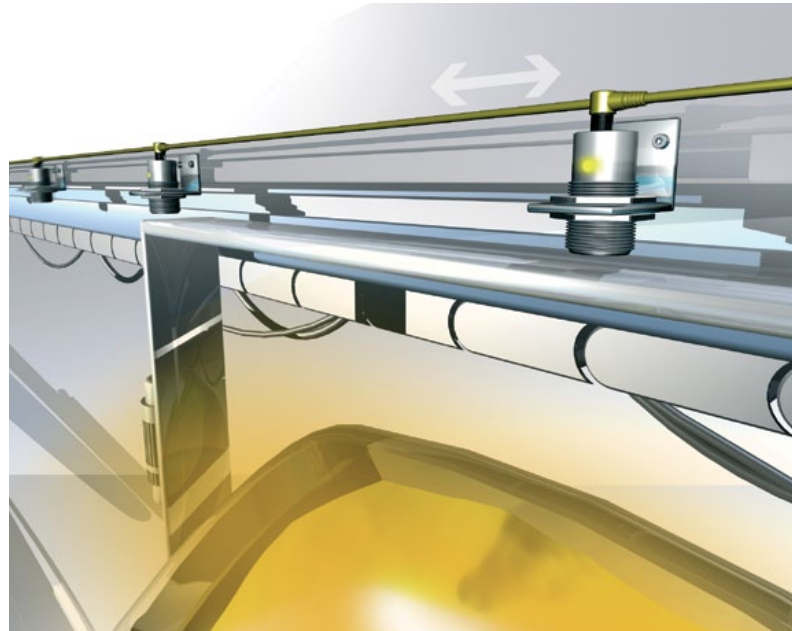
M30×1.5	M30×1.5			
Non-flush	Non-flush			
15 mm	15 mm			
0...12.1 mm	0...12.1 mm			
1X	1X			
BES02AA	BES02AE			
BES 516-217-E5-E-S21	BES 516-217-E5-E-S5			
BES02AK	BES02AM			
BES 516-218-E5-E-S21	BES 516-218-E5-E-S5			
110 V AC	110 V AC			Inductive sensors
20...250 V AC/DC	20...250 V AC/DC			Global DC 3-wire
11 V	11 V			DC 3-/4-wire
250 V AC	250 V AC			DC 2-wire
250 mA	250 mA			AC/DC 2-wire
5 mA	5 mA			Tubular housings
1.7 mA	1.7 mA			Block housings
3 A/20 ms	3 A/20 ms			AC 2-wire
Yes	Yes			Special properties
-25...+70 °C	-25...+70 °C			Analog distance measurement
100 Hz	100 Hz			Accessories
AC 140/DC 13	AC 140/DC 13			
Yellow LED	Yellow LED			
IP 67	IP 67			
CE, cULus	CE, cULus			
Brass-coated	Brass-coated			
PA 12	PA 12			
1/2"-20UNF-2A plug connector, 3-pin	7/8" 16UN plug connector, 3-pin			
C21 AE3-00-TY-060F	BCC A313-0000-10-071-VX43W6-020			



AC/DC 2-wire Inductive Sensors Sensors in use

Position detection with Balluff inductive sensors: In foundry work, exact position detection is absolutely essential for pouring metal with exact precision. Balluff inductive sensors can be integrated into the existing feed system and detect the stationary ladle position right before pouring.

Assembly procedures require precise position of materials. Balluff inductive sensors also identify metals over long distances and in harsh environments.



AC/DC 2-wire Inductive Sensors

Block housings, 26×40×12 mm



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

Tubular housings

Block housings

AC 2-wire

Special properties

Analog distance measurement

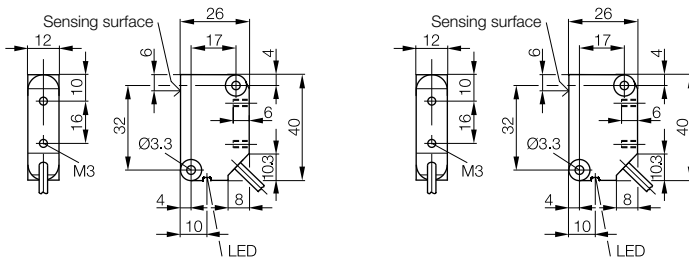
Accessories

Housing size	26×40×12 mm R05	26×40×12 mm R05
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush
Rated switching distance s_n	2 mm	4 mm
Assured switching distance s_a	0...1.6 mm	0...3.2 mm
Sensing distance	1X	2X
NO	Ordering code	BES02CT
	Part number	BES R05KB-USU20B-EV02
		BES R05KB-USU40B-EV02
Rated operating voltage U_o	110 V AC	110 V AC
Supply voltage U_B	20...250 V AC/DC	20...250 V AC/DC
Voltage drop U_d at I_o max.	12 V	12 V
Rated insulation voltage U_i (protection class)	250 V AC (□)	250 V AC (□)
Rated operating current I_o	130 mA	130 mA
Minimum operating current I_m	5 mA	5 mA
Residual current I_r max.	1.7 mA	1.7 mA
Short-term current carrying capacity I_c /time T	0.7 A/20 ms	0.7 A/20 ms
Short-circuit protected	Yes	Yes
Ambient temperature T_a	-25...+70 °C	-25...+70 °C
Switching frequency f max.	400 Hz	400 Hz
Utilization category	AC 140/DC 13	AC 140/DC 13
Output function indicator	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 67
Approvals	CE	CE
Material	Housing PA 12	PA 12
	Sensing surface PA 12	PA 12
Connection	2 m PVC cable, 22 AWG	2 m PVC cable, 22 AWG

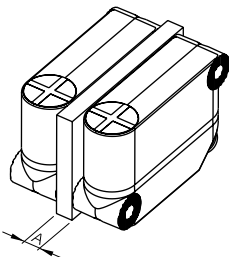
See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



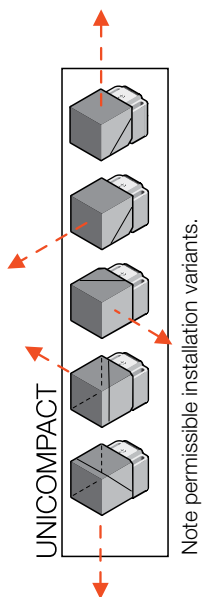
Row mounting



- With plastics or no material present in the space:
Distance A = at least 5 mm
- With metal in the space:
Distance A = at least 4 mm

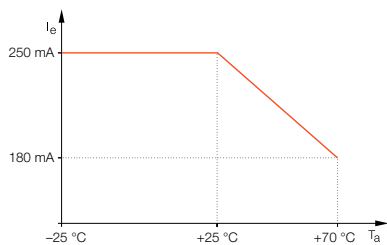
AC/DC 2-wire Inductive Sensors

Block housings, 40×73×40 mm



Housing size		
Installation type (observe instructions in Basic Information chapter)		
Rated switching distance s_n		
Assured switching distance s_a		
Sensing distance		
NO	Ordering code	
	Part number	
NC	Ordering code	
	Part number	
Rated operating voltage U_e		
Supply voltage U_B		
Voltage drop U_d at I_e max.		
Rated insulation voltage U_i		
Rated operating current I_e		
Minimum operating current I_m		
Residual current I_r max.		
Short-term current carrying capacity I_c /time T		
Short-circuit protected		
Ambient temperature T_a		
Switching frequency f max.		
Utilization category		
Output function indicator		
Degree of protection as per IEC 60529		
Approvals		
Material	Housing	
	Sensing surface	
Possible installation variations		
Connection		
Suggested mating cable		

Current reduction as a function of ambient temperature range



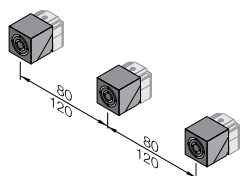
See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

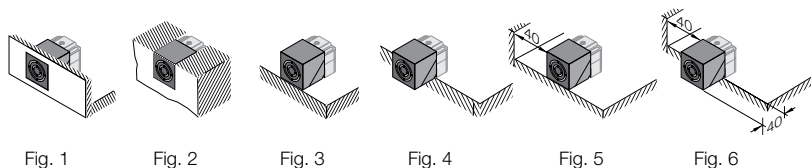
Additional cable lengths and PUR cable jacket material available on request.

Row mounting

Flush 80 mm, Non-flush 120 mm



Mounting options



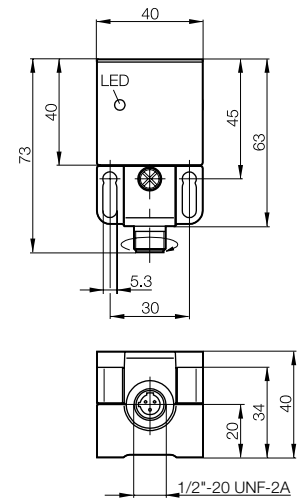
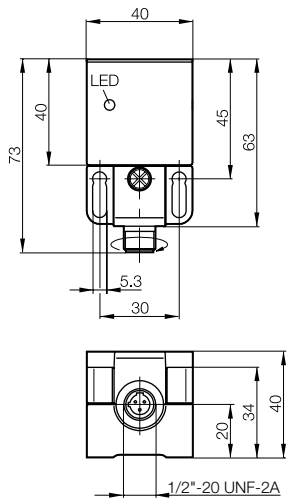
AC/DC 2-wire Inductive Sensors

Block housings, 40×73×40 mm



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire**
- Tubular housings
- Block housings
- AC 2-wire
- Special properties
- Analog distance measurement
- Accessories

40×73×40 mm Unicomact	40×73×40 mm Unicomact
Flush	Non-flush
15 mm	25 mm
0...12 mm	0...20.2 mm
1X	1X
BES022A	BES022F
BES Q40KEU-USU15B-S21G	BES Q40KEU-USU25F-S21G
BES0211	BES0213
BES Q40KEU-UOU15B-S21G	BES Q40KEU-UOU25F-S21G
110 V AC	110 V AC
20...250 V AC/DC	20...250 V AC/DC
11 V	11 V
250 V AC	250 V AC
250 mA	250 mA
5 mA	5 mA
1.7 mA	1.7 mA
2 A/20 ms	2 A/20 ms
Yes	Yes
-25...+70 °C	-25...+70 °C
100 Hz	100 Hz
AC 140/DC 13	AC 140/DC 13
Yellow LED	Yellow LED
IP 67	IP 67
CE	CE
PBT/Cast zinc	PBT/Cast zinc
PBT	PBT
Fig. 1...6	Fig. 3...6
1/2" 20UNF-2A plug connector, 3-pin	1/2" 20UNF-2A plug connector, 3-pin
C21 AE3-00-TY-060F	C21 AE3-00-TY-060F

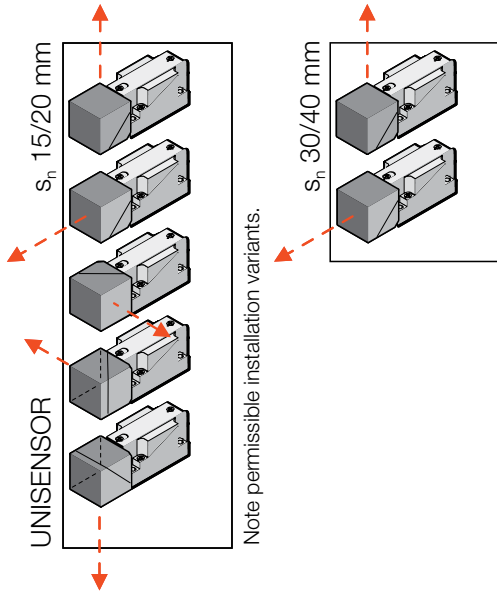


AC/DC 2-wire Inductive Sensors

Block housings, 40×120×40 mm

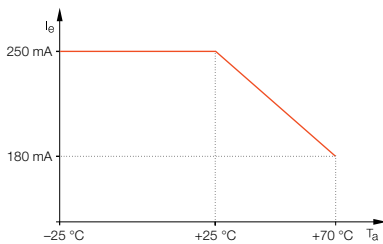
Programmable Unisensor

Unisensors can be switched between a normally open function and a normally closed function. A wire jumper is used to change the setting.



Housing size	
Installation type (observe instructions in Basic Information chapter)	
Rated switching distance s_n	
Assured switching distance s_a	
Sensing distance	
NO/NC	Ordering code
programmable	Part number
Rated operating voltage U_e	
Supply voltage U_B	
Voltage drop U_d at I_e max.	
Rated insulation voltage U_i (protection class)	
Rated operating current I_e	
Minimum operating current I_m	
Residual current I_r max.	
Short-term current carrying capacity I_c /time T	
Short-circuit protected	
Ambient temperature T_a	
Switching frequency f max.	
Utilization category	
Output function indicator	
Degree of protection as per IEC 60529	
Approvals	
Material	Housing
	Sensing surface
Possible installation variations	
Connection	
Suggested mating cable	

Current reduction as a function of ambient temperature range



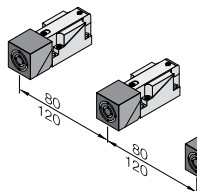
See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

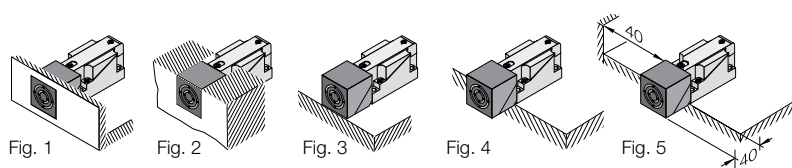
Additional cable lengths and PUR cable jacket material available on request.

Row mounting

Flush 80 mm,
Non-flush 120 mm



Mounting options



AC/DC 2-wire Inductive Sensors

Block housings, 40×120×40 mm



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

Tubular housings

Block housings

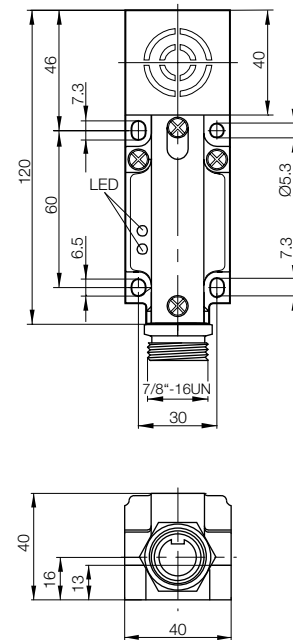
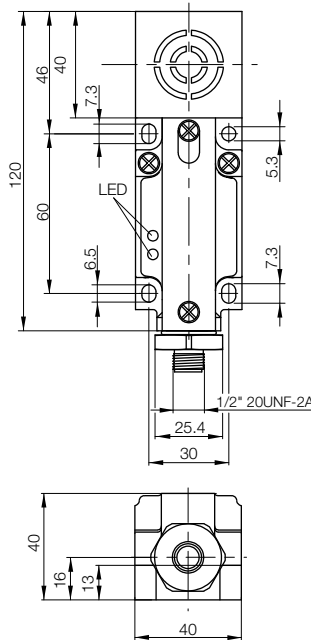
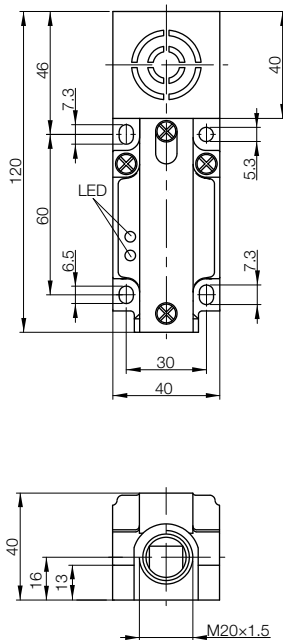
AC 2-wire

Special properties

Analog distance measurement

Accessories

40×120×40 mm Unisensor	40×120×40 mm Unisensor	40×120×40 mm Unisensor
Flush	Flush	Flush
15 mm	15 mm	15 mm
0...12 mm	0...12 mm	0...12 mm
1X	1X	1X
BES020Y	BES0242	BES0243
BES 517-223-M3-E	BES 517-223-U3-E-S21	BES 517-223-U3-E-S5
110 V AC	110 V AC	110 V AC
20...250 V AC/DC	20...250 V AC/DC	20...250 V AC/DC
10.5 V	10.5 V	10.5 V
250 V AC (□)	250 V AC	250 V AC
250 mA	250 mA	250 mA
5 mA	5 mA	5 mA
1.7 mA	1.7 mA	1.7 mA
1 A/20 ms	1 A/20 ms	1 A/20 ms
Yes	Yes	Yes
-25...+70 °C	-25...+70 °C	-25...+70 °C
100 Hz	100 Hz	100 Hz
AC 140/DC 13	AC 140/DC 13	AC 140/DC 13
Yellow LED	Yellow LED	Yellow LED
IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus
PBT/aluminum	PBT/aluminum	PBT/aluminum
PBT	PBT	PBT
Fig. 1...5	Fig. 1...5	Fig. 1...5
Screw terminal M20x1.5	1/2" 20UNF-2A plug connector, 3-pin C21 AE3-00-TY-060F	7/8" 16UN plug connector, 3-pin BCC A313-0000-10-071-VX43W6-020



AC/DC 2-wire Inductive Sensors

Block housings, 40×120×40 mm

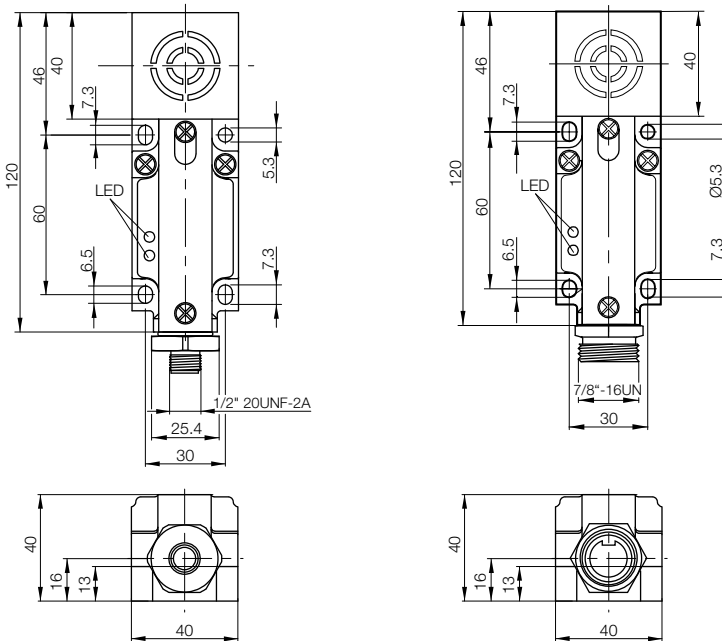


Housing size		40×120×40 mm Unisensor	40×120×40 mm Unisensor
Installation type (observe instructions in Basic Information chapter)		Non-flush	Non-flush
Rated switching distance s_n		20 mm	20 mm
Assured switching distance s_a		0...16 mm	0...16 mm
Sensing distance		1X	1X
NO/NC programmable	Ordering code	BES0245	BES0246
Part number		BES 517-223-U4-E-S21	BES 517-223-U4-E-S5
Rated operating voltage U_e		110 V AC	110 V AC
Supply voltage U_B		20...250 V AC/DC	20...250 V AC/DC
Voltage drop U_d at I_e max.		10.5 V	10.5 V
Rated insulation voltage U_i		250 V AC	250 V AC
Rated operating current I_e		250 mA	250 mA
Minimum operating current I_m		5 mA	5 mA
Residual current I_r max.		1.7 mA	1.7 mA
Short-term current carrying capacity I_c /time T		1 A/20 ms	1 A/20 ms
Short-circuit protected		Yes	Yes
Ambient temperature T_a		-25...+70 °C	-25...+70 °C
Switching frequency f max.		100 Hz	100 Hz
Utilization category		AC 140/DC 13	AC 140/DC 13
Output function indicator		Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67
Approvals		CE, cULus	CE, cULus
Material	Housing	PBT/aluminum	PBT/aluminum
	Sensing surface	PBT	PBT
Possible installation variations		Fig. 4 and 5 (see page 626)	Fig. 4 and 5 (see page 626)
Connection		1/2" 20UNF-2A plug connector, 3-pin	7/8" 16UN plug connector, 3-pin
Suggested mating cable		C21 AE3-00-TY-060F	BCC A313-0000-10-071-VX43W6-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



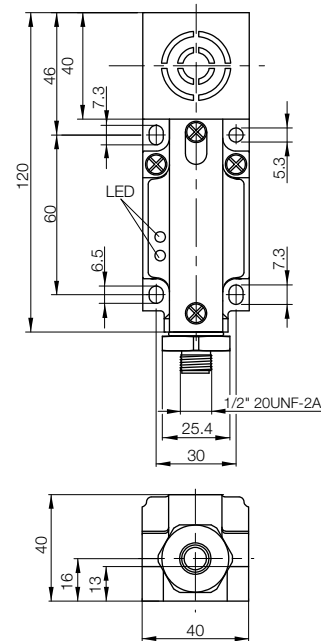
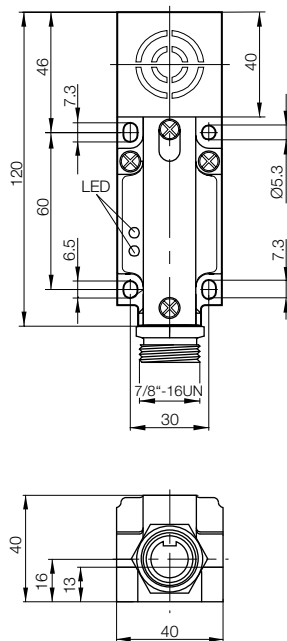
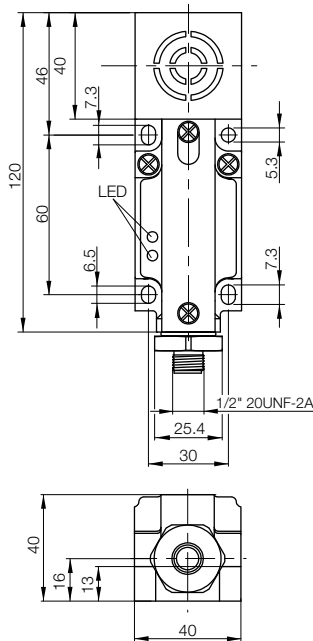
AC/DC 2-wire Inductive Sensors

Block housings, 40×120×40 mm



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire**
- Tubular housings
- Block housings
- AC 2-wire
- Special properties
- Analog distance measurement
- Accessories

40×120×40 mm Unisensor	40×120×40 mm Unisensor	40×120×40 mm Unisensor
Non-flush	Non-flush	Non-flush
30 mm	30 mm	40 mm
0...24 mm	0...24 mm	0...32 mm
1X	1X	1X
BES0248	BES0249	BES024C
BES 517-223-U5-E-S21	BES 517-223-U5-E-S5	BES 517-223-U7-EL-S21
110 V AC	110 V AC	110 V AC
20...250 V AC/DC	20...250 V AC/DC	20...250 V
10.5 V	10.5 V	12.5 V
250 V AC	250 V AC	250 V AC
250 mA	250 mA	250 mA
5 mA	5 mA	5 mA
1.7 mA	1.7 mA	1.7 mA
1 A/20 ms	1 A/20 ms	1 A/20 ms
Yes	Yes	Yes
-25...+70 °C	-25...+70 °C	-25...+70 °C
100 Hz	100 Hz	100 Hz
AC 140/DC 13	AC 140/DC 13	AC 140/DC 13
Yellow LED	Yellow LED	Yellow LED
IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus
PBT/aluminum	PBT/aluminum	PBT/aluminum
PBT	PBT	PBT
Fig. 4 and 5 (see page 626)	Fig. 4 and 5 (see page 626)	Fig. 4 and 5 (see page 626)
1/2" 20UNF-2A plug connector, 3-pin	7/8" 16UN plug connector, 3-pin	1/2" 20UNF-2A plug connector, 3-pin
C21 AE3-00-TY-060F	BCC A313-0000-10-071-VX43W6-020	C21 AE3-00-TY-060F



AC/DC 2-wire Inductive Sensors

Block housings, 80×80×40 mm



Precise pallet positioning using inductive sensors with long switching distance

Take advantage of the ability to position with precision and ensure a consistent production process. Rugged Maxisensors can be sunk into a plant floor to provide stopping points for vehicle assembly pallets.

Housing size	
Installation type (observe instructions in Basic Information chapter)	
Rated switching distance s_n	
Assured switching distance s_a	
Sensing distance	
NO/NC programmable	Ordering code
	Part number
Rated operating voltage U_o	
Supply voltage U_B	
Voltage drop U_d at I_o max.	
Rated insulation voltage U_i (protection class)	
Rated operating current I_o	
Minimum operating current I_m	
Residual current I_r max.	
Short-term current carrying capacity I_c /time T	
Short-circuit protected	
Ambient temperature T_a	
Switching frequency f max.	
Utilization category	
Output function indicator	
Degree of protection as per IEC 60529	
Approvals	
Material	Housing Sensing surface
Connection	
Suggested mating cable	

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.

Mounting in non-ferrous metals

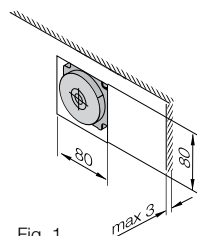


Fig. 1

Mounting in steel/non-ferrous metals

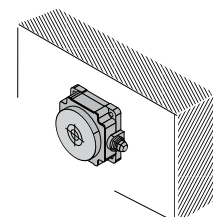


Fig. 2

AC/DC 2-wire Inductive Sensors

Block housings, 80×80×40 mm



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

Tubular housings

Block housings

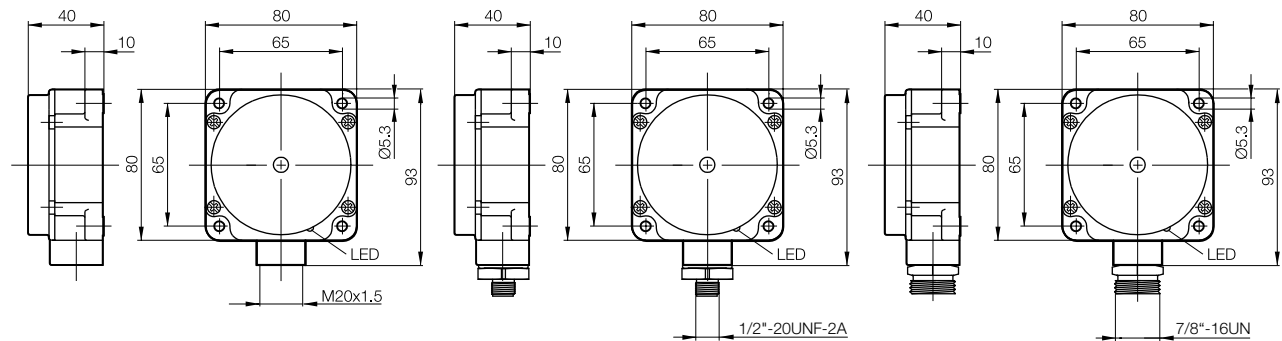
AC 2-wire

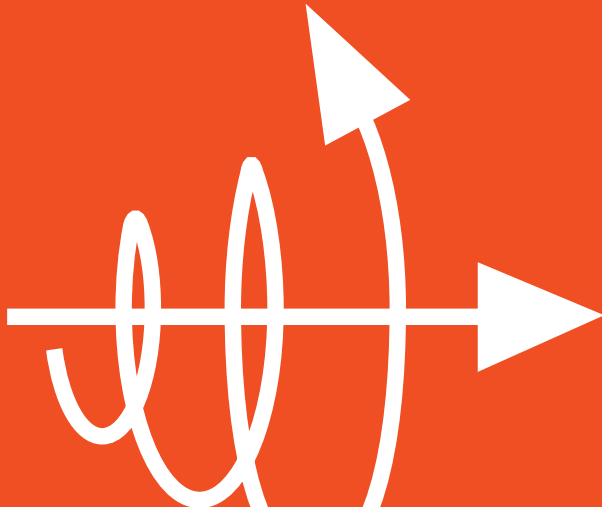
Special properties

Analog distance measurement

Accessories

80×80×40 mm Maxisensor	80×80×40 mm Maxisensor	80×80×40 mm Maxisensor
Non-flush	Non-flush	Non-flush
50 mm	50 mm	50 mm
0...40.5 mm	0...40.5 mm	0...40.5 mm
1X	1X	1X
BES024F	BES023C	BES01ZJ
BES 517-224-M5-E	BES 517-224-M5-E-S21	BES 517-224-U5-E-S5
110 V AC	110 V AC	110 V AC
20...250 V AC/DC	20...250 V AC/DC	20...250 V AC/DC
11 V	11 V	11 V
250 V AC (□)	250 V AC (□)	250 V AC (□)
250 mA	250 mA	250 mA
5 mA	5 mA	5 mA
≤ 1.7 mA	1700 µA	1700 µA
1 A/20 ms	1 A/20 ms	1 A/20 ms
Yes	Yes	Yes
-25...+70 °C	-25...+70 °C	-25...+70 °C
10 Hz	10 Hz	10 Hz
AC 140/DC 13	AC 140/DC 13	AC 140/DC 13
Yellow LED	Yellow LED	Yellow LED
IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus
PBT	PBT	PBT
PBT	PBT	PBT
Screw terminal M20x1.5	1/2" 20UNF-2A plug connector, 3-pin C21 AE3-00-TY-060F	7/8" 16UN plug connector, 3-pin BCC A313-0000-10-071-VX43W6-020



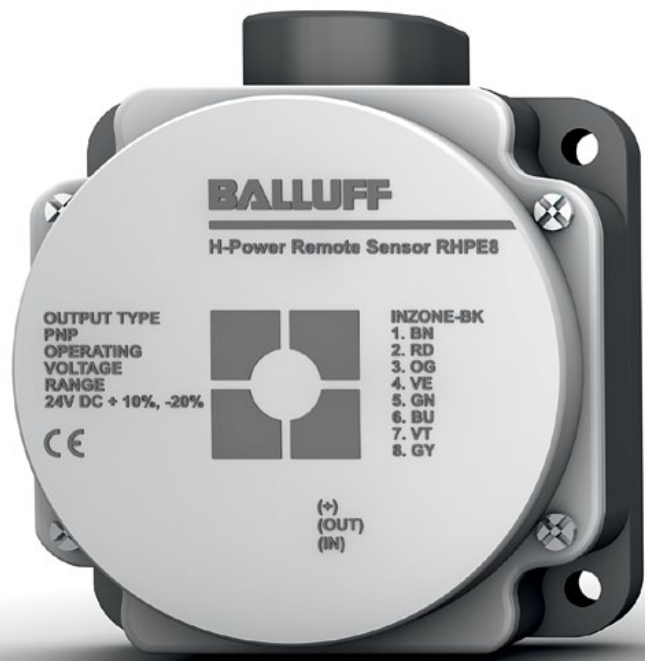


Inductive Sensors

AC 2-wire inductive sensors

Balluff AC 2-wire sensor technology:

Balluff offers AC-sensors in the M12, M18, M30, and block housings to meet a wide variety of applications.





AC 2-wire Inductive Sensors

Contents

Tubular housings

M12×1

634

M18×1

636

M30×1.5

637

Block housings

80×80×40 mm (Maxisensor)

639



AC 2-wire Inductive Sensors

Tubular housings, M12x1

AC-sensors are optimized for controllers with alternating current inputs.
When maintaining the rated operating current, the sensors can directly control fuses and relays.

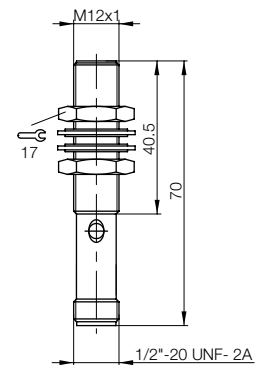


Housing size		M12x1
Installation type (observe instructions in Basic Information chapter)		Flush
Rated switching distance s_n		2 mm
Assured operating distance s_a		0...1.6 mm
Sensing distance		1X
NO	Ordering code	BES02CA
	Part number	BES 516-449-S21-L
Supply voltage U_B		20...250 V AC
Voltage drop U_d at I_e max.		4 V
Rated insulation voltage U_i (protection class)		250 V AC (II)
Rated operating current I_e		500 mA
Polarity reversal/short-circuit protected		Yes/No
Ambient temperature range T_a		-25...+70 °C
Switching frequency f max.		25 Hz
Utilization category		AC 140
Function indicator		Yellow LED
Degree of protection as per IEC 60529		IP 67
Approvals		CE, cULus
Material	Housing	Brass-coated
	Sensing surface	PA 12
Connection		1/2" 20UNF-2A plug connector, 3-pin
Suggested mating cable		C21 AE3-00-TY-060F

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.





AC 2-wire Inductive Sensors Tubular housings, M12x1



M12x1	M12x1	M12x1	M12x1	
Flush	Flush	Not flush	Not flush	
2 mm	2 mm	4 mm	4 mm	
0...1.6 mm	0...1.6 mm	0...3.2 mm	0...3.2 mm	
1X	1X	1X	1X	
BES02FP	BES02C8	BES02CF	BES02CC	
BES 515-449-SA7-S21	BES 516-449-BO-L-02	BES 516-461-S21-L	BES 516-461-BO-L-02	
35...250 V AC	20...250 V AC	20...250 V AC	20...250 V AC	
8.5 V	4 V	4 V	4 V	
250 V AC	250 V AC (□)	250 V AC (□)	250 V AC (□)	
150 mA	500 mA	500 mA	500 mA	
Yes/No	Yes/No	Yes/No	Yes/No	
-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C	
10 Hz	25 Hz	25 Hz	25 Hz	
AC 140	AC 140	AC 140	AC 140	
Yellow LED	Yellow LED	Yellow LED	Yellow LED	
IP 67	IP 67	IP 67	IP 67	
CE, cULus	CE, cULus	CE, cULus	CE, cULus	
Stainless steel	Brass-coated	Brass-coated	Brass-coated	
PA 12	PA 12	PA 12	PA 12	
1/2" 20UNF-2A plug connector, 3-pin	2 m PVC cable, 22 AWG	1/2" 20UNF-2A plug connector, 3-pin	2 m PVC cable, 22 AWG	
C21 AE3-00-TY-060F		C21 AE3-00-TY-060F		



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

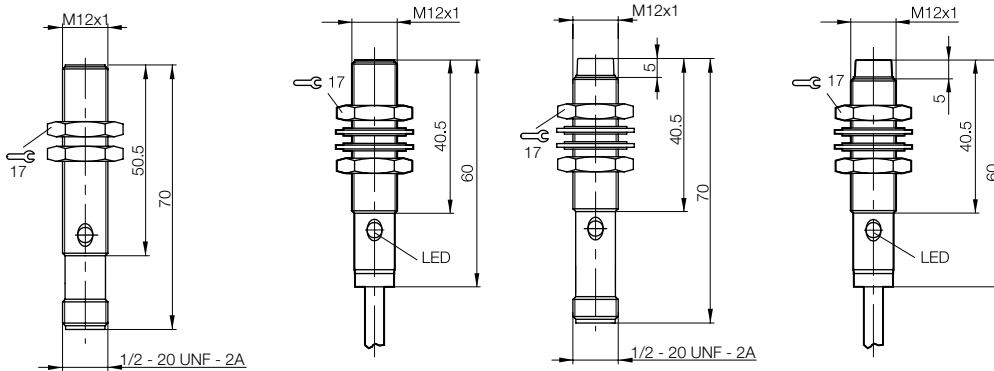
AC 2-wire

Tubular housings
Block housings

Special properties

Analog distance measurement

Accessories



AC 2-wire Inductive Sensors

Tubular housings, M18x1

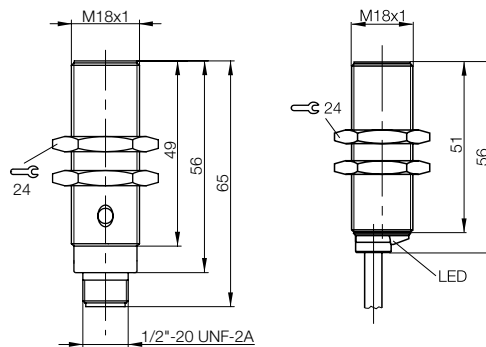


Housing size	M18x1	M18x1
Installation type (observe instructions in Basic Information chapter)	Flush	Flush
Rated switching distance s_n	5 mm	5 mm
Assured switching distance s_a	0...4 mm	0...4 mm
Sensing distance	1X	1X
NO	Ordering code	BES02AY
	Part number	BES 516-420-E5-L-S21
		BES 516-420-E4-L-02
Rated operating voltage U_e	110 V	110 V
Supply voltage U_B	20...250 V AC	20...250 V AC
Voltage drop U_d at I_e max.	4 V	4 V
Rated insulation voltage U_i (protection class)	250 V AC (□)	250 V AC (□)
Rated operating current I_e	500 mA	500 mA
Polarity reversal/short-circuit protected	Yes/No	Yes/No
Ambient temperature range T_a	-25...+70 °C	-25...+70 °C
Switching frequency f max.	25 Hz	25 Hz
Utilization category	AC 140	AC 140
Function indicator	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 67
Approvals	CE, cULus	CE, cULus
Material	Housing Sensing surface	Brass-coated PA 12
Connection	1/2" 20UNF-2A plug connector, 3-pin	2 m PVC cable, 22 AWG
Suggested mating cable	C21 AE3-00-TY-060F	

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.





AC 2-wire Inductive Sensors

Tubular housings, M18x1, M30x1.5



M18x1	M18x1	M30x1.5	M30x1.5	
Not flush	Not flush	Flush	Flush	
8 mm	8 mm	10 mm	10 mm	
0...6.4 mm	0...6.4 mm	0...8 mm	0...10 mm	
1X	1X	1X	1X	
BES02C7	BES02C5	BES02AT	BES02AP	
BES 516-437-E5-L-S21	BES 516-437-E4-L-02	BES 516-418-E5-L-S21	BES 516-418-E4-L-02	
110 V	110 V	110 V	110 V	
20...250 V AC	20...250 V AC	20...250 V AC	20...250 V AC	
4 V	4 V	4 V	4 V	
250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)	
500 mA	500 mA	500 mA	500 mA	
Yes/No	Yes/No	Yes/No	Yes/No	
-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C	
25 Hz	25 Hz	25 Hz	10 Hz	
AC 140	AC 140	AC 140	AC 140	
Yellow LED	Yellow LED	Yellow LED	Yellow LED	
IP 67	IP 67	IP 67	IP 67	
CE, cULus	CE, cULus	CE, cULus	CE, cULus	
Brass-coated	Brass-coated	Brass-coated	Brass-coated	
PA 12	PA 12	PA 12	PA 12	
1/2" 20UNF-2A plug connector, 3-pin	2 m PVC cable, 22 AWG	1/2" 20UNF-2A plug connector, 3-pin	2 m PVC cable, 22 AWG	
C21 AE3-00-TY-060F		C21 AE3-00-TY-060F		



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

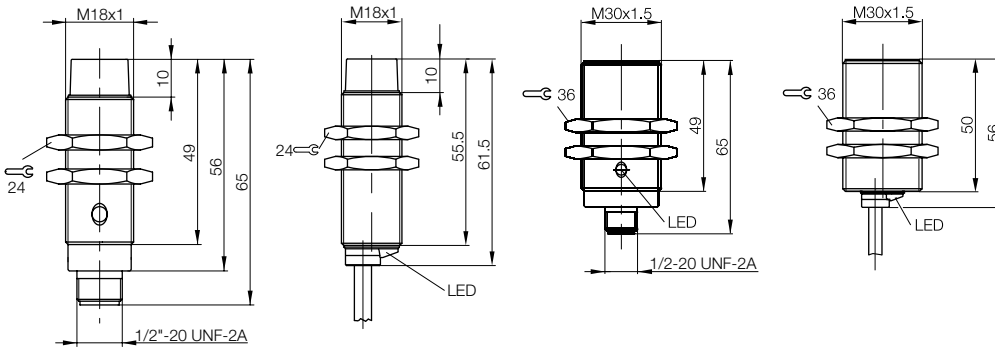
AC 2-wire

Tubular housings
Block housings

Special properties

Analog distance measurement

Accessories



AC 2-wire Inductive Sensors

Tubular housings, M30×1.5

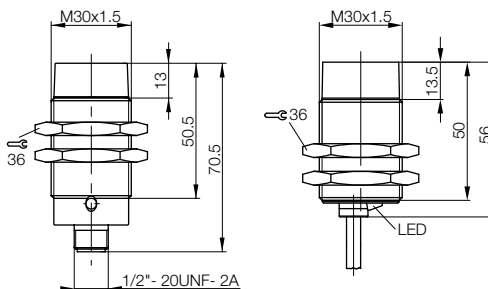


	M30×1.5	M30×1.5	
Housing size	M30×1.5	M30×1.5	
Installation type (observe instructions in Basic Information chapter)	Not flush	Not flush	
Rated switching distance s_n	15 mm	15 mm	
Assured switching distance s_a	0...12 mm	0...12 mm	
Sensing distance	1X	1X	
NO	Ordering code	BES02C3	BES02C1
	Part number	BES 516-432-E5-L-S21	BES 516-432-E4-L-02
Supply voltage U_B	20...250 V AC	20...250 V AC	
Voltage drop U_d at I_e max.	4 V	4 V	
Rated insulation voltage U_i (protection class)	250 V AC (II)	250 V AC (II)	
Rated operating current I_e	500 mA	500 mA	
Polarity reversal/short-circuit protected	Yes/No	Yes/No	
Ambient temperature range T_a	-25...+70 °C	-25...+70 °C	
Switching frequency f max.	10 Hz	10 Hz	
Utilization category	AC 140	AC 140	
Function indicator	Yellow LED	Yellow LED	
Degree of protection as per IEC 60529	IP 67	IP 67	
Approvals	CE, cULus	CE, cULus	
Material	Housing	Brass-coated	Brass-coated
	Sensing surface	PA 12	PA 12
Connection	1/2" 20UNF-2A plug connector, 3-pin	2 m PVC cable, 26 AWG	
Suggested mating cable	C21 AE3-00-TY-060F		

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.





AC 2-wire Inductive Sensors

Block housings, 80×80×40 mm



Housing size		80×80×40 mm Maxisensor	80×80×40 mm Maxisensor
Installation type (observe instructions in Basic Information chapter)		Not flush	Not flush
Rated switching distance s_n		50 mm	50 mm
Assured switching distance s_a		0...40 mm	0...40 mm
Sensing distance		1X	1X
NO/NC;	Ordering code	BES022T	BES022U
programmable	Part number	BES 517-460-U5-L-D-S21	BES 517-460-U5-L-D-S5
Supply voltage U_B		20...250 V AC	20...250 V AC
Voltage drop U_d at I_e max.		7 V	7 V
Rated insulation voltage U_i (protection class)		250 V AC (□)	250 V AC (□)
Rated operating current I_e		500 mA	500 mA
Polarity reversal/short-circuit protected		Yes/No	Yes/No
Ambient temperature range T_a		-25...+70 °C	-25...+70 °C
Switching frequency f max.		10 Hz	10 Hz
Utilization category		AC 140	AC 140
Function indicator		Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67
Approvals		CE, cULus	CE, cULus
Material	Housing	PBT	PBT
	Sensing surface	PBT	PBT
Connection		1/2" 20UNF-2A plug connector, 3-pin	7/8" 16UN plug connector, 3-pin
Suggested mating cable		C21 AE3-00-TY-060F	BCC A313-0000-10-071-VX43W6-020

Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire Tubular housings

AC 2-wire Block housings

Special properties

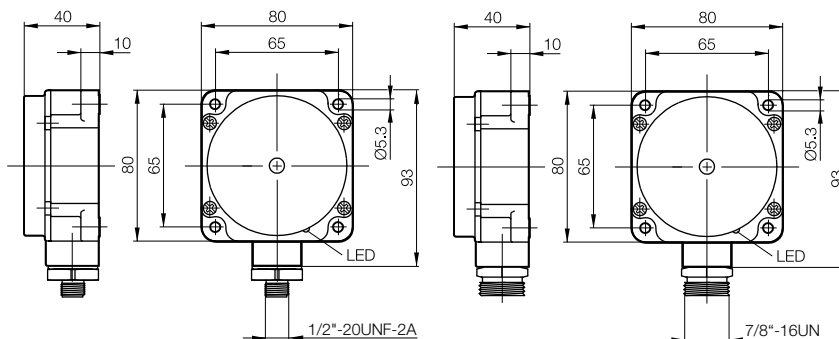
Analog distance measurement

Accessories

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



Maxisensor can be programmed

Maxisensors can be set to have a normally open- or normally closed function using a switch.

Mounting in non-ferrous metals

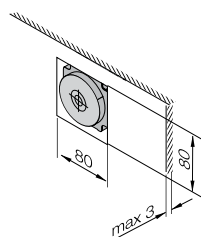


Fig. 1

Mounting in steel/non-ferrous metals

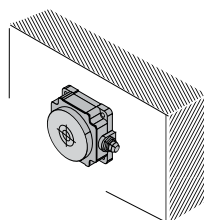
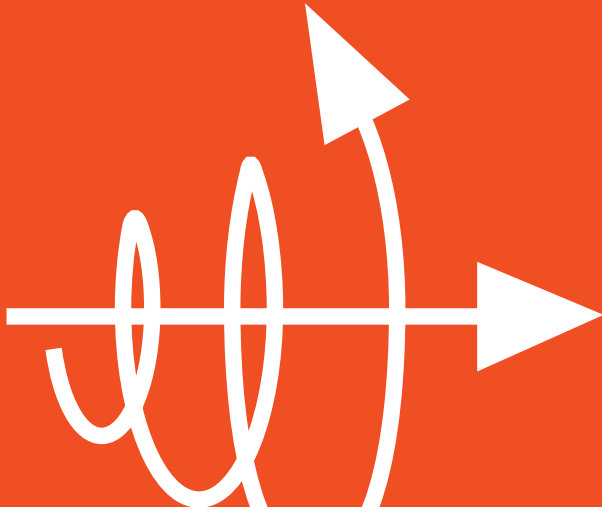


Fig. 2

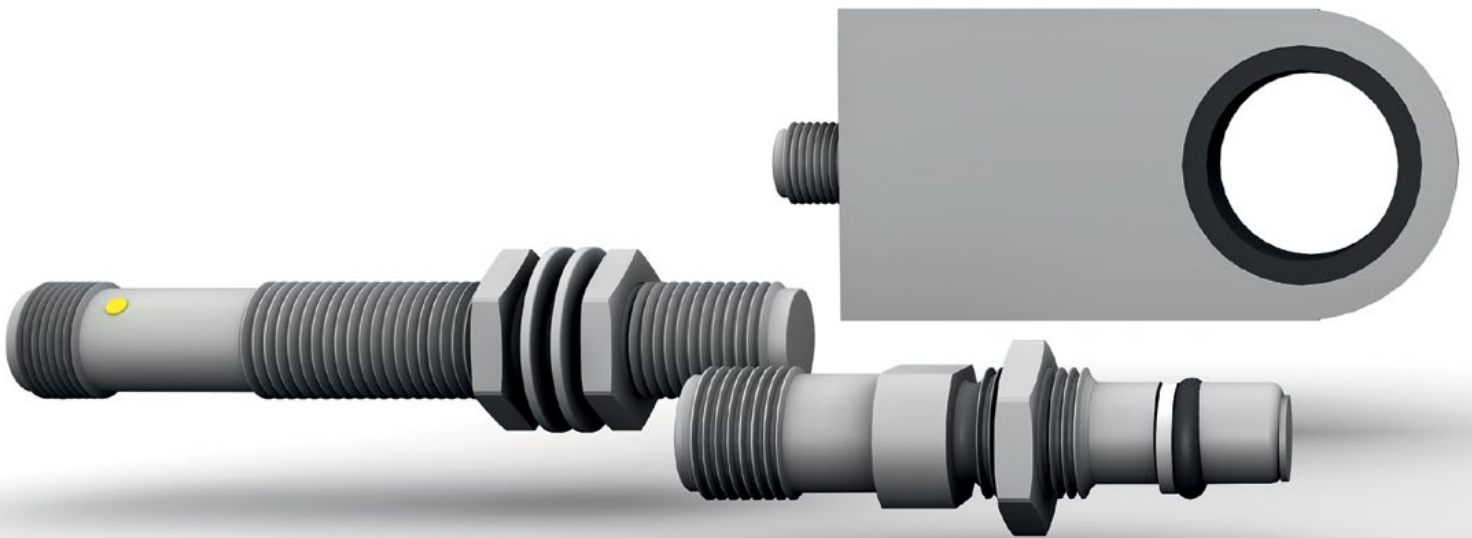


Inductive Sensors

Inductive sensors with special properties

Balluff's inductive sensors provide solutions for applications: With increased requirements such as high pressure or Factor 1, under rough conditions, in harsh environment applications.

The product line also includes special versions such as tube or ring sensors for discharge and infeed and counting small parts and large designs with large switching distance.

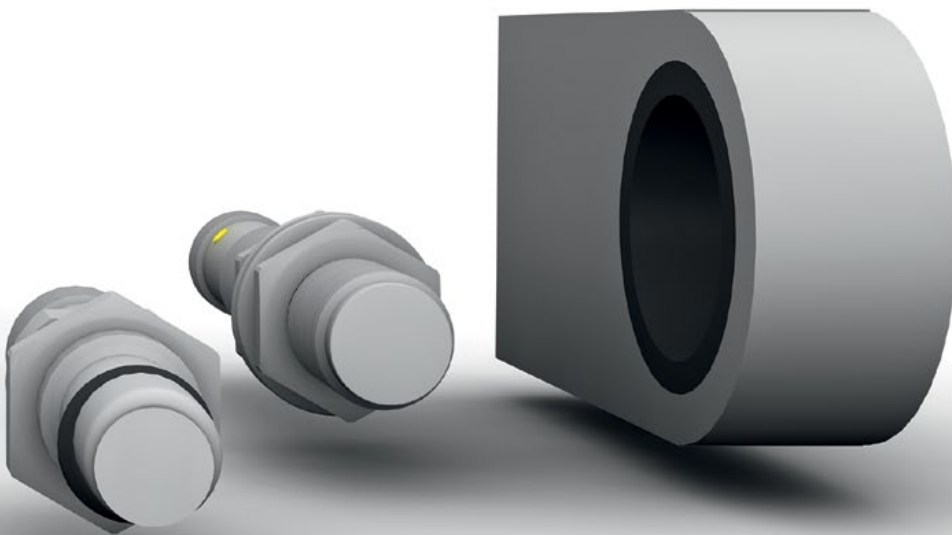




Inductive Sensors with Special Properties

Contents

High-pressure sensors	642
Strokemaster® sensors	660
Steelface sensors	664
High temperature sensors	670
Harsh environment sensors	674
Factor 1 sensors	684
Weld field immune sensors	696
Large designs	704
Ring sensors	710
Tube sensors	714



Inductive Sensors with Special Properties

High-pressure inductive cylinder sensors

M5×0.5, M12×1



M5×0.5	M5×0.5	M5×0.5	M5×0.5	M12×1
Flush	Flush	Flush	Flush	Flush
0.8 mm	0.8 mm	0.8 mm	0.8 mm	1.5 mm
0...0.65 mm	0...0.65 mm	0...0.65 mm	0...0.65 mm	0...1.2 mm
Oil pressure resistant up to 10 bar	Oil pressure resistant up to 20 bar	Oil pressure resistant up to 20 bar	Oil pressure resistant up to 20 bar	Oil pressure resistant up to 50 bar
BES03H6	BES03JN	BES03LT	BES03K8	BHS003A
BES M05EG-PSC08B-BP02	BES M05EC-PSC08B-S26G-R01	BES M05EC-PSC08B-S49G-R01	BES M05ED-PSC08B-BP00,3-GS49-R01	BES 516-300-S291-S4-D
	BES03JP		BES03K9	
	BES M05EC-POC08B-S26G-R01		BES M05ED-POC08B-BP00,3-GS49-R01	
	BES03JP		BES03KA	
	BES M05EC-NSC08B-S26G-R01		BES M05ED-NSC08B-BP00,3-GS49-R01	
	BES03JT		BES03KC	
	BES M05EC-NOC08B-S26G-R01		BES M05ED-NOC08B-BP00,3-GS49-R01	
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
3 V	3 V	3 V	3 V	2 V
75 V DC	75 V DC	75 V DC	75 V DC	75 V DC
100 mA	100 mA	100 mA	100 mA	200 mA
Open collector	Open collector	Open collector	Open collector	150 kΩ
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+80 °C
3 kHz	3 kHz	3 kHz	3 kHz	2 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	no
IP 67	IP 67	IP 67	IP 67	IP 68 per BWN Pr. 20
CE	CE	CE	CE	CE
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Ceramic	PBT	PBT	PBT	EP
	PA/10.4×3.5/178173	PA/10.4×3.5/178173	PA/10.4×3.5/178173	N70B200V/5.3×2.4 NBR/631753
				PTFE/5.3×2.4/705918
2 m PUR cable, 26 AWG	M5 connector, 4-pin	M8 connector, 3-pin	0.3 m PUR cable with M8 connector, 3-pin	M12 connector, 3-pin
	BKS-B 25-3-PU-03	BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020	BCC M415-0000-1A-003-EX44T2-020



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

High-pressure sensors

Strokemaster sensors

Steelface sensors

High temperature sensors

Harsh environment sensors

Factor 1 sensors

Weld field immune sensors

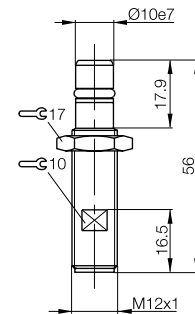
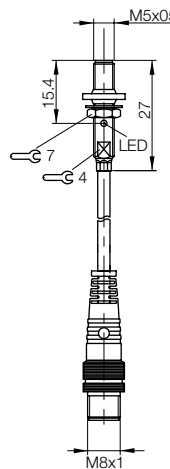
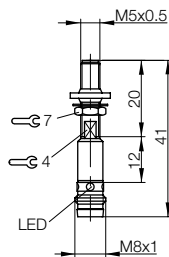
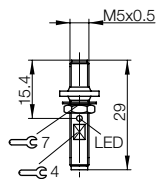
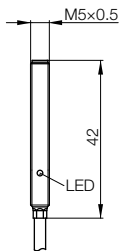
Large designs

Ring sensors

Tube sensors

Analog distance measurement

Accessories





Housing size		
Installation type (observe instructions in the Basic Information chapter)		
Rated switching distance s_n		
Assured switching distance s_a		
Pressure range		
PNP, NO	Ordering code	
	Part number	
PNP, NC	Ordering code	
	Part number	
NPN, NO	Ordering code	
	Part number	
NPN, NC	Ordering code	
	Part number	
Supply voltage U_B		
Voltage drop U_d at I_o max.		
Rated insulation voltage U_i		
Rated operating current I_o		
Output resistance R_a		
Polarity reversal protected/transposition protected/short-circuit protected		
Ambient temperature T_a		
Switching frequency f max.		
Degree of protection as per IEC 60529		
Approvals		
Material	Housing	
	Sensing surface	
Sealing ring material/size/replacement part number		
Supporting ring material/size/replacement part number		
Connection		
Suggested mating cable		

For wiring diagram see page 958.

Additional cable lengths on request.

Inductive Sensors with Special Properties

High-pressure inductive cylinder sensors

M5×0.5, M12×1



M5×0.5	M5×0.5	M12×1
Flush	Flush	Flush
0.8 mm	0.8 mm	1.5 mm
0...0.65 mm	0...0.65 mm	0...1.2 mm
Oil pressure resistant up to 100 bar	Oil pressure resistant up to 100 bar	Oil pressure resistant up to 100 bar
BES03LC	BES03L7	BHS0035
BES M05ED-PSD08B-BP00,3-GS49-R03	BES M05ED-PSD08B-BP02-R03	BES 516-300-S270-S4-D
BES03LE	BES03L8	
BES M05ED-POD08B-BP00,3-GS49-R03	BES M05ED-POD08B-BP02-R03	
BES03LF	BES03L9	
BES M05ED-NSD08B-BP00,3-GS49-R03	BES M05ED-NSD08B-BP02-R03	
BES03LH	BES03LA	
BES M05ED-NOD08B-BP00,3-GS49-R03	BES M05ED-NOD08B-BP02-R03	
10...30 V DC	10...30 V DC	10...30 V DC
3 V	3 V	2.5 V
75 V DC	75 V DC	75 V DC
100 mA	100 mA	200 mA
Open collector	Open collector	150 kΩ
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70 °C	-25...+70 °C	-25...+80 °C
3 kHz	3 kHz	2 kHz
IP 67	IP 67	IP 68 per BWN Pr. 20
CE, cULus	CE, cULus	CE
Stainless steel	Stainless steel	Stainless steel
Ceramic	Ceramic	EP
N70B200V/5.3×2.4/178173	N70B200V/5.3×2.4/178173	N70B200V/5.3×2.4/631753
		PTFE/5.3×2.4
0.3 m PUR cable with M8 connector, 3-pin BCC M313-0000-10-001-EX43T2-020	2 m PUR cable, 26 AWG	M12 connector, 3-pin BCC M415-0000-1A-003-EX44T2-020



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

High-pressure sensors

Strokemaster sensors

Steelface sensors

High temperature sensors

Harsh environment sensors

Factor 1 sensors

Weld field immune sensors

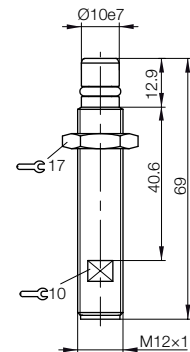
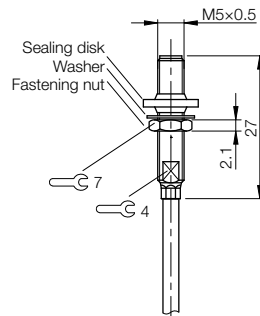
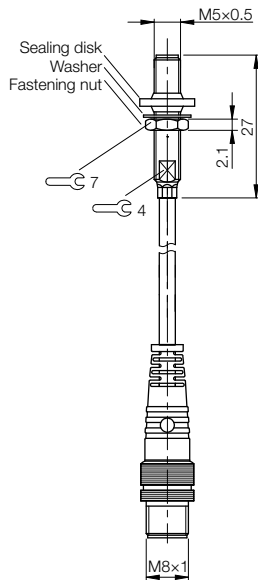
Large designs

Ring sensors

Tube sensors

Analog distance measurement

Accessories



Inductive Sensors with Special Properties

High-pressure inductive cylinder sensors

Ø 10 mm, M12x1

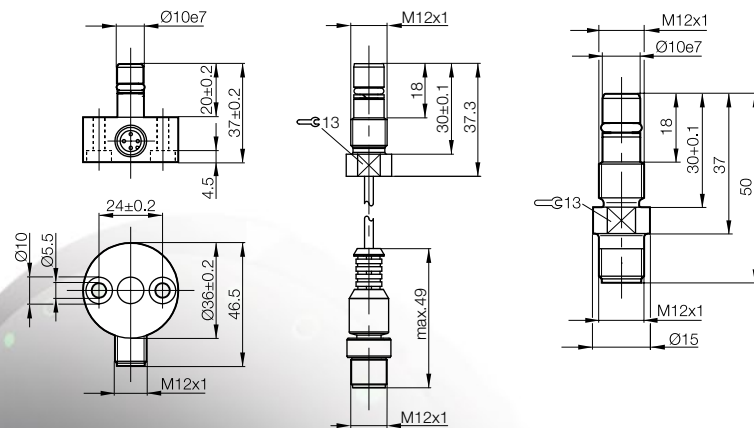
up to 350 bar



CE

	Ø 10e7	M12x1	M12x1
Housing size	Ø 10e7	M12x1	M12x1
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	1.5 mm	1.5 mm	1.5 mm
Assured switching distance s_a	0...1.2 mm	0...1.2 mm	0...1.2 mm
Pressure range	Oil pressure resistant up to 350 bar	Oil pressure resistant up to 350 bar	Oil pressure resistant up to 350 bar
PNP, NO	Ordering code Part number	Ordering code Part number	Ordering code Part number
	BHS0030 BES 516-300-S260-S4-D	BHS007E BES 516-300-S205-D-S4-00,3	BHS004T BES 516-300-S324-S4-D
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_a at I_e max.	2 V	2 V	2 V
Rated insulation voltage U_i	75 V DC	75 V DC	75 V DC
Rated operating current I_e	200 mA	200 mA	200 mA
Output resistance R_a	150 kΩ	150 kΩ	150 kΩ
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+80 °C	-25...+80 °C	-25...+80 °C
Switching frequency f max.	2 kHz	2 kHz	1 kHz
Degree of protection as per IEC 60529	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
Approvals	CE	CE	CE
Material	Housing: Stainless steel Sensing surface: EP	Housing: Stainless steel Sensing surface: EP	Housing: Stainless steel Sensing surface: EP
Sealing ring material/size/replacement part number	FPM 70/5.85x2.4/636594	N70B200V/5.3x2.4/631753	FPM 70/5.85x2.4/636594
Supporting ring material/size/replacement part number	PTFE/5.3x2.4/705918	PTFE/5.3x2.4/705918	PTFE/5.3x2.4/705918
Connection	M12 connector, 3-pin	0.3 m PUR cable with M12 connector, 3-pin	M12 connector, 4-pin
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

For wiring diagram see page 958.



Inductive Sensors with Special Properties

High-pressure inductive cylinder sensors

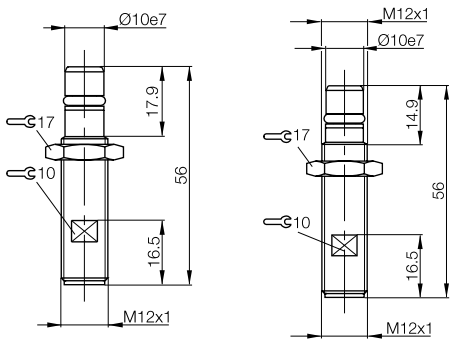
M12x1



M12x1	M12x1			
Flush	Flush			
1.5 mm	1.5 mm			
0...1.2 mm	0...1.2 mm			
Oil pressure resistant up to 350 bar	Oil pressure resistant up to 350 bar			
BHS004P	BHS004R			
BES 516-300-S322-S4-D	BES 516-300-S323-S4-D			
10...30 V DC	10...30 V DC			
2 V	2 V			
75 V DC	75 V DC			
200 mA	200 mA			
150 kΩ	150 kΩ			
Yes/Yes/Yes	Yes/Yes/Yes			
-25...+80 °C	-25...+80 °C			
1 kHz	1 kHz			
IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20			
CE	CE			
Stainless steel	Stainless steel			
EP	EP			
FPM 70/5.85x2.4/636594	FPM 70/5.85x2.4/636594			
PTFE/5.3x2.4/705918	PTFE/5.3x2.4/705918			
M12 connector, 4-pin	M12 connector, 4-pin			
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020			



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties**
- High-pressure sensors
- Strokemaster sensors
- Steelface sensors
- High temperature sensors
- Harsh environment sensors
- Factor 1 sensors
- Weld field immune sensors
- Large designs
- Ring sensors
- Tube sensors
- Analog distance measurement
- Accessories



Inductive Sensors with Special Properties

High-pressure inductive cylinder sensors

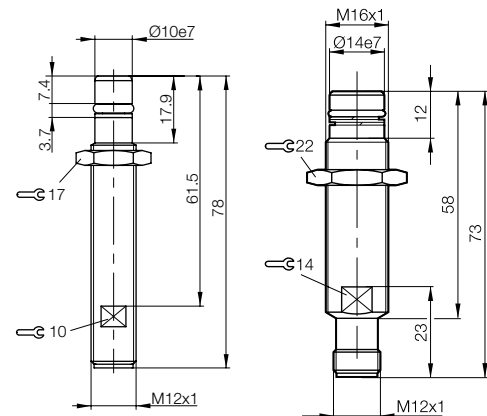
M12x1, M16x1

up to 350 bar



Housing size		M12x1	M16x1
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush
Rated switching distance s_n		1.5 mm	1.5 mm
Assured switching distance s_a		0...1.2 mm	0...1.2 mm
Pressure range		Oil pressure resistant up to 350 bar	Oil pressure resistant up to 350 bar
PNP, NO	Ordering code	BHS004N	BHS001T
	Part number	BES 516-300-S321-S4-D	BES 516-300-S149-S4-D
PNP, NC	Ordering code		
	Part number		
Supply voltage U_B		10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.		1.5 V	1.5 V
Rated insulation voltage U_i		75 V DC	75 V DC
Rated operating current I_e		200 mA	200 mA
Output resistance R_a		33 k Ω	33 k Ω
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+80 °C	-25...+80 °C
Switching frequency f max.		1 kHz	1 kHz
Degree of protection as per IEC 60529		IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
Approvals		CE	CE
Material	Housing	Stainless steel	Stainless steel
	Sensing surface	EP	EP
Sealing ring material/size/replacement part number		FPM 70/5.85x2.4/636594	NBR 60-80/11.0x1.5/709137
Supporting ring material/size/replacement part number		PTFE/5.3x2.4/705918	PTFE/14x11.6x1.5/709136
Connection		M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable		BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

For wiring diagram see page 958.



Inductive Sensors with Special Properties

High-pressure inductive cylinder sensors M16x1



M16x1	M16x1	M16x1	M16x1	
Flush	Flush	Flush	Flush	
1.5 mm	1.5 mm	1.5 mm	2.5 mm	
0...1.2 mm	0...1.2 mm	0...1.2 mm	0...2 mm	
Oil pressure resistant up to 350 bar	Oil pressure resistant up to 350 bar	Oil pressure resistant up to 350 bar	Oil pressure resistant up to 350 bar	
BHS001E		BHS001C		
BES 516-300-S129-S4-D		BES 516-300-S128-S4-D		
	BHS001Y		BHS004U	
	BES 516-300-S156-S4-D		BES 516-300-S328-S4-D	
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	
75 V DC	75 V DC	75 V DC	75 V DC	
200 mA	200 mA	200 mA	200 mA	
33 kΩ	33 kΩ	33 kΩ	33 kΩ	
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	
-25...+80 °C	-25...+80 °C	-25...+80 °C	-10...+80 °C	
1 kHz	1 kHz	1 kHz	500 Hz	
IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	
CE	CE	CE	CE	
Stainless steel	Stainless steel	Stainless steel	Stainless steel	
EP	EP	EP	EP	
NBR 60-80/11.0x1.5/709137	NBR 60-80/11.0x1.5/709137	NBR 60-80/11.0x1.5/709137	NBR 60-80/11.0x1.5/709137	
PTFE/14x11.1x0.7/505953	PTFE/14x11.6x1.5/709136	PTFE/14x11.1x0.7/505953	PTFE/14x11.1x0.7/505953	
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

High-pressure sensors

Strokemaster sensors

Steelface sensors

High temperature sensors

Harsh environment sensors

Factor 1 sensors

Weld field immune sensors

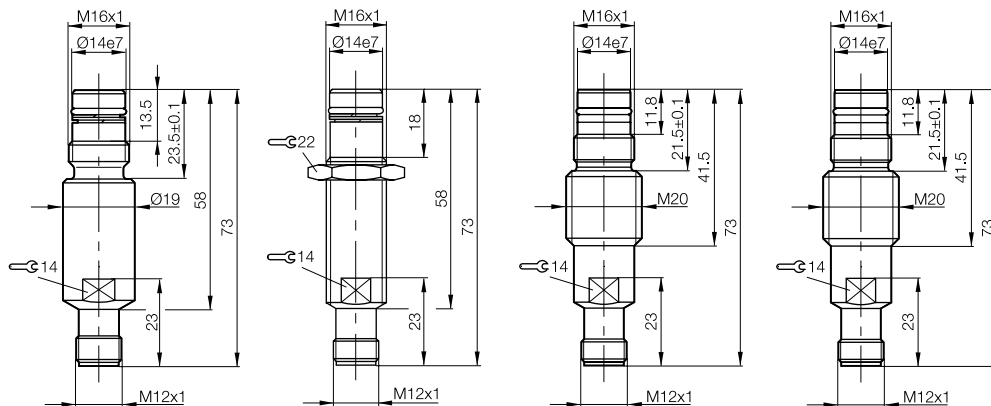
Large designs

Ring sensors

Tube sensors

Analog distance measurement

Accessories



Inductive Sensors with Special Properties

High-pressure inductive cylinder sensors

M18x1, M22x1.5, M5x0.5

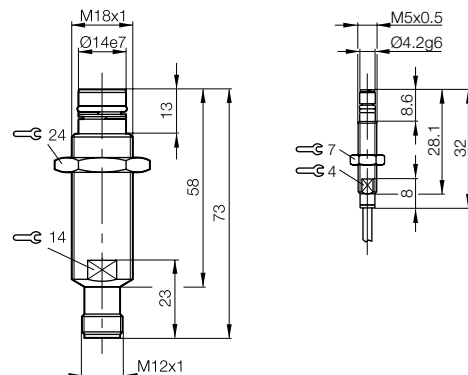
350 bar up to 500 bar



	M18x1	M5x0.5
Housing size	M18x1	M5x0.5
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush
Rated switching distance s_n	1.5 mm	1 mm
Assured switching distance s_a	0...1.2 mm	0...0.8 mm
Pressure range	Oil pressure resistant up to 350 bar	Oil pressure resistant up to 500 bar
PNP, NO	Ordering code Part number	BHS001N BES 516-300-S144-S4-D
PNP, NC	Ordering code Part number	BHS006U BHS G409N-PSD10-EP02
NPN, NO	Ordering code Part number	BHS006W BHS G409N-POD10-EP02
NPN, NC	Ordering code Part number	BHS006Y BHS G409N-NSD10-EP02
Supply voltage U_B	10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.	1.5 V	2.5 V
Rated insulation voltage U_i	75 V DC	75 V DC
Rated operating current I_e	200 mA	100 mA
Output resistance R_a	33 k Ω	Open collector
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/No/Yes
Ambient temperature T_a	-25...+80 °C	-25...+80 °C
Switching frequency f max.	1 kHz	3 kHz
Output function indicator		
Degree of protection as per IEC 60529	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
Approvals	CE	CE
Material	Housing Sensing surface	Housing Sensing surface
	Stainless steel EP	Stainless steel ZrO ₂
Sealing ring material/size/replacement part number	NBR 60-80/11.0x1.5/709137	NBR 70/2.35x1/154783
Supporting ring material/size/replacement part number	PTFE/14x11.1x0.7/505953	PTFE/4.2x0.65x1/154782
Connection	M12 connector, 4-pin	2 m PUR cable, 26 AWG
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	

For wiring diagram see page 958.

Additional cable lengths on request.



Inductive Sensors with Special Properties

High-pressure inductive cylinder sensors

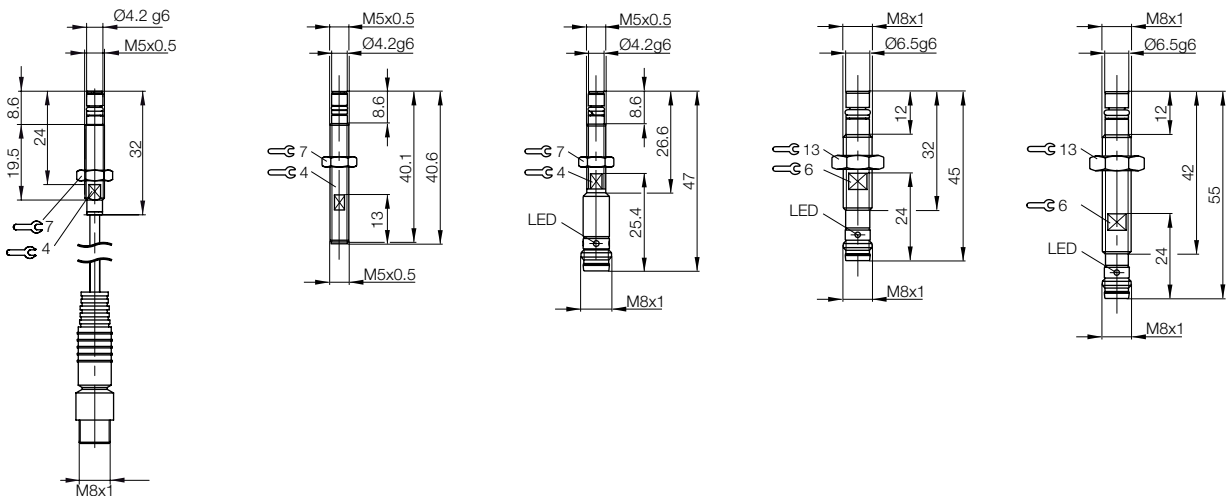
M5x0.5, M8x1



M5x0.5	M5x0.5	M5x0.5	M8 x 1	M8 x 1
Flush	Flush	Flush	Flush	Flush
1 mm	1 mm	1 mm	1.5 mm	1.5 mm
0...0.8 mm	0...0.8 mm	0...0.8 mm	0...1.2 mm	0...1.2 mm
Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar
BHS007J	BHS006N	BHS005H	BHS0054	BHS0050
BHS G409N-PSD10-EP00,3-GS49	BHS G403N-PSD10-S26	BHS G408N-PSC10-S49	BHS A404N-PSC15-S49	BHS A402N-PSC15-S49
	BHS006P	BHS005F	BHS0053	BHS004Z
	BHS G403N-POD10-S26	BHS G408N-POC10-S49	BHS A404N-POC15-S49	BHS A402N-POC15-S49
	BHS006R	BHS005E	BHS0052	BHS004Y
	BHS G403N-NSD10-S26	BHS G408N-NSC10-S49	BHS A404N-NSC15-S49	BHS A402N-NSC15-S49
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2.5 V	2.5 V	2.5 V	2.5 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
Open collector	Open collector	Open collector	Open collector	Open collector
Yes/No/Yes	Yes/No/Yes	Yes/No/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+80 °C	-25...+80 °C	-25...+80 °C	0...+80 °C	-25...+80 °C
3 kHz	3 kHz	3 kHz	4 kHz	4 kHz
		Yellow LED	Yellow LED	Yellow LED
IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
CE	CE	CE	CE	CE
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
ZrO ₂	ZrO ₂	ZrO ₂	ZrO ₂	ZrO ₂
NBR 70/2.35x1/154783	NBR 70/2.35x1/154783	NBR 70/2.35x1/154783	NBR 70/4x1.5/154149	NBR 70/4x1.5/154149
PTFE/4.2x0.65x1/154782	PTFE/4.2x0.65x1/154782	PTFE/4.2x0.65x1/154782	PTFE/5.3x2.4/154150	PTFE/5.3x2.4/154150
0.3 m PUR cable with M8 connector, 3-pin	M5 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin
BCC M313-0000-10-001-EX43T2-020	BKS-B 25-3-PU-03	BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020	BCC M313-0000-10-001-EX43T2-020



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties**
- High-pressure sensors
- Strokemaster sensors
- Steelface sensors
- High temperature sensors
- Harsh environment sensors
- Factor 1 sensors
- Weld field immune sensors
- Large designs
- Ring sensors
- Tube sensors
- Analog distance measurement
- Accessories



Inductive Sensors with Special Properties

High-pressure inductive cylinder sensors

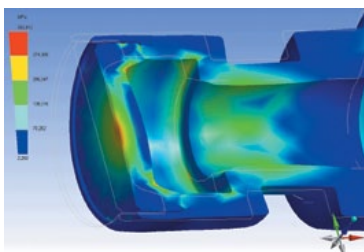
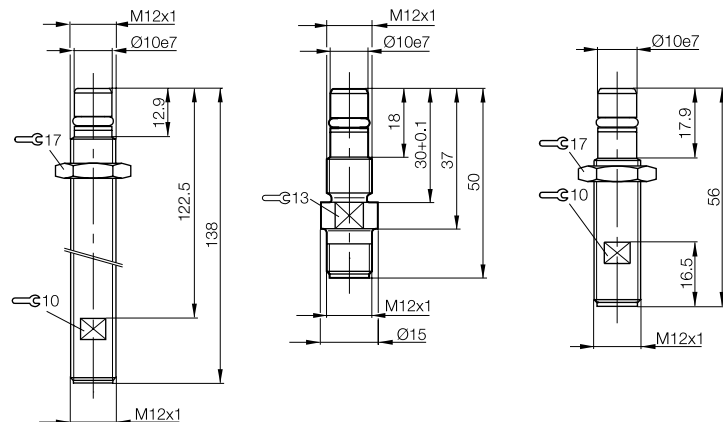
M12x1

up to 500 bar

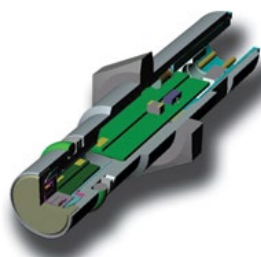


Housing size	M12x1	M12x1	M12x1
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	1.5 mm	1.5 mm	1.5 mm
Assured switching distance s_a	0...1.2 mm	0...1.2 mm	0...1.2 mm
Pressure range	Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar
PNP, NO	Ordering code	BHS0023	BHS0032
	Part number	BES 516-300-S164-S4-D	BES 516-300-S262-S4-D
PNP, NC	Ordering code		BHS004F
	Part number		BES 516-300-S305-S4-D
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.	1.5 V	2 V	2 V
Rated insulation voltage U_i	75 V DC	75 V DC	75 V DC
Rated operating current I_e	200 mA	200 mA	200 mA
Output resistance R_a	33 k Ω	150 k Ω	150 k Ω
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+80 °C	-25...+90 °C	-25...+80 °C
Switching frequency f_a	1 kHz	2 kHz	2 kHz
Degree of protection as per IEC 60529	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
Approvals	CE	CE	CE
Material	Housing	Stainless steel	Stainless steel
	Sensing surface	EP	EP
Sealing ring material/size/replacement part number	N70B200V/5.3x2.4/631753	N70B200V/5.3x2.4/631753	N70B200V/5.3x2.4/631753
Supporting ring material/size/replacement part number	PTFE/5.3x2.4/705918	PTFE/5.3x2.4/705918	PTFE/5.3x2.4/705918
Connection	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

For wiring diagram see page 958.



Simulation of sensor end cap and housing under high-pressure stress.



Inductive Sensors with Special Properties

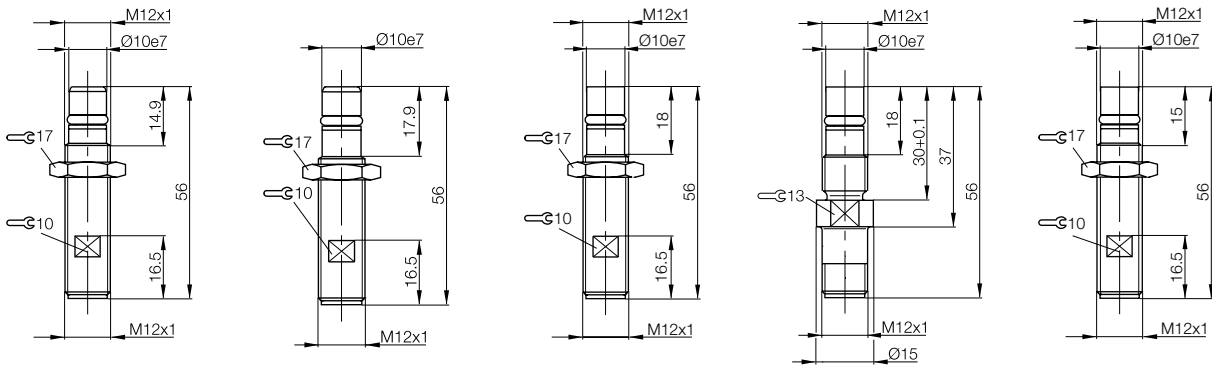
High-pressure sensors M12x1



M12x1	M12x1	M12x1	M12x1	M12x1
Flush	Flush	Flush	Flush	Flush
1.5 mm	1.5 mm	1.5 mm	1.5 mm	1.5 mm
0...1.2 mm	0...1.2 mm	0...1.2 mm	0...1.2 mm	0...1.2 mm
Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar
BHS0033	BHS002Y	BHS005Y	BHS0063	BHS0061
BES 516-300-S265-S4-D	BES 516-300-S249-S4-D	BHS B249V-PSD15-S04	BHS B400V-PSD15-S04	BHS B265V-PSD15-S04
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2 V	2 V	2.5 V	2.5 V	2.5 V
75 V DC	75 V DC	75 V DC	75 V DC	75 V DC
200 mA	200 mA	200 mA	200 mA	200 mA
150 kΩ	150 kΩ	33 kΩ	33 kΩ	33 kΩ
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+80 °C	-25...+80 °C	-25...+120 °C*	-25...+120 °C*	-25...+120 °C*
2 kHz	2 kHz	400 Hz	400 Hz	400 Hz
IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
CE	CE	CE	CE	CE
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
EP	EP	Ceramic	Ceramic	Ceramic
N70B200V/5.3x2.4/631753	N70B200V/5.3x2.4 NBR/631753	FPM 80/6.75x1.78/149621	FPM 80/6.75x1.78/149621	FPM 80/6.75x1.78/123170
PTFE/5.3x2.4/705918	PTFE/5.3x2.4/705918	PTFE/10x7.0x1.8/150229	PTFE/10x7.0x1.8/150229	PTFE/10x7.0x1.8/150229
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

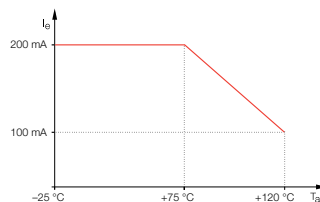


- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties**
- High-pressure sensors
- Strokemaster sensors
- Steelface sensors
- High temperature sensors
- Harsh environment sensors



- Factor 1 sensors
- Weld field immune sensors
- Large designs
- Ring sensors
- Tube sensors
- Analog distance measurement
- Accessories

*Current reduction as a function of ambient temperature range



Inductive Sensors with Special Properties

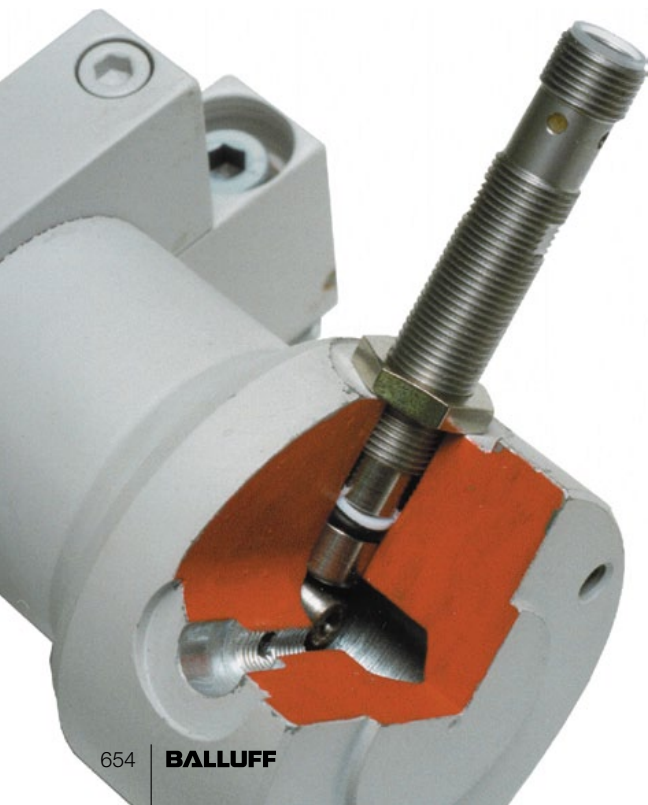
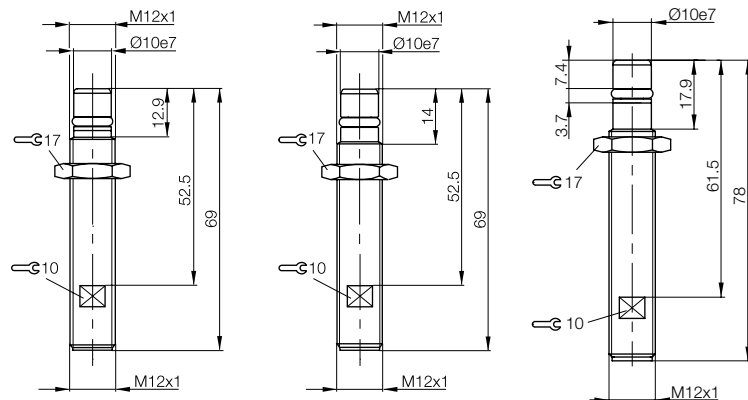
High-pressure sensors M12x1

up to 500 bar



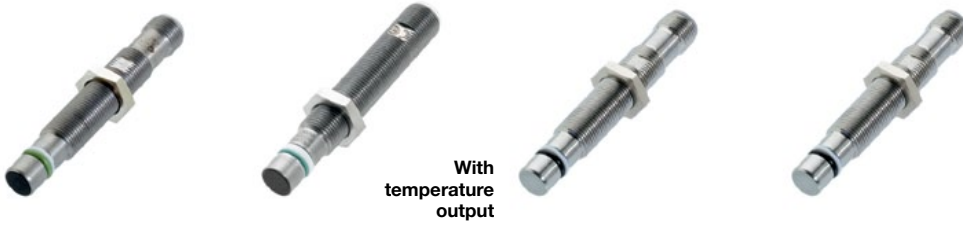
Housing size	M12x1	M12x1	M12x1
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	1.5 mm	1.5 mm	1.5 mm
Assured switching distance s_a	0...1.2 mm	0...1.2 mm	0...1.2 mm
Pressure range	Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar
PNP, NO	Ordering code	BHS0021	BHS001L
	Part number	BES 516-300-S162-S4-D	BES 516-300-S135-S4-D
PNP, complementary	Ordering code		
	Part number		
NPN, NO	Ordering code	BHS0037	
	Part number	BES 516-300-S281-S4-D	
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.	2 V	1.5 V	1.5 V
Rated insulation voltage U_i	75 V DC	75 V DC	75 V DC
Rated operating current I_e	200 mA	200 mA	200 mA
Output resistance R_a	150 k Ω	33 k Ω	33 k Ω
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+80 °C	-25...+80 °C	-25...+80 °C
Switching frequency f max.	2 kHz	1 kHz	1 kHz
Degree of protection as per IEC 60529	IP 68 according to BWN PR. 20	IP 68 according to BWN PR. 20	IP 68 according to BWN PR. 20
Approvals	CE	CE	CE
Material	Housing	Stainless steel	Stainless steel
	Sensing surface	EP	EP
Sealing ring material/size/replacement part number	N70B200V/5.3x2.4/631753	N70B200V/5.3x2.4/631753	FPM 70/5.85x2.4/636594
Supporting ring material/size/replacement part number	PTFE/5.3x2.4/705918	PTFE/5.3x2.4/705918	PTFE/5.3x2.4/705918
Connection	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

For wiring diagram see page 958.



Inductive Sensors with Special Properties

High-pressure sensors M12x1



M12x1	M12x1	M12x1	M12x1	
Flush	Flush	Flush	Flush	
1.5 mm	1.5 mm	1.5 mm	1.5 mm	
0...1.2 mm	0...1.2 mm	0...1.2 mm	0...1.2 mm	
Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar	
BHS005R	BHS005T		BHS0049	
BHS B135V-PSD15-S04	BHS B135V-PSD15-S04-T01		BES 516-300-S298-S4-D	
		BHS0002		
		BES 516-100-S46-S4-D		
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	
2.5 V	2.5 V	1.5 V	1.5 V	
75 V DC	75 V DC	75 V DC	75 V DC	
200 mA	200 mA	200 mA	200 mA	
33 kΩ	33 kΩ	33 kΩ	33 kΩ	
Yes/Yes/Yes	Yes/No/Yes	Yes/Yes/Yes	Yes/Yes/Yes	
-25...+120 °C*	-25...+120 °C*	-25...+80 °C	-25...+80 °C	
400 Hz	400 Hz	1 kHz	1 kHz	
IP 68 according to BWN PR. 20	IP 68 according to BWN PR. 20	IP 68 according to BWN PR. 20	IP 68 according to BWN PR. 20	
CE	CE	CE	CE	
Stainless steel	Stainless steel	Stainless steel	Stainless steel	
Ceramic	Ceramic	EP	EP	
FPM 80/6.75x1.78/149621	FPM 80/6.75x1.78/123170	FPM 70/5.85x2.4/636594	FPM 70/5.85x2.4/636594	
PTFE/10x7.0x1.8/150229	PTFE/10x7.0x1.8/150229	PTFE/5.3x2.4/705918	PTFE/5.3x2.4/705918	
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

High-pressure sensors

Strokemaster sensors

Steelface sensors

High temperature sensors

Harsh environment sensors

Factor 1 sensors

Weld field immune sensors

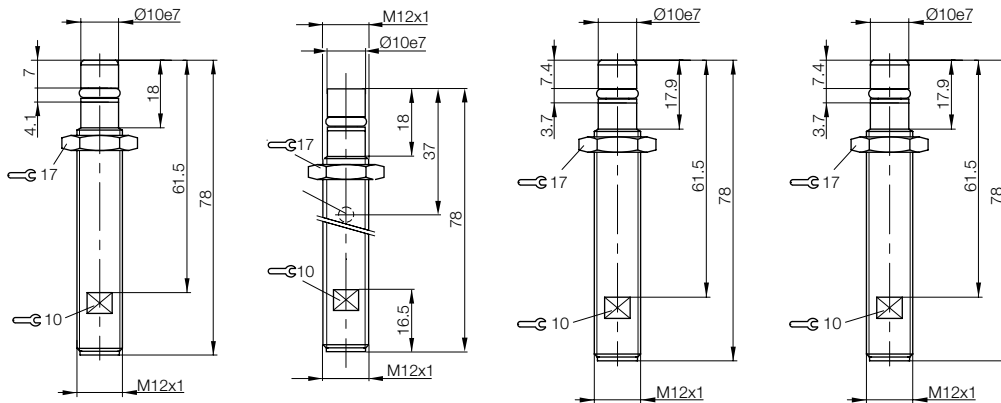
Large designs

Ring sensors

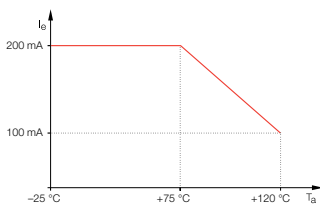
Tube sensors

Analog distance measurement

Accessories



***Current reduction as a function of ambient temperature range**



Inductive Sensors with Special Properties

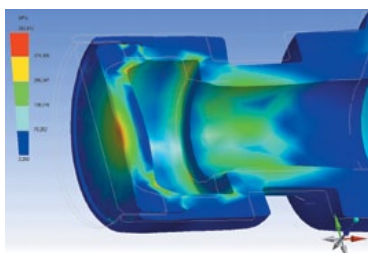
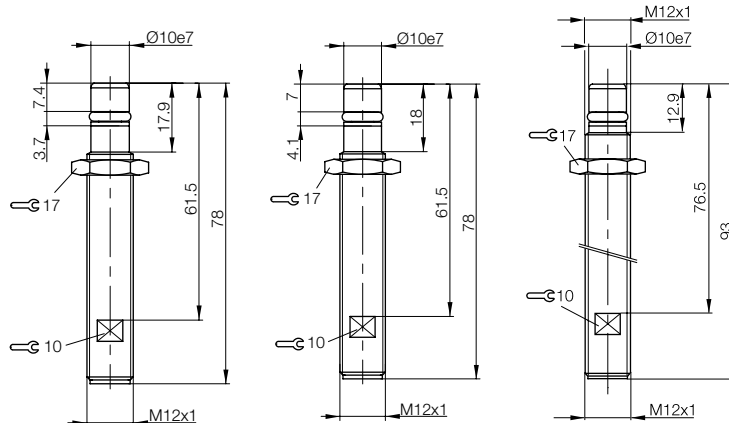
High-pressure sensors M12x1

up to 500 bar

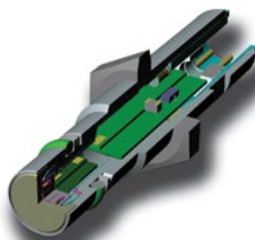


Housing size		M12x1	M12x1	M12x1
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush	Flush
Rated switching distance s_n		1.5 mm	1.5 mm	1.5 mm
Assured switching distance s_a		0...1.2 mm	0...1.2 mm	0...1.2 mm
Pressure range		Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar
PNP, NO	Ordering code	BHS007H		BHS0022
	Part number	BES 516-300-S135-E1-S4-D		BES 516-300-S163-S4-D
PNP, complementary	Ordering code		BHS0076	
	Part number		BHS B135V-PAD15-S04-007	
NPN, NO	Ordering code			
	Part number			
Supply voltage U_B		10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_a at I_e max.		3 V	2.5 V	1.5 V
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC
Rated operating current I_e		200 mA	200 mA	200 mA
Output resistance R_a		33 k Ω	33 k Ω	33 k Ω
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+80 °C	-25...+85 °C	-25...+80 °C
Switching frequency f max.		1 kHz	1.5 kHz	1 kHz
Degree of protection as per IEC 60529		IP 68 according to BWN PR. 20	IP 68 according to BWN PR. 20	IP 68 according to BWN PR. 20
Approvals		CE	CE	CE
Material	Housing	Stainless steel	Stainless steel	Stainless steel
	Sensing surface	EP	Ceramic	EP
Sealing ring material/size/replacement part number		FPM 70/5.85x2.4/636594	FPM 80/6.75x1.78/149621	N70B200V/5.3x2.4/631753
Supporting ring material/size/replacement part number		PTFE/5.3x2.4/705918	PTFE/10x7.0x1.8/150229	PTFE/5.3x2.4/705918
Connection		M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable		BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

For wiring diagram see page 958.



Simulation of sensor end cap and housing under high-pressure stress.



Inductive Sensors with Special Properties

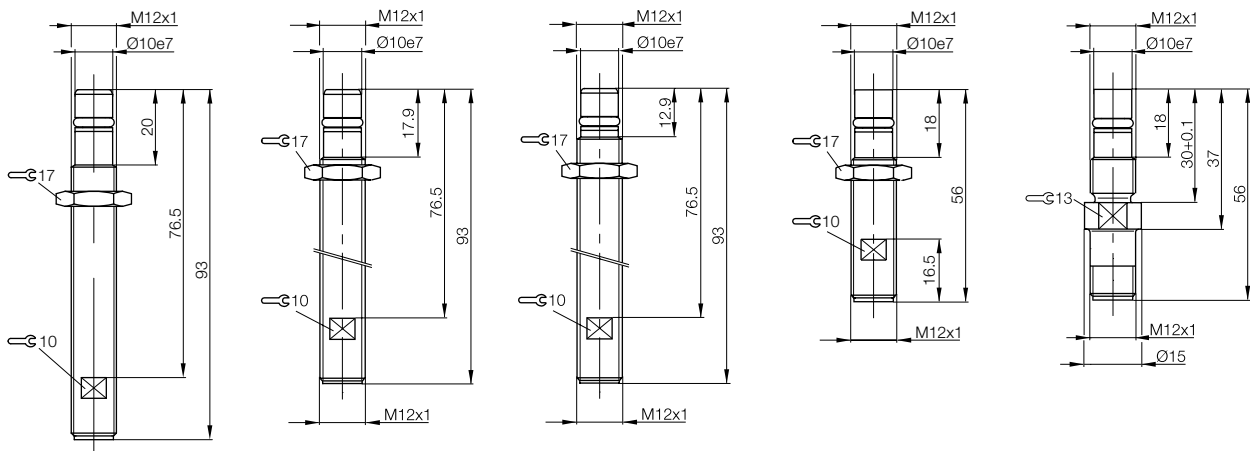
High-pressure sensors M12x1



M12x1	M12x1	M12x1	M12x1	M12x1	M12x1
Flush	Flush	Flush	Flush	Flush	Flush
1.5 mm	1.5 mm	1.5 mm	1.5 mm	2.5 mm	1.5 mm
0...1.2 mm	0...1.2 mm	0...1.2 mm	0...1.2 mm	0...2 mm	0...2 mm
Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar
BES03PP	BHS004C			BHS0060	BHS0065
BES 516-300-S335-S4-D	BES 516-300-S300-S4-D			BHS B249V-PSD25-S04-003	BHS B400V-PSD25-S04-003
			BHS002U		
			BES 516-300-S242-S4-D		
10...30 V DC	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	2.5 V	2.5 V
75 V DC	75 V DC	75 V DC	75 V DC	75 V DC	75 V DC
200 mA	200 mA	200 mA	200 mA	200 mA	200 mA
33 kΩ	33 kΩ	33 kΩ	33 kΩ	33 kΩ	33 kΩ
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+80 °C	-25...+80 °C	-25...+80 °C	-25...+80 °C	-25...+90 °C	-25...+90 °C
1 kHz	1 kHz	1 kHz	1 kHz	400 Hz	400 Hz
IP 68 according to BWN PR. 20	IP 68 according to BWN PR. 20	IP 68 according to BWN PR. 20	IP 68 according to BWN PR. 20	IP 68 according to BWN PR. 20	IP 68 according to BWN PR. 20
CE	CE	CE	CE	CE	CE
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
EP	EP	EP	EP	Ceramic	Ceramic
N70B200V/5.3x2.4/631753	N70B200V/5.3x2.4/631753	N70B200V/5.3x2.4/631753	N70B200V/5.3x2.4/631753	FPM 80/6.75x1.78/149621	FPM 80/6.75x1.78/149621
PTFE/5.3x2.4/705918	PTFE/5.3x2.4/705918	PTFE/5.3x2.4/705918	PTFE/5.3x2.4/705918	PTFE/10x7.0x1.8/150229	PTFE/10x7.0x1.8/150229
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties**
- High-pressure sensors
- Strokemaster sensors
- Steelface sensors
- High temperature sensors
- Harsh environment sensors
- Factor 1 sensors
- Weld field immune sensors
- Large designs
- Ring sensors
- Tube sensors
- Analog distance measurement
- Accessories



Inductive Sensors with Special Properties

High-pressure sensors

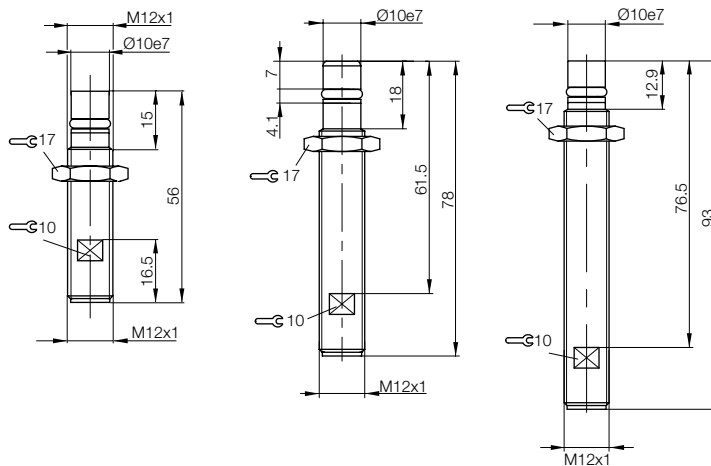
M12x1

up to 500 bar



	M12x1	M12x1	M12x1
Housing size	M12x1	M12x1	M12x1
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	2.5 mm	2.5 mm	2.5 mm
Assured switching distance s_a	0...2 mm	0...2 mm	0...2 mm
Pressure range	Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar
PNP, NO	Ordering code Part number	BHS0062 BHS B265V-PSD25-S04-003	BHS005U BHS B135V-PSD25-S04-003
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_a at I_e max.	2.5 V	2.5 V	2.5 V
Rated insulation voltage U_i	75 V DC	75 V DC	75 V DC
Rated operating current I_e	200 mA	200 mA	200 mA
Output resistance R_a	33 k Ω	33 k Ω	33 k Ω
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+90 °C	-25...+90 °C	-25...+90 °C
Switching frequency f max.	400 Hz	400 Hz	400 Hz
Degree of protection as per IEC 60529	IP 68 according to BWN PR. 20	IP 68 according to BWN PR. 20	IP 68 according to BWN PR. 20
Approvals	CE	CE	CE
Material	Housing: Stainless steel Sensing surface: Ceramic	Housing: Stainless steel Sensing surface: Ceramic	Housing: Stainless steel Sensing surface: Ceramic
Sealing ring material/size/replacement part number	FPM 80/6.75x1.78/149621	FPM 80/6.75x1.78/149621	FPM 80/6.75x1.78/149621
Supporting ring material/size/replacement part number	PTFE/10x7.0x1.8/150229	PTFE/10x7.0x1.8/150229	PTFE/10x7.0x1.8/150229
Connection	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

For wiring diagram see page 958.



Inductive Sensors with Special Properties

High pressure sensors

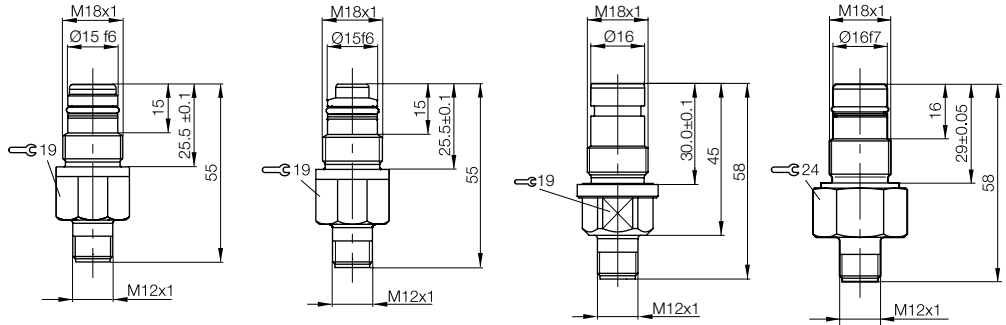
M18x1



M18x1	M18x1	M18x1	M18x1
Flush	Flush	Flush	Flush
1.5 mm	1.5 mm	3 mm	3 mm
0...1.2 mm	0...1.2 mm	0...2.1 mm	0...2.1 mm
Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar	Oil pressure resistant up to 500 bar
BHS004A	BHS004J	BHS0071	BHS0026
BES 516-300-S299-S4-D	BES 516-300-S308-S4-D	BES 516-300-S334-S4	BES 516-300-S190-S4
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2 V	2 V	3.5 V	3.5 V
75 V DC	75 V DC	75 V DC	75 V DC
200 mA	200 mA	130 mA	130 mA
150 kΩ	150 kΩ	2 kΩ	2 kΩ
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+80 °C	-25...+80 °C	-25...+80 °C	-25...+80 °C
2 kHz	2 kHz	400 Hz	400 Hz
IP 68 according to BWN PR. 20	IP 68 according to BWN PR. 20	IP 68 according to BWN PR. 20	IP 68 according to BWN PR. 20
CE	CE	CE	CE
Stainless steel	Stainless steel	Stainless steel	Stainless steel
EP	EP	PEEK	PEEK
NBR 60-80/12.42x1.78/642828	NBR 60-80/12.42x1.78/642828	NBR 85/15.7x20.9x1.5/179002	NBR 90/13.0x1.5/619531
PTFE/15x12.2x0.7/642827	PTFE/15x12.2x0.7/642827		PTFE/16x13.8x0.5/635431
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties**
- High-pressure sensors
- Strokemaster sensors
- Steelface sensors
- High temperature sensors
- Harsh environment sensors
- Factor 1 sensors
- Weld field immune sensors
- Large designs
- Ring sensors
- Tube sensors
- Analog distance measurement
- Accessories



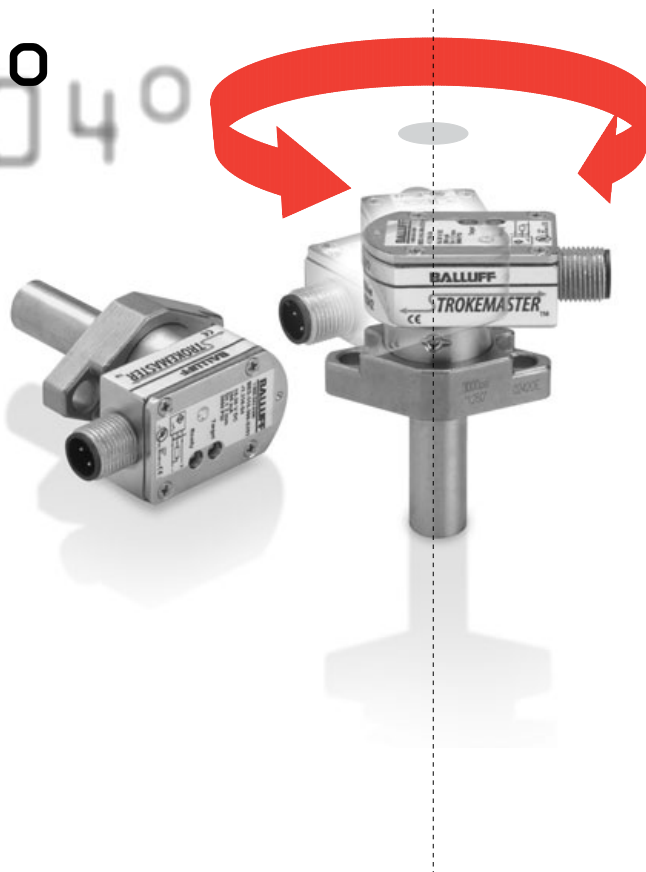
Strokemaster® Inductive Cylinder Sensors

Balluff's Strokemaster® cylinder-position sensors provide precision end-of-stroke sensing for hydraulic cylinders. The sensor body allows 304° of rotation to eliminate the hassle of post-installation cable management, which in some competitive designs requires unbolting the flange and breaking the hydraulic seal.

A high-pressure, inductive proximity sensor, the Strokemaster provides a 2mm (0.08") sensing range to detect the "spud" of hydraulic/pneumatic cylinders and indicate fully retracted or extended position. It mounts with two socket-head cap screws and seals with a Viton O-ring. Withstanding cylinder pressures up to 3000 PSI (207 bar), the embeddable design keeps most of the switch protected within the cylinder, with only a 0.62" (16 mm) high housing exposed outside.

Strokemaster sensors are available in 3-wire DC and 2-wire AC/DC versions, both with mini or micro connectors. Switching frequency is 50 Hz for the AC/DC versions. All units are weld-field immune, short-circuit, and reverse-polarity protected. They fit popular cylinder designs with standard available probe lengths of 0.912" - 4.560" (23.165mm - 115.8mm). Custom probe lengths can be achieved by using factory spacer kits. Probes are made of stainless steel with a high-strength ceramic face. Both DC and AC/DC sensors have all-metal housings. The Strokemaster sensor is CE-certified, and its housing is sealed to IP67 requirements.

304°



Inductive Sensors with Special Properties

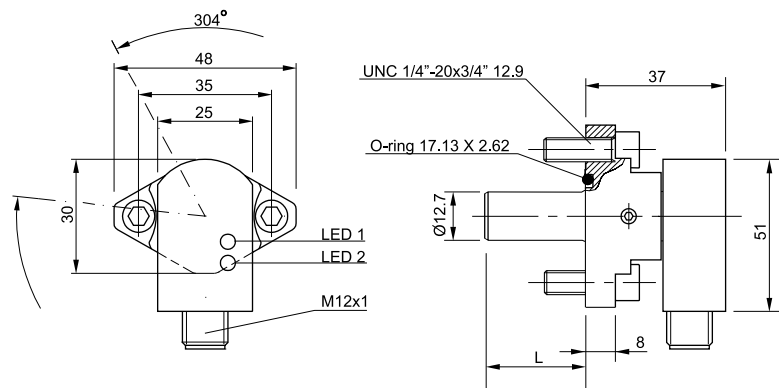
Strokemaster DC sensors



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties**
- High-pressure sensors
- Strokemaster sensors
- Steelface sensors
- High temperature sensors
- Harsh environment sensors
- Factor 1 sensors
- Weld field immune sensors
- Large designs
- Ring sensors
- Tube sensors
- Analog distance measurement
- Accessories

Housing size		
Installation type (observe instructions in the Basic Information chapter)		Flush
Rated switching distance s_n		2 mm
Assured switching distance s_a		0...1.6 mm
PNP, NO	Ordering code	
	Part number	BES 516-300-S 295/0.912"...4.560"-S4
Rated operational voltage U_o		24 V DC
Supply voltage U_B		10...30 V DC
Voltage drop U_a at I_o max.		≤ 2.5 V
Rated insulation voltage U_i		75 V DC
Rated operating current I_o		200 mA
No-load supply current I_o damped/undamped		≤ 18 mA/ ≤ 10 mA
Off-state current I_r		≤ 80 μ A
Protected against polarity reversal		Yes
Short circuit/overload protected		Yes/Yes
Load capacitance		≤ 1.0 μ F
Repeat accuracy R		≤ 5 %
High pressure rated up to		207 bar (3000 PSI)
Ambient temperature T_a		-25...+70 °C
Operating frequency f		10 Hz
Utilization categories		DC 13
Function/Operating voltage indication		Yes/Yes
Degree of protection as per IEC 60529		IP 67
Approvals		cULus
Material	Housing	stainless steel/aluminum
	Sensing surface	ceramic
Connection		M12 connector 4-pin BCC M415-0000-IA-003-EX44T2-020

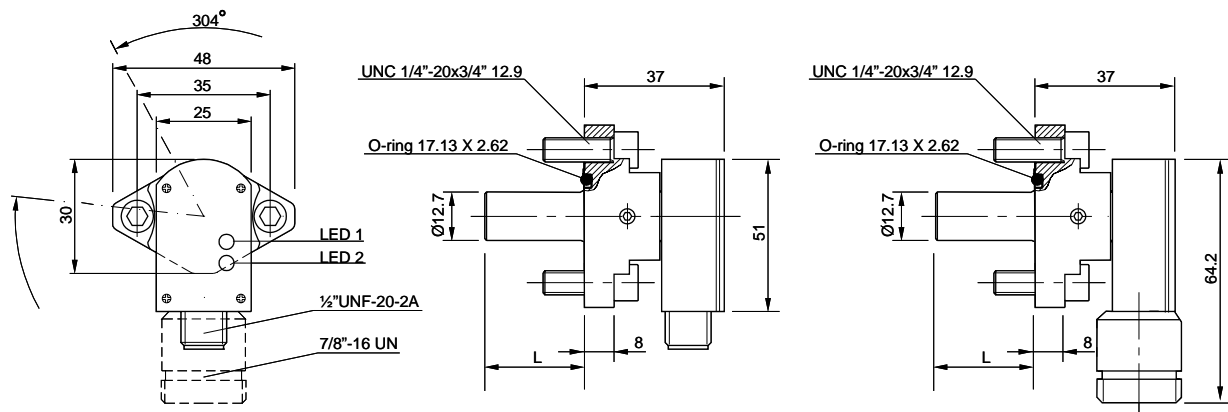
For wiring diagram see page 958.





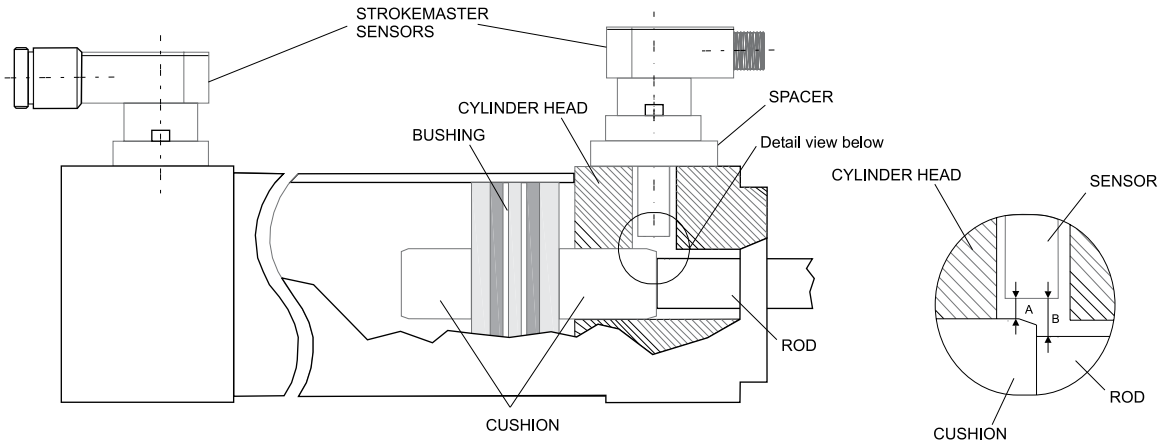
Housing size			
Installation type		Flush	Flush
Rated switching distance s_n		2 mm	2 mm
Assured switching distance s_a		0...1.6 mm	0...1.6 mm
PNP, NO	Ordering code		
	Part number	BES 516-200-S 2/0.912"...4.560"-S 21	BES 516-200-S 2/0.912"...4.560"-S5
Rated operational voltage U_o		110 V AC	110 V AC
Supply voltage U_B		20...250 V AC/V DC	20...250 V AC/V DC
Voltage drop U_d at I_o		≤ 6 V	≤ 6 V
Rated insulation voltage U_i		250 V AC	250 V AC
Rated operating current I_o		500 mA	500 mA
Minimum operational current I_m		5 mA	5 mA
Off-state current I_r		≤ 1.7 mA at 110 V AC	≤ 1.7 mA at 110 V AC
Inrush current I_k (t = 20 ms)		3 A max./1Hz	3 A max./1Hz
Protected against polarity reversal		Yes	Yes
Short circuit protected		Yes	Yes
Repeat accuracy R		≤ 5 %	≤ 5 %
High pressure rated up to		207 bar (3000 PSI)	207 bar (3000 PSI)
Ambient temperature T_a		-25...+70 °C	-25...+70 °C
Operating frequency f		≤ 50 Hz	≤ 50 Hz
Utilization categories		AC 140/DC 13	AC 140/DC 13
Function/Operating voltage indication		Yes/Yes	Yes/Yes
Degree of protection as per IEC 60529		IP 67	IP 67
Approvals		cULus	cULus
Material	Housing	stainless steel/aluminum	stainless steel/aluminum
	Sensing surface	ceramic	ceramic
Connection		1/2" 20 UNF-2A plug connector, 3-pin C21-AE3-00-TY-060F	7/8" 16 UN plug connector, 5-pin BCC A314-0000-IO-003-EX44W6-020

For wiring diagram see page 958.



Inductive Sensors with Special Properties

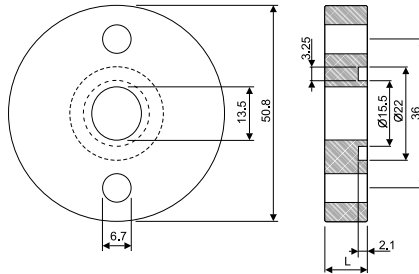
Strokemaster installation and spacers



Note: Spacer may be required to elevate cylinder sensor to position sensing face in optimal position. Balluff recommends the following guidelines when mounting our Strokemaster® sensors:

Strokemaster® Spacers

- A - Recommended to allow for mechanical wear (0.025" to 0.047")
- B - This dimension must be large enough to allow the sensor to turn off when the rod is present (0.110" to 0.118")



Below is a table to help you pick out a spacer for custom lengths needed with Strokemaster® sensors:

	Z/Spacers (inches)												
	0.180	0.188	0.225	0.307	0.372	0.375	0.500	0.562	0.600	0.684	0.712	0.810	0.937
0.912	0.732	0.724	0.687	0.605	0.540	0.537	0.412	0.350	0.312	0.228	0.200	0.102	—
1.025	0.845	0.837	0.800	0.718	0.653	0.650	0.525	0.463	0.425	0.341	0.313	0.215	0.088
1.25	1.07	1.062	1.025	0.943	0.878	0.875	0.750	0.688	0.650	0.566	0.538	0.440	0.313
1.35	1.17	1.162	1.125	1.043	0.978	0.975	0.850	0.788	0.750	0.666	0.638	0.540	0.413
1.5	1.32	1.312	1.275	1.193	1.128	1.125	1.000	0.938	0.900	0.816	0.788	0.690	0.563
1.75	1.57	1.562	1.525	1.443	1.378	1.375	1.250	1.188	1.150	1.066	1.038	0.940	0.813
1.875	1.695	1.687	1.650	1.568	1.503	1.500	1.375	1.313	1.275	1.191	1.163	1.065	0.938
2.062	1.882	1.874	1.837	1.755	1.690	1.687	1.562	1.500	1.462	1.378	1.350	1.252	1.125
2.375	2.195	2.187	2.150	2.068	2.003	2.000	1.875	1.813	1.775	1.691	1.663	1.565	1.438
2.775	2.595	2.587	2.550	2.468	2.403	2.400	2.275	2.213	2.175	2.091	2.063	1.965	1.838
2.875	2.695	2.687	2.650	2.568	2.503	2.500	2.375	2.313	2.275	2.191	2.163	2.065	1.938
3.775	3.595	3.587	3.550	3.468	3.403	3.400	3.275	3.213	3.175	3.091	3.063	2.965	2.838
4.56	4.38	4.372	4.335	4.253	4.188	4.185	4.060	3.998	3.960	3.876	3.848	3.750	3.623

Example: Need probe length of 1.125" combine sensor BES-516-200-S2-1.35-S21 with a 0.225" spacer. (1.35" tube length - 0.225" spacer = 1.125" adjusted length)

Note: A difference of 0.005" will still have to be carefully considered when sizing a spacer and sensor to the cylinder.

- Spacer kits include a spacer, "O" ring, and appropriate mounting screws.
- Other spacer kits may be available: consult factory.

To order a spacer kit:

Use part number BESA-516-200-KIT-* (X.XXX) *measured in inches
(For both DC and AC/DC devices - there is no difference in flange dimensions)



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

High-pressure sensors

Strokemaster sensors

Steelface sensors

High temperature sensors

Harsh environment sensors

Factor 1 sensors

Weld field immune sensors

Large designs

Ring sensors

Tube sensors

Analog distance measurement

Accessories

Today's inductive proximity sensors provide position/part confirmation and error proofing functions on a variety of machines and assembly lines. When impact damages or destroys these vital feedback devices it can shut down your entire production process. This leads to higher sensor costs, higher maintenance costs, loss of production and lower profitability...bad news for any manufacturer. Balluff's SteelFace inductive sensors are affordable, rugged sensors that are designed for impact-prone areas. Their stainless steel faces handle impacts and abuse multiple times longer than plastic faced sensors. They also provide up to twice the sensing range of standard flush mount sensors. This feature allows the sensors to be mounted farther away from their targets, reducing the chance of impact and impact-related failures.

The extremely high-quality coating has a PTFE and ceramic base. It prevents the deposition of weld splatter, thereby increasing the pot life of sensors.



Application areas

- Welding equipment
- Lightweight construction
- Automotive industry
- Conveyor technology
- Handling
- Assembly
- Special machine construction



Inductive Sensors with Special Properties

Steelface sensors

M8x1



Housing size		M8 x 1	M8 x 1	M8 x 1
Installation type (pay attention to the note in the Basic Information chapter)		Flush	Flush	Flush
Rated switching distance s_n		1.5 mm	2 mm	2 mm
Assured switching distance s_a		0...1.2 mm	0...1.6 mm	0...1.6 mm
Sensing distance		1X	2X	2X
PNP, NO	Ordering code	BES02YZ	BES02N5	BES02N6
	Part number	BES M08EG1-PSC15S-S04G-S	BES M08EH1-PSC20B-S04G-S	BES M08EH1-PSC20B-S04G-S01
NPN, NO	Ordering code	BES02YY	BES02N3	BES02N4
	Part number	BES M08EG1-NSC15S-S04G-S	BES M08EH1-NSC20B-S04G-S	BES M08EH1-NSC20B-S04G-S01
Supply voltage U_B		10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.		2 V	2.5 V	2.5 V
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC
Rated operating current I_e		100 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/No/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70 °C	-25...+70 °C	-25...+70 °C
Switching frequency f max.		20 Hz	750 Hz	750 Hz
Function indicator		Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67	IP 67
Approvals		CE	CE	CE
Special properties		Selective ferrous	Pressure rated to 80 bar	Pressure rated to 80 bar, weld spatter-resistant
Material	Housing	Stainless steel 303	Stainless steel 316 L	Stainless steel, PTFE coated
	Sensing surface	Stainless steel 303	Stainless steel 316 L	Stainless steel, PTFE coated
Connection		M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable		BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020



Inductive sensors
Global DC 3-wire
DC 3-/4-wire
DC 2-wire
AC/DC 2-wire
AC 2-wire

Special properties
High-pressure sensors
Strokemaster sensors
Steelface sensors
High temperature sensors
Harsh environment sensors

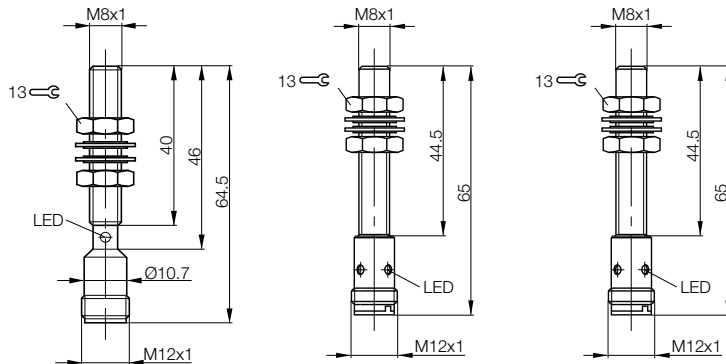
Factor 1 sensors
Weld field immune sensors
Large designs
Ring sensors
Tube sensors
Analog distance measurement
Accessories

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.

When using metal mounts, a reduction in the switching distance is to be expected. You should check whether the clamping holder can be used in the application.



Steelface sensors

M12x1



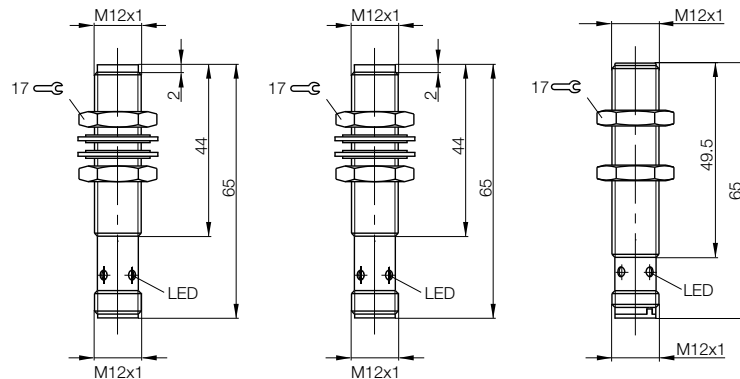
		M12x1	M12x1	M12x1
Housing size		M12x1	M12x1	M12x1
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush	Flush
Rated switching distance s_n		2 mm	2 mm	4 mm
Assured switching distance s_a		0...1.6 mm	0...1.6 mm	0...3.2 mm
Sensing distance marking		1X	1X	2X
PNP, NO	Ordering code	BES02Z2	BES02Z3	BES02NA
	Part number	BES M12EG1-PSC20N-S04G-S	BES M12EG1-PSC20S-S04G-S	BES M12EI-PSC40B-S04G-S
PNP, NC	Ordering code		BES02Z1	
	Part number		BES M12EG1-POC20S-S04G-S	
NPN, NO	Ordering code		BES02Z0	BES02N8
	Part number		BES M12EG1-NSC20S-S04G-S	BES M12EI-NSC40B-S04G-S
Supply voltage U_B		10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.		2 V	2 V	2.5 V
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC
Rated operating current I_e		200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/No/Yes	Yes/No/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70 °C	-25...+70 °C	-25...+70 °C
Switching frequency f max.		50 Hz	50 Hz	500 Hz
Function indicator		Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67/1200 psi washdown	IP 67/1200 psi washdown	IP 67
Approvals		CE	CE	CE
Special properties		Selective non-ferrous	Selective ferrous	Pressure rated to 60 bar (870 psi)
Material	Housing	Stainless steel 303	Stainless steel 303	Stainless steel 316 L
	Sensing surface	Stainless steel 303	Stainless steel 303	Stainless steel 316 L
Connection		M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable		BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.

When using metal mounts, a reduction in the switching distance is to be expected. You should check whether the clamping holder can be used in the application.



Inductive Sensors with Special Properties

Steelface sensors

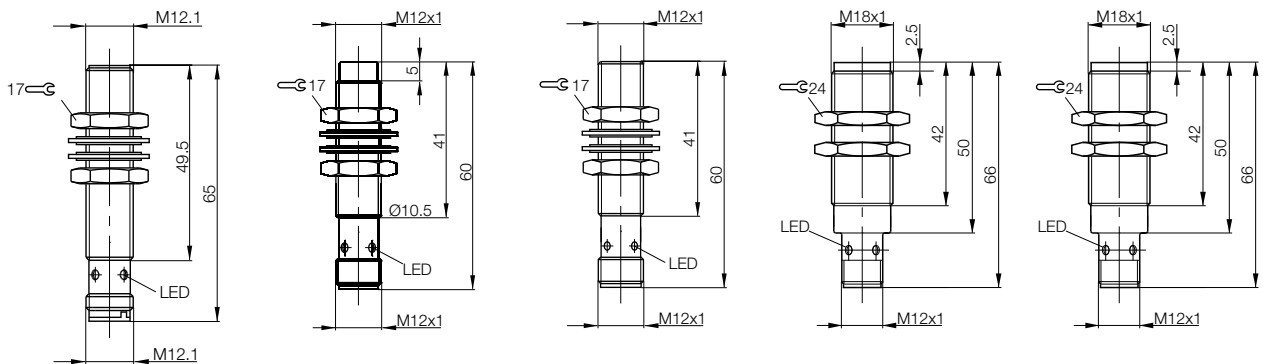
M12x1, M18x1



M12x1	M12x1	M12x1	M18x1	M18x1
Flush	Non-flush	Quasi-flush	Flush	Flush
4 mm	10 mm	6 mm	5 mm	5 mm
0...3.2 mm	0...8.1 mm	0...4.9 mm	0...4.1 mm	0...4.1 mm
2X	3X	3X	1X	1X
BES02NC	BES02WE	BES02WH	BES02Z8	BES02Z9
BES M12EI-PSC40B-S04G-S01	BES M12EF1-PSC10F-S04G-S	BES M12EG1-PSC60Z-S04G-S11	BES M18EG1-PSC50N-S04G-S	BES M18EG1-PSC50S-S04G-S
				BES02Z7
				BES M18EG1-POC50S-S04G-S
BES02N9	BES02WC	BES02WF		BES02Z6
BES M12EI-NSC40B-S04G-S01	BES M12EF1-NSC10F-S04G-S	BES M12EG1-NSC60Z-S04G-S11		BES M18EG1-NSC50S-S04G-S
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2 V	2 V	2 V	2 V
75 V DC	75 V DC	75 V DC	75 V DC	75 V DC
200 mA	200 mA	200 mA	100 mA	100 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/No/Yes	Yes/No/Yes
-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C
500 Hz	350 Hz	400 Hz	15 Hz	15 Hz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 67	IP 67	IP 67/1200 psi washdown	IP 67/1200 psi washdown
CE	CE	CE	CE	CE
Pressure rated to 60 bar, weld spatter-resistant	Pressure rated to 80 bar (1,160 psi)	Pressure rated to 80 bar (1,160 psi)	Selective non-ferrous	Selective ferrous
Stainless steel, 316 L PTFE coated	Stainless steel 303	Stainless steel 303	Stainless steel 303	Stainless steel 303
Stainless steel, 316 L PTFE coated	Stainless steel 303	Stainless steel 303	Stainless steel 303	Stainless steel 303
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties**
- High-pressure sensors
- Strokemaster sensors
- Steelface sensors
- High temperature sensors
- Harsh environment sensors
- Factor 1 sensors
- Weld field immune sensors
- Large designs
- Ring sensors
- Tube sensors
- Analog distance measurement
- Accessories





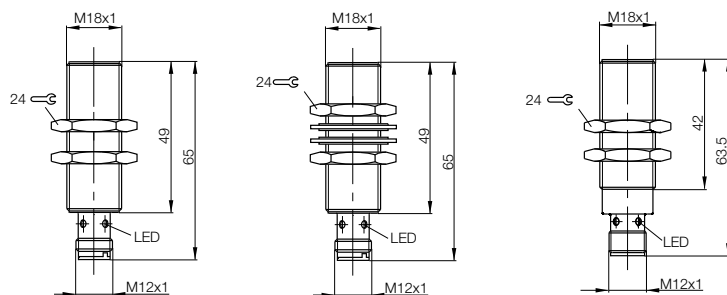
	M18x1	M18x1	M18x1
Housing size	M18x1	M18x1	M18x1
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	7.2 mm	7.2 mm	10 mm
Assured switching distance s_a	0...5.2 mm	0...5.2 mm	0...8.1 mm
Sensing distance	2X	2X	2X
PNP, NO	Ordering code Part number	BES02NJ BES M18EI-PSC72B-S04G-S	BES02NK BES M18EI-PSC72B-S04G-S01
			BES02Y3 BES M18EG1-PSC10Z-S04G-S11
NPN, NO	Ordering code Part number	BES02NF BES M18EI-NSC72B-S04G-S	BES02NH BES M18EI-NSC72B-S04G-S01
			BES02Y2 BES M18EG1-NSC10Z-S04G-S11
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.	2.5 V	2.5 V	2 V
Rated insulation voltage U_i	75 V DC	75 V DC	75 V DC
Rated operating current I_e	200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70 °C	-25...+70 °C	-25...+70 °C
Switching frequency f max.	250 Hz	250 Hz	200 Hz
Function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67
Approvals	CE	CE	CE
Special properties	Pressure rated to 40 bar (580 psi)	Pressure rated to 40 bar, weld spatter-resistant (580 psi)	Pressure rated to 60 bar (870 psi)
Material	Housing	Stainless steel 316 L	Stainless steel, 316 L PTFE coated
	Sensing surface	Stainless steel 316 L	Stainless steel, 316 L PTFE coated
Connection	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.

When using metal mounts, a reduction in the switching distance is to be expected. You should check whether the clamping holder can be used in the application.



Inductive Sensors with Special Properties

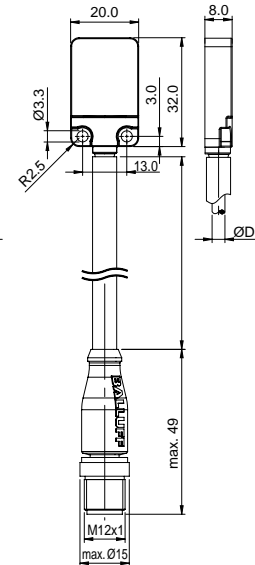
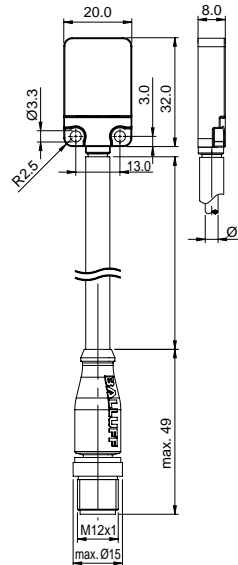
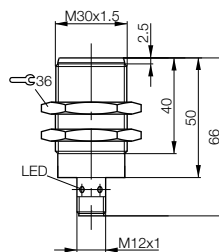
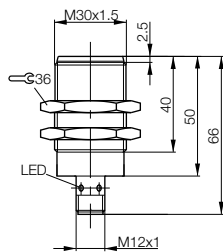
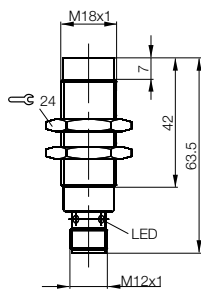
Steelface sensors M18x1, M30x1.5, Flat Pack



M18x1	M30x1.5	M30x1.5	20x32x8 mm	20x32x8 mm
Non-flush	Flush	Flush	Flush	Flush
20 mm	8 mm	8 mm	5 mm	5 mm
0...16.2 mm	0...6.5 mm	0...6.5 mm		
2X	1X	1X		
BES02Y1	BES02ZH	BES02ZJ	BES04AH	BES049Y
BES M18EF1-PSC20F-S04G-S	BES M30EG1-PSC80N-S04G-S	BES M30EG1-PSC80S-S04G-S	BES R01EC-PSC50A-BP00,3-GS04-W50	BES R01EC-PSC50A-BP00,3-GS04-W51
		BES02ZF		
		BES M30EG1-NSC80S-S04G-S		
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2 V	2 V	2 V		
75 V DC	75 V DC	75 V DC		
200 mA	100 mA	100 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/No/Yes	Yes/No/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70 °C	-25...+70 °C	-25...+70 °C	0...+50 °C	0...+50 °C
200 Hz	15 Hz	15 Hz	20 Hz	20 Hz
Yellow LED	Yellow LED	Yellow LED		
IP 67	IP 67	IP 67	IP 65	IP 65
CE	CE	CE	CE, cULus	CE, cULus
Pressure rated to 60 bar (870 psi)	Selective non-ferrous	Selective ferrous		
Stainless steel 303	Stainless steel 303	Stainless steel 303	Stainless steel 303	Stainless steel 303
Stainless steel 303	Stainless steel 303	Stainless steel 303	Stainless steel 303	Stainless steel with W51 ceramic coating
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	0.3 m PUR cable, M12 connector, 3-pin LED	0.3 m PUR cable, M12 connector, 3-pin LED
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties**
- High-pressure sensors
- Strokemaster sensors
- Steelface sensors
- High temperature sensors
- Harsh environment sensors
- Factor 1 sensors
- Weld field immune sensors
- Large designs
- Ring sensors
- Tube sensors
- Analog distance measurement
- Accessories



Inductive Sensors with Special Properties

High temperature sensors

M5×0.5, M8×1, M12×1

High temperature sensors

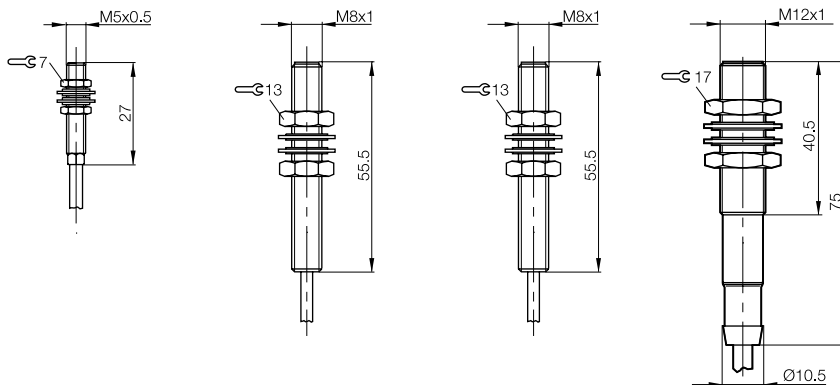


Housing size		M5×0.5	M8 × 1	M8 × 1	M12×1
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush	Flush	Flush
Rated switching distance s_n		0.5 mm	1 mm	2 mm	2 mm
Assured switching distance s_a		0...0.4 mm	0...0.8 mm	0...1.6 mm	0...1.6 mm
Sensing distance		1X	1X	2X	1X
PNP, NO	Ordering code	BES02J2	BES02HP	BES02HK	BES02HU
	Part number	BES M05ED-PSD05B-ES02-T01	BES 516-324-SA8-02	BES 516-324-SA26-02	BES 516-325-SA19-03
NPN, NO	Ordering code				BES0361
	Part number				BES 516-329-SA14-A0-X-03
NPN, complementary	Ordering code				
	Part number				
Supply voltage U_B		10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.		1 V	1.5 V	1.5 V	PNP 1.8 V, NPN 1.5 V
Rated insulation voltage U_i		75 V DC	75 V DC	75 V DC	75 V DC
Rated operating current I_e		≤ 150 mA (fig. 1)	≤ 200 mA (fig. 2)	≤ 200 mA (fig. 3)	≤ 200 mA (fig. 3)
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/No/No	Yes/No/No	Yes/No/No
Ambient temperature T_a		-25...+120 °C	-25...+100 °C	-25...+120 °C	-25...+120 °C
Switching frequency f max.		1 kHz	2 kHz	1.5 kHz	1 kHz
Degree of protection as per IEC 60529		IP 67	IP 67	IP 67, IP 60 cable outlet	IP 68 according to BWN Pr. 20, IP 60 cable outlet
Approvals		CE	CE	CE	CE
Material	Housing	Stainless steel	Stainless steel	Stainless steel	Brass-coated
	Sensing surface	PA 6	PBT	PBT	PEEK
Connection		2 m silicon cable, 26 AWG	2 m PVC cable, 26 AWG	2 m Teflon cable, 26 AWG	3 m silicon cable, 20 AWG
Suggested mating cable					
Pressure rated to					3 bar

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.

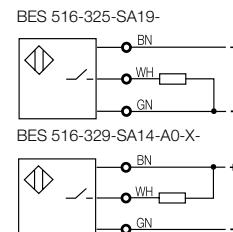


Temperature rated sensors to +120 °C

More and more industrial processes are running at higher temperatures. This increases the demands on the sensors. Balluff high temperature sensors are ideal for your high temperature application.

Applications

- Steel production
- Motor function monitoring
- Glass manufacturing



Inductive Sensors with Special Properties

High temperature sensors

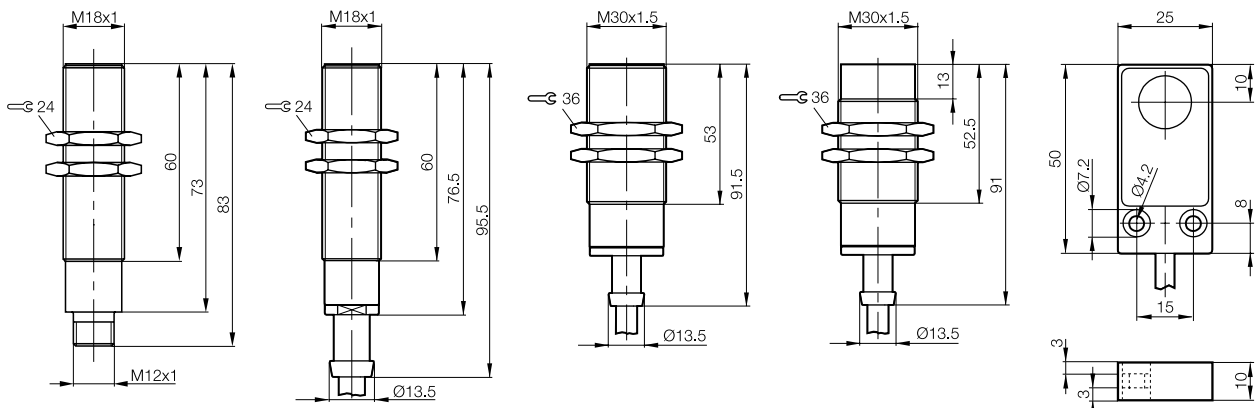
M18x1, M30x1.5, 25x50x10 mm



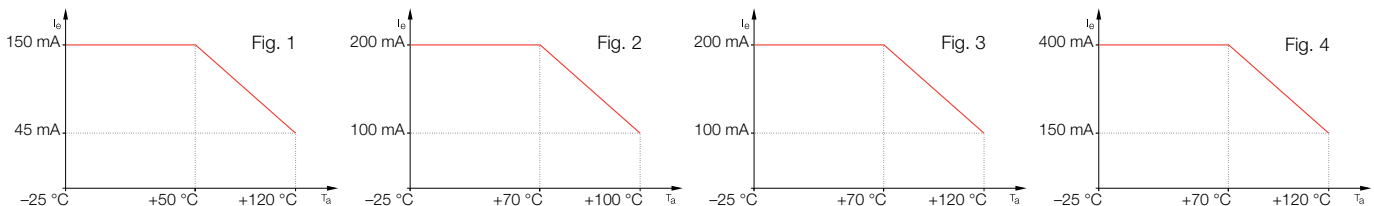
M18x1	M18x1	M30x1.5	M30x1.5	25x50x10 mm
Flush	Flush	Flush	Non-flush	Flush
5 mm	5 mm	10 mm	15 mm	5 mm
0...4.1 mm	0...4.1 mm	0...8.1 mm	0...12.2 mm	0...4.1 mm
1X	1X	1X	1X	1X
BES02H6	BES02H5	BES02H7	BES02HE	BES02J0
BES 516-105-SA5	BES 516-105-SA2-05	BES 516-114-SA1-05	BES 516-125-SA1-05	BES 516-347-SA2-03
		BES02HC		
		BES 516-120-SA2		
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	24 V DC $\pm 10\%$
1.5 V	1.5 V	1.5 V	1.5 V	2.5 V
75 V DC	75 V DC	75 V DC	75 V DC	75 V DC
≤ 400 mA (fig. 4)	≤ 400 mA (fig. 4)	≤ 400 mA (fig. 4)	≤ 400 mA (fig. 4)	≤ 25 mA
Yes/No/No	Yes/No/No	Yes/No/No	Yes/No/No	Yes/Yes/Yes
-25...+120 °C	-25...+120 °C	-25...+120 °C	-25...+120 °C	-25...+100 °C
500 Hz	500 Hz	300 Hz	100 Hz	500 Hz
IP 67	IP 67, IP 60 cable outlet	IP 67, IP 60 cable outlet	IP 67, IP 60 cable outlet	IP 67, IP 60 cable outlet
CE	CE	CE	CE	CE
Brass-coated	Brass-coated	Brass-coated	Brass-coated	Cast aluminum
PBT	PBT	PBT	PA 12	PBT
M12 plug connector, 4-pin	5 m silicon cable, 19 AWG	Silicon cable, 19 AWG	5 m silicon cable, 19 AWG	3 m silicon cable, 19 AWG
BCC M415-0000-1A-003-EX44T2-020				



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties**
- High-pressure sensors
- Strokemaster sensors
- Steelface sensors
- High temperature sensors
- Harsh environment sensors
- Factor 1 sensors
- Weld field immune sensors
- Large designs
- Ring sensors
- Tube sensors
- Analog distance measurement
- Accessories



Current reduction as a function of ambient temperature range



Inductive Sensors with Special Properties

High temperature sensors

High temperature sensors

Balluff's ultra-high temperature inductive sensors can be used in temperature ranges up to +160 °C. These sensors are ideally suited to harsh environments in the steel industry, in plastic injection molding machines and in forging and foundry processes.



- Optimization of system availability
- Reduction in maintenance costs
- Increase in process quality

Housing size		
Installation type (observe instructions in the Basic Information chapter)		
Rated switching distance s_n		
Assured switching distance s_a		
Sensing distance		
PNP, NO	Ordering code	
	Part number	
Supply voltage U_B		
Voltage drop U_d at I_e max.		
Rated insulation voltage U_i		
Rated operating current I_e		
Polarity reversal protected/transposition protected/short-circuit protected		
Ambient temperature T_a		
Switching frequency f max.		
Degree of protection as per IEC 60529		
Approvals		
Material	Housing	
	Sensing surface	
Connection		

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



Inductive Sensors with Special Properties

High temperature sensors

M18x1, M30x1.5



160 °C
High temperature range



160 °C
High temperature range



160 °C
High temperature range



160 °C
High temperature range

M18x1	M18x1	M30x1.5	M30x1.5
Flush	Non-flush	Flush	Non-flush
5 mm	8 mm	10 mm	15 mm
0...4 mm	0...6.4 mm	0...8 mm	0...12 mm
1X	1X	1X	1X
BES043T	BES043U	BES043W	BES043Y
BES 515-326-SA49-D-TF-02	BES 515-360-SA13-D-TF-02	BES 515-327-SA22-D-TF-02	BES 515-362-SA4-D-TF-02
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2.5 V	2.5 V	2.5 V
75 V DC	75 V DC	75 V DC	75 V DC
200 mA	200 mA	200 mA	200 mA
Yes/No/No	Yes/No/No	Yes/No/No	Yes/No/No
-25...+160 °C	-25...+160 °C	-25...+160 °C	-25...+160 °C
200 Hz	200 Hz	200 Hz	200 Hz
IP 69K	IP 69K	IP 69K	IP 69K
CE	CE	CE	CE
Stainless steel	Stainless steel	Stainless steel	Stainless steel
PEEK	PEEK	PEEK	PEEK
2 m cable FEP, 22 AWG	2 m cable FEP, 22 AWG	2 m cable FEP, 22 AWG	2 m cable FEP, 22 AWG



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

High-pressure sensors

Strokemaster sensors

Steelface sensors

High temperature sensors

Harsh environment sensors

Factor 1 sensors

Weld field immune sensors

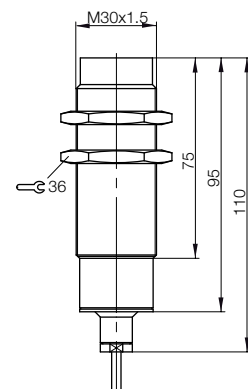
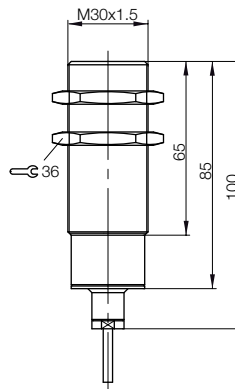
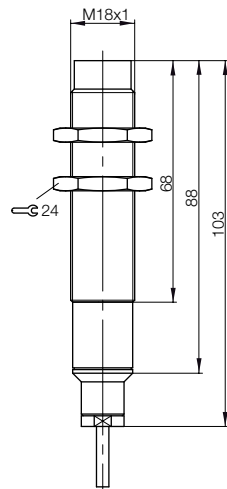
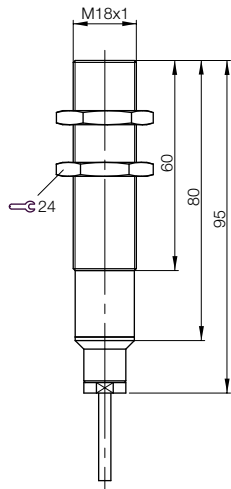
Large designs

Ring sensors

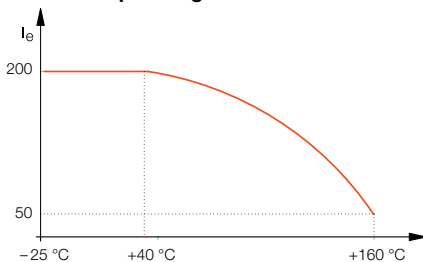
Tube sensors

Analog distance measurement

Accessories



Rated operating current



Inductive Sensors with Special Properties

Harsh environment sensors

M12x1 standard

PROXINOX®



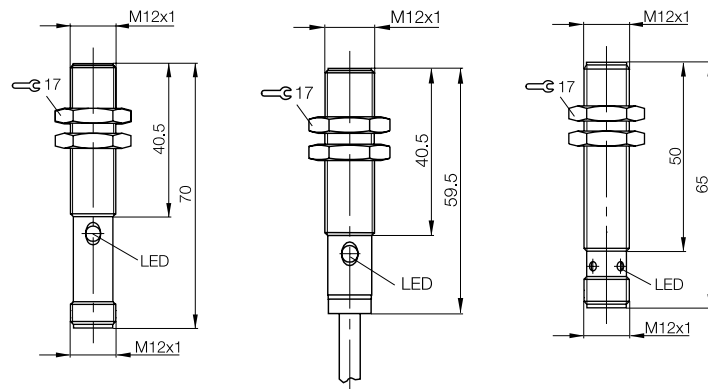
Increased temperature range

	M12x1	M12x1	M12x1
Housing size	M12x1	M12x1	M12x1
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	2 mm	2 mm	4 mm
Assured switching distance s_a	0...1.6 mm	0...1.6 mm	0...3.2 mm
Sensing distance	1X	1X	2X
PNP, NO	Ordering code Part number	BES02EL BES 515-325-S4-C	BES02EH BES 515-325-BO-C-PU-03
PNP, NC	Ordering code Part number		BES02FU BES M12EI-PSC40B-S04G
NPN, NO	Ordering code Part number		BES02FT BES M12EI-POC40B-S04G
NPN, NC	Ordering code Part number		BES02FR BES M12EI-NSC40B-S04G
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_o max.	1.5 V	1.5 V	1.5 V
Rated insulation voltage U_i (protection class)	250 V AC (□)	250 V AC (□)	250 V AC (□)
Rated operating current I_o	200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70 °C	-25...+70 °C	-25...+85 °C
Switching frequency f max.	≤ 3 kHz	≤ 3 kHz	≤ 1 kHz
Function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
Approvals	CE, cULus	CE, cULus	CE, cULus
Material	Housing: Stainless steel Sensing surface: PA 12	Stainless steel PA 12	Stainless steel LCP
Connection	M12 connector, 4 pin	3 m PUR cable, 22 AWG	M12 connector, 4-pin
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020		BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



Built tough – stainless steel housing stops aggressive media in its tracks. Inductive sensors are also used more and more in aggressive environments: in machine tools, in the chemical industry, in packaging machines- and the food industry. PROXINOX® sensors are ideal for applications where aggressive cleaning agents, in connection with high-pressure cleaning devices are used.

Inductive Sensors with Special Properties

Harsh environment sensors

M12x1 standard



Increased temperature range

M12x1	M12x1	M12x1	M12x1	M12x1	M12x1
Flush	Flush	Non-flush	Non-flush	Non-flush	Non-flush
4 mm	4 mm	4 mm	4 mm	4 mm	4 mm
0...3.2 mm	0...3.2 mm	0...3.2 mm	0...3.2 mm	0...3.2 mm	0...3.2 mm
2X	2X	1X	1X	1X	1X
BES038C	BES014W	BES02FC	BES02F3	BES02F7	
BES M12EI-PSC40B-S04G-009	BES M12EE-PSC40B-S04G	BES 515-356-S4-C	BES 515-356-BO-C-03	BES 515-356-E4-C-03	
	BES014U				
	BES M12EE-POC40B-S04G				
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2 V	1.5 V	1.5 V	2 V	2 V
250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)
200 mA	200 mA	200 mA	200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-40...+85 °C	-25...+85 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C
≤ 2 kHz	≤ 2 kHz	≤ 1.5 kHz	≤ 1.5 kHz	≤ 2 kHz	≤ 2 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
LCP	LCP	PA 12	PA 12	PBT	PBT
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	3 m PVC cable, 22 AWG	3 m PVC cable, 22 AWG	
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020			



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

High-pressure sensors

Strokemaster sensors

Steelface sensors

High temperature sensors

Harsh environment sensors

Factor 1 sensors

Weld field immune sensors

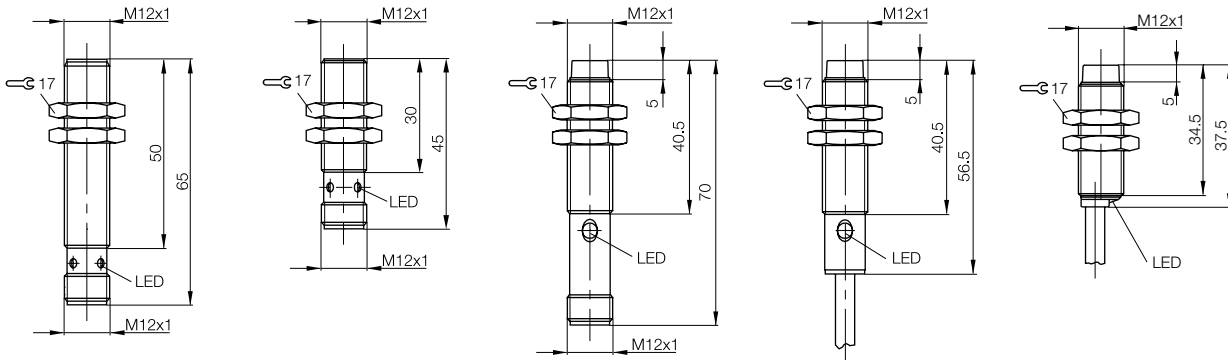
Large designs

Ring sensors

Tube sensors

Analog distance measurement

Accessories





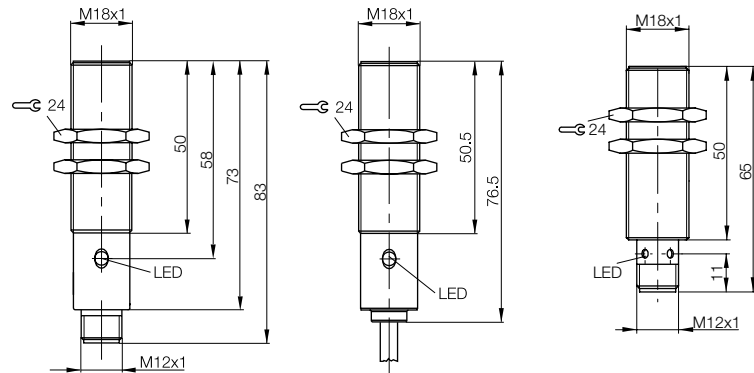
Increased temperature range

Housing size	M18x1	M18x1	M18x1
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	5 mm	5 mm	8 mm
Assured switching distance s_a	0...4.1 mm	0...4.1 mm	0...6.5 mm
Sensing distance	1X	1X	2X
PNP, NO	Ordering code	BES02EU	BES02EN
	Part number	BES 515-326-S4-C	BES 515-326-BO-C-PU-03
PNP, NC	Ordering code		BES02H0
	Part number		BES M18EI-PSC80B-S04G
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.	1.5 V	1.5 V	2.5 V
Rated insulation voltage U_i (protection class)	250 V AC (□)	250 V AC (□)	250 V AC (□)
Rated operating current I_e	200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-40...+85 °C	-25...+70 °C	-40...+85 °C
Switching frequency f max.	900 Hz	900 Hz	≤ 700 Hz
Function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20
Approvals	CE, cULus	CE, cULus	CE, cULus
Material	Housing	Stainless steel	Stainless steel
	Sensing surface	PA 12	PA 12
Connection	M12 connector, 4-pin	3 m PUR cable, 22 AWG	M12 connector, 4-pin
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020		BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



Inductive Sensors with Special Properties

Harsh environment sensors

M18x1, M30x1.5



Increased temperature range



M18x1	M18x1	M30x1.5	M30x1.5	
Non-flush	Non-flush	Flush	Non-flush	
8 mm	8 mm	10 mm	15 mm	
0...6.5 mm	0...6.5 mm	0...8.1 mm	0...12.2 mm	
1X	1X	1X	1X	
BES02FL	BES02FH	BES02F1	BES02FN	
BES 515-360-S4-C	BES 515-360-BO-C-PU-03	BES 515-327-S4-C	BES 515-362-S4-C	
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	DC 3-/4-wire
1.5 V	1.5 V	2.5 V	2.5 V	DC 2-wire
250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)	AC/DC 2-wire
200 mA	200 mA	200 mA	200 mA	AC 2-wire
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	
-40...+85 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C	
≤ 600 Hz	≤ 600 Hz	≤ 300 Hz	≤ 100 Hz	
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Special properties
IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	IP 68 per BWN Pr. 20	High-pressure sensors
CE, cULus	CE, cULus	CE, cULus	CE, cULus	Strokemaster sensors
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Steelface sensors
PA 12	PA 12	PA 12	PA 12	High temperature sensors
M12 connector, 4-pin	3 m PUR cable, 22 AWG	M12 connector, 4-pin	M12 connector, 4-pin	Harsh environment sensors
BCC M415-0000-1A-003-EX44T2-020		BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	Factor 1 sensors



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

High-pressure sensors

Strokemaster sensors

Steelface sensors

High temperature sensors

Harsh environment sensors

Factor 1 sensors

Weld field immune sensors

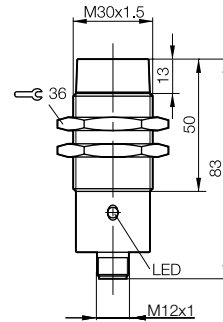
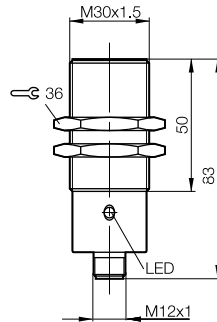
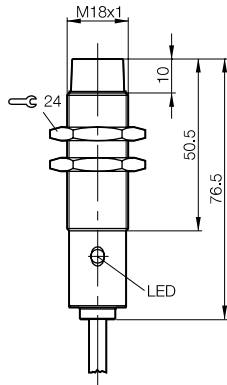
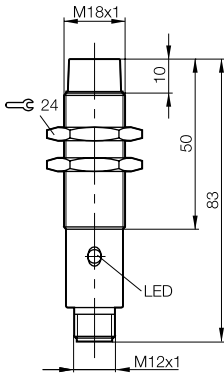
Large designs

Ring sensors

Tube sensors

Analog distance measurement

Accessories



PROXINOX® sensors – withstand the harshest cleaning processes

In the food- and beverage industry, the chemical industry, and even conveying operations, inductive sensors are routinely cleaned with more and more aggressive methods. Whether acids, bases, steam, foaming cleaners or high-pressure cleaners – PROXINOX®-stainless steel sensors fulfill stringent requirements.

Features

- No function indicator directly on the sensor: The drill hole for the LED is a potential source of danger during cleaning processes and a possible means of entry for bacteria. The function display is completely wrapped in the transparent plastic of the connector.
- Housing made of stainless steel (material 1.4571): This material is common in the food and beverage- industry. The cable plug has to be adapted to different cleaning and- disinfection agents.
- Gold-coated contacts: The difficult installation relationships require gold-coated contacts, so that plug corrosion is prevented.
- Lasered or etched part number: Cleaning- and disinfection processes dissolve type plates. Lasered or etched part numbers are there to stay.
- Additional O-ring-seals for extreme requirements: temperature shocks – triggered by cleaning and disinfection – cause strong, different residual stress on steel housings and casting resin.



Housing size	
Installation type (observe instructions in the Basic Information chapter)	
Rated switching distance s_n	
Assured switching distance s_a	
Sensing distance	
PNP, NO	Ordering code
	Part number
Supply voltage U_R	
Voltage drop U_d at I_e max.	
Rated insulation voltage U_i (protection class)	
Rated operating current I_e	
Polarity reversal protected/transposition protected/short-circuit protected	
Ambient temperature T_a	
Ambient temperature T_a at load current ≤ 20 mA	
Ambient temperature range T_a short-time 30 min	
Switching frequency f max.	
Degree of protection as per IEC 60529	
Approvals	
Material	Housing
	Sensing surface
Connection	
Suggested mating cable	

Steam jet tested



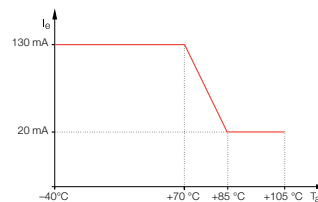
See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



Current reduction as a function of ambient temperature range



Inductive Sensors with Special Properties

Harsh environment sensors

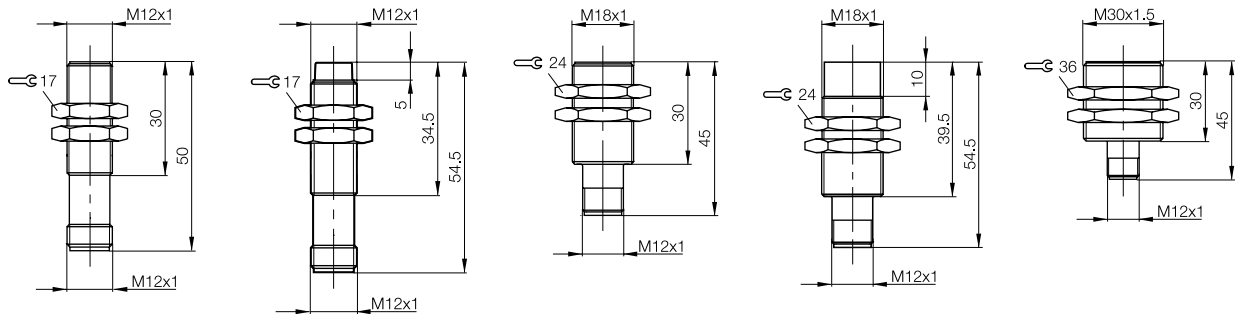
M12x1, M18x1, M30x1.5



M12x1	M12x1	M18x1	M18x1	M30x1.5
Flush	Non-flush	Flush	Non-flush	Flush
2 mm	4 mm	5 mm	8 mm	10 mm
0...1.6 mm	0...3.2 mm	0...4.1 mm	0...6.5 mm	0...8.1 mm
1X	1X	1X	1X	1X
BES02EK	BES02FA	BES02ET	BES02FK	BES02F0
BES 515-325-E5-T-S4	BES 515-356-E5-T-S4	BES 515-326-E5-T-S4	BES 515-360-E5-T-S4	BES 515-327-E5-T-S4
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
3.5 V	3.5 V	3.5 V	3.5 V	3.5 V
75 V DC	75 V DC	75 V DC	75 V DC	75 V DC
130 mA	130 mA	130 mA	130 mA	130 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-40...+70 °C	-40...+70 °C	-40...+70 °C	-40...+70 °C	-40...+70 °C
-40...+85 °C	-40...+85 °C	-40...+85 °C	-40...+85 °C	-40...+85 °C
+105 °C	+105 °C	+105 °C	+105 °C	+105 °C
≤ 800 Hz	≤ 400 Hz	≤ 500 Hz	≤ 200 Hz	≤ 200 Hz
IP 69K and IP 68 as per BWN Pr. 27 CE, cULus	IP 69K and IP 68 as per BWN Pr. 27 CE, cULus	IP 69K and IP 68 as per BWN Pr. 27 CE, cULus	IP 69K and IP 68 as per BWN Pr. 27 CE, cULus	IP 69K and IP 68 as per BWN Pr. 27 CE, cULus
Stainless steel 1.4571	Stainless steel 1.4571	Stainless steel 1.4571	Stainless steel 1.4571	Stainless steel 1.4571
PEEK	PEEK	PA 12	PA 12	PA 12
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties**
- High-pressure sensors
- Strokemaster sensors
- Steelface sensors
- High temperature sensors
- Harsh environment sensors
- Factor 1 sensors
- Weld field immune sensors
- Large designs
- Ring sensors
- Tube sensors
- Analog distance measurement
- Accessories



Inductive Sensors with Special Properties

Harsh environment sensors

PROXINOX®

In the food industry, medical and pharmaceutical technology, and special requirements are placed on sensors: FDA conformity and testing according to the Ecolab standard.

The sensors fulfill the highest requirements:

- Extended temperature range
- Safe to clean according to Ecolab
- FDA conformity
- Resistant to high-pressure cleaners

Steam jet tested



Inductive Sensors with Special Properties

Harsh environment sensors

Ø 12 mm, M12x1



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

High-pressure sensors

Strokemaster sensors

Steelface sensors

High temperature sensors

Harsh environment sensors

Factor 1 sensors

Weld field immune sensors

Large designs

Ring sensors

Tube sensors

Analog distance measurement

Accessories

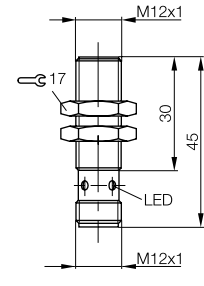
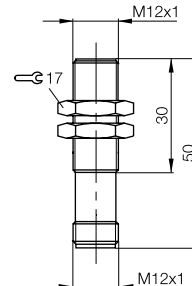
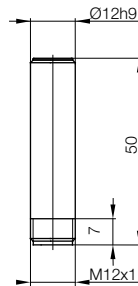
Accessories

Housing size	Ø 12 mm	M12x1	M12x1
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	2 mm	2 mm	4 mm
Assured switching distance s_a	0...1.6 mm	0...1.6 mm	0...3.2 mm
Sensing distance	1X	1X	1X
PNP, NO	Ordering code Part number	BES0430 BES G12EE1-PSY20B-S04G-L02	BES0444 BES M12EE1-PSY20B-S04G-L01
PNP, NC	Ordering code Part number		BES0432 BES M12EE-POC40B-S04G-L01
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.	3.5 V	3.5 V	2 V
Rated insulation voltage U_i (protection class)	75 V DC	75 V DC	250 V AC (II)
Rated operating current I_e	130 mA*	130 mA*	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-40...+105 °C	-40...+105 °C	-25...+85 °C
Switching frequency f max.	800 Hz	800 Hz	2000 Hz
Degree of protection as per IEC 60529	IP 69K and IP 68 as per BWN Pr. 27	IP 69K and IP 68 as per BWN Pr. 27	IP 69K and IP 68 as per BWN Pr. 20
Approvals	CE, cULus, Ecolab, FDA compliant	CE, cULus, Ecolab, FDA compliant	CE, cULus, Ecolab, FDA compliant
Material	Housing: Stainless steel 1.4571 Sensing surface: PEEK	Housing: Stainless steel 1.4571 Sensing surface: PEEK	Housing: Stainless steel 1.4404 Sensing surface: LCP
Connection	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

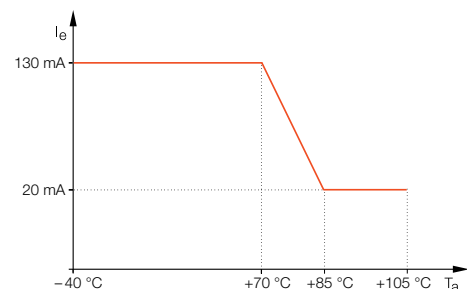
See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



***Current decrease curve**



Inductive Sensors with Special Properties

Harsh environment sensors

Ø 12 mm, M12x1

PROXINOX®



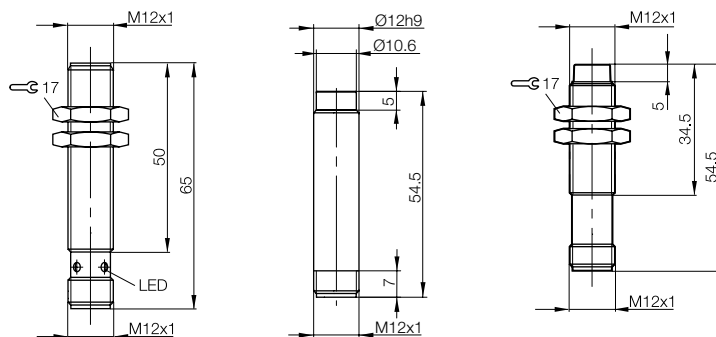
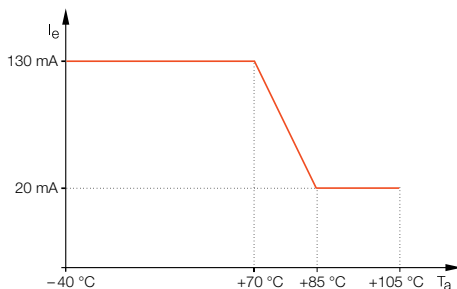
	M12x1	Ø 12 mm	M12x1
Housing size	M12x1	Ø 12 mm	M12x1
Installation type (observe instructions in the Basic Information chapter)	Flush	Non-flush	Non-flush
Rated switching distance s_n	4 mm	4 mm	4 mm
Assured switching distance s_a	0...3.2 mm	0...3.2 mm	0...3.2 mm
Sensing distance	1X	1X	1X
PNP, NO	Ordering code Part number	BES0435 BES M12EI-PSC40B-S04G-L01	BES0431 BES G12EE1-PSY40F-S04G-L02
PNP, NC	Ordering code Part number	BES0434 BES M12EI-POC40B-S04G-L01	BES0443 BES G12EE1-PSY40F-S04G-L01
NPN, NO	Ordering code Part number	BES0436 BES M12EI-NSC40B-S04G-L01	
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.	2.5 V	3.5 V	3.5 V
Rated insulation voltage U_i (protection class)	250 V AC (II)	75 V DC	75 V DC
Rated operating current I_e	200 mA	130 mA*	130 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	-40...+105 °C	-40...+105 °C
Switching frequency f max.	1000 Hz	400 Hz	400 Hz
Degree of protection as per IEC 60529	IP 69K and IP 68 as per BWN Pr. 20	IP 69K and IP 68 as per BWN Pr. 27	IP 69K and IP 68 as per BWN Pr. 27
Approvals	CE, cULus, Ecolab, FDA compliant	CE, cULus, Ecolab, FDA compliant	CE, cULus, Ecolab, FDA compliant
Material	Housing Sensing surface	Stainless steel 1.4404 LCP	Stainless steel 1.4571 PEEK
Connection	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.

*Current decrease curve



IP 69K

IP 68
as per BWN

Stainless
steel

H₂O₂
resistant

FDA

ECOLAB

Inductive Sensors with Special Properties

Harsh environment sensors

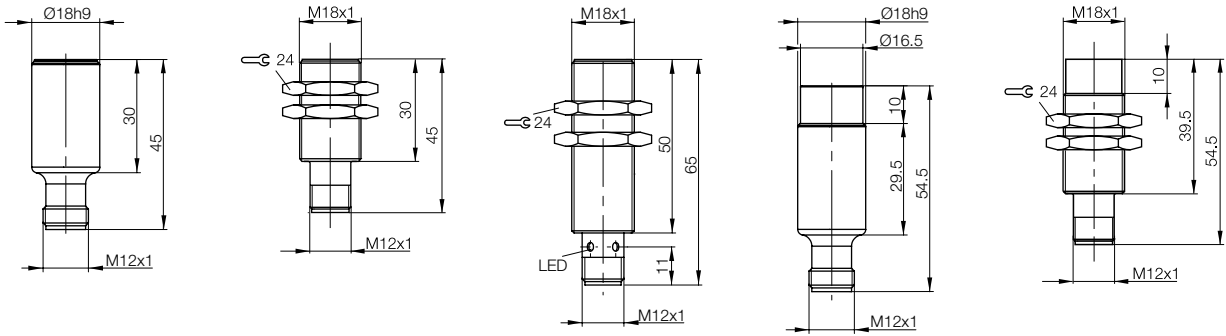
Ø 18 mm, M18x1



Ø 18 mm	M18x1	M18x1	Ø 18 mm	M18 mm
Flush	Flush	Flush	Non-flush	Non-flush
5 mm	5 mm	8 mm	8 mm	8 mm
0...4 mm	0...4 mm	0...6.4 mm	0...6.4 mm	0...6.4 mm
1X	1X	1X	1X	1X
BES0439	BES0441	BES0437	BES043A	BES0442
BES G18EE1-PSY50B-S04G-L02	BES M18EE1-PSY50B-S04G-L01	BES M18EI-PSC80B-S04G-L01	BES G18EE1-PSY80F-S04G-L02	BES M18EE1-PSY80F-S04G-L01
		BES0438		
		BES M18EI-POC80B-S04G-L01		
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
3.5 V	3.5 V	2.5 V	3.5 V	3.5 V
75 V DC	75 V DC	250 V AC (□)	75 V DC	75 V DC
130 mA*	130 mA*	200 mA	130 mA*	130 mA*
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-40...+105 °C	-40...+105 °C	-40...+85 °C	-40...+105 °C	-40...+105 °C
500 Hz	500 Hz	700 Hz	200 Hz	200 Hz
IP 69K and IP 68 as per BWN Pr. 27	IP 69K and IP 68 as per BWN Pr. 27	IP 69K and IP 68 as per BWN Pr. 20	IP 69K and IP 68 as per BWN Pr. 27	IP 69K and IP 68 as per BWN Pr. 27
CE, cULus, Ecolab, FDA compliant	CE, cULus, Ecolab, FDA compliant	CE, cULus, Ecolab, FDA compliant	CE, cULus, Ecolab, FDA compliant	CE, cULus, Ecolab, FDA compliant
Stainless steel 1.4571	Stainless steel 1.4571	Stainless steel 1.4404	Stainless steel 1.4571	Stainless steel 1.4571
PEEK	PEEK	PEEK	PEEK	PEEK
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties**
- High-pressure sensors
- Strokemaster sensors
- Steelface sensors
- High temperature sensors
- Harsh environment sensors
- Factor 1 sensors
- Weld field immune sensors
- Large designs
- Ring sensors
- Tube sensors
- Analog distance measurement
- Accessories



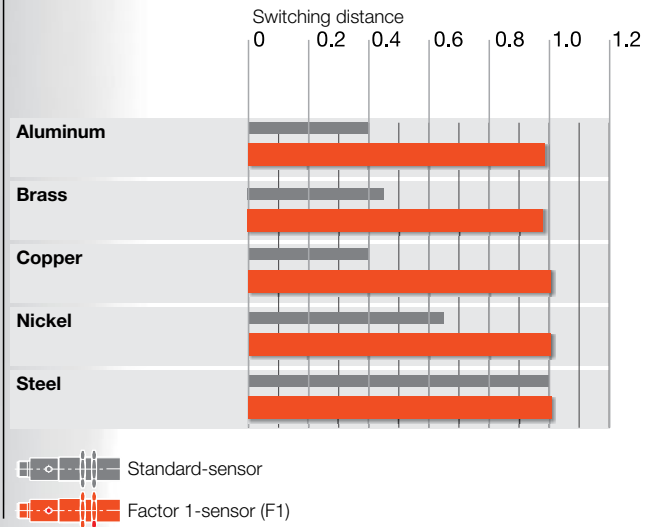
Inductive Sensors with Special Properties

Factor 1

Factor 1 sensors identify objects, such as those made of steel, aluminum or brass, with identical switching distances (without reduction factor). These properties provide advantages in applications in which the material of the objects to be detected can vary, or non-ferrous metal can be detected with a high switching distance. Moreover, all Factor 1-sensors are magnetic field immune. Their function is not impaired by strong electromagnetic fields (commonly found in welding applications). Factor 1-sensors are not influenced in their switching behavior by welding currents up to 25 kA (at a distance from the current conductor of approx. 5 cm).



Comparison of sensor types/switching distances





Inductive Sensors with Special Properties

Factor 1 M8 x 1



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

High-pressure sensors

Strokemaster sensors

Steelface sensors

High temperature sensors

Harsh environment sensors

Factor 1 sensors

Weld field immune sensors

Large designs

Ring sensors

Tube sensors

Analog distance measurement

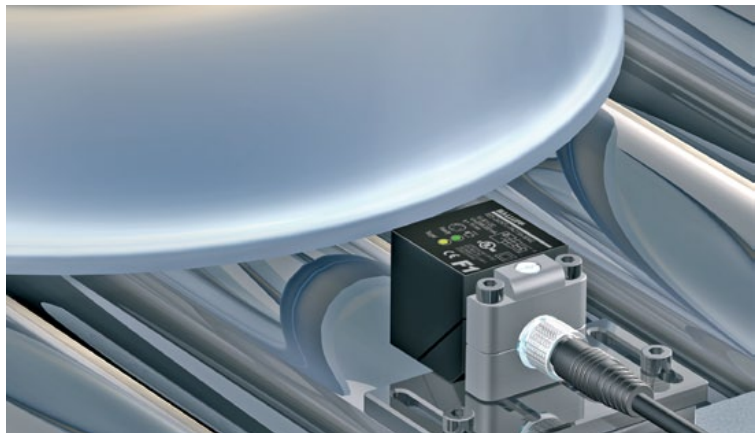
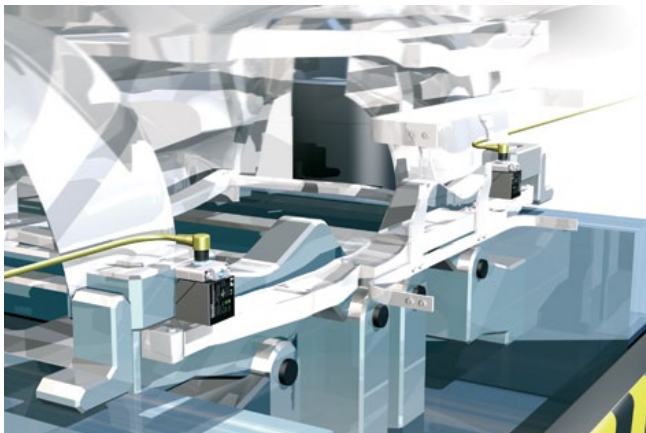
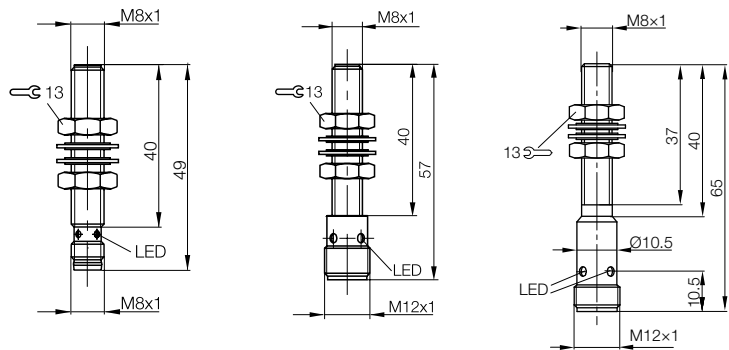
Accessories

Housing size		M8 x 1	M8 x 1	M8 x 1
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush	Flush
Rated switching distance s_n		1.5 mm	1.5 mm	2 mm
Assured switching distance s_a		0...1.2 mm	0...1.2 mm	0...1.6 mm
Sensing distance		1X	1X	1X
PNP, NO	Ordering code	BES02YR	BES02YT	BES03YP
	Part number	BES M08EG-PSC15A-S49G-W	BES M08EG1-PSC15A-S04G-W	BES M08MG1-PSC20A-S04G-W
Supply voltage U_B		10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.		2.5 V	2.5 V	3 V
Rated insulation voltage U_i (protection class)		75 V DC	250 V AC (II)	75 V DC
Rated operating current I_e		150 mA	150 mA	100 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70 °C	-25...+70 °C	-25...+70 °C
Switching frequency f max.		2 kHz	2 kHz	1 kHz
Output function indicator		Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67	IP 67
Approvals		CE	CE	CE
Special properties		Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields
Material	Housing	Stainless steel, PTFE coated	Stainless steel, PTFE coated	Brass, PTFE coated
	Sensing surface	PBT, PTFE coated	PBT, PTFE coated	LCP, PTFE coated
Connection		M8 connector, 3-pin	M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable		BCC M313-0000-10-001-EX43T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



Inductive Sensors with Special Properties

Factor 1 M12x1

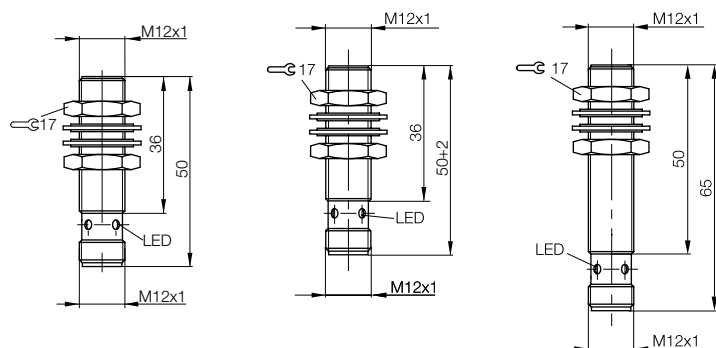


Housing size	M12x1	M12x1	M12x1
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Rated switching distance s_n	3 mm	3 mm	3 mm
Assured switching distance s_a	0...2.4 mm	0...2.4 mm	0...2.4 mm
Sensing distance	2X	2X	2X
PNP, NO	Ordering code	BES01PZ	BES02JZ
	Part number	BES M12MF-PSC30A-S04G	BES M12MF1-PSC30A-S04G-W
NPN, NO	Ordering code		BES02K3
	Part number		BES M12ML-PSC30A-S04G-W
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.	2.5 V	2.5 V	2.5 V
Rated insulation voltage U_i (protection class)	250 V AC (II)	250 V AC (II)	250 V AC (II)
Rated operating current I_e	200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70 °C	-25...+70 °C	-25...+70 °C
Switching frequency f max.	2 kHz	2 kHz	2 kHz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67
Approvals	CE	CE	CE
Special properties	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields
Material	Housing	Brass, coated	Brass, PTFE coated
	Sensing surface	LCP, PTFE coated	LCP, PTFE coated
Connection	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.





Inductive Sensors with Special Properties

Factor 1 M12x1



M12x1	M12x1	M12x1	M12x1	M12x1
Flush	Flush	Non-flush	Non-flush	Non-flush
3 mm	4 mm	8 mm	8 mm	8 mm
0...2.2 mm	0...3.2 mm	0...6.5 mm	0...6.5 mm	0...6.5 mm
2X	1X	2X	2X	2X
BES02K4	BES0452	BES01PW	BES02JW	
BES M12ML-PSC30A-S04G-W01	BES M12MG-PSC40A-S04G-W12	BES M12MD-PSC80E-S04G	BES M12MD1-PSC80E-S04G-W	
				BES02YU
				BES M12MD1-NSC80E-S04G
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	3 V	2.5 V	2.5 V	2.5 V
250 V AC (□)	60 V DC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)
200 mA	200 mA	200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C
2 kHz	2 kHz	2 kHz	2 kHz	2 kHz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 67	IP 67	IP 67	IP 67
CE	CE	CE	CE	CE
Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields
Brass, PTFE coated	Brass, PTFE coated	Brass, coated	Brass, PTFE coated	Brass, coated
Ceramic coating	PPS	LCP, PTFE coated	LCP, PTFE coated	PA 12
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

High-pressure sensors

Strokemaster sensors

Steelface sensors

High temperature sensors

Harsh environment sensors

Factor 1 sensors

Weld field immune sensors

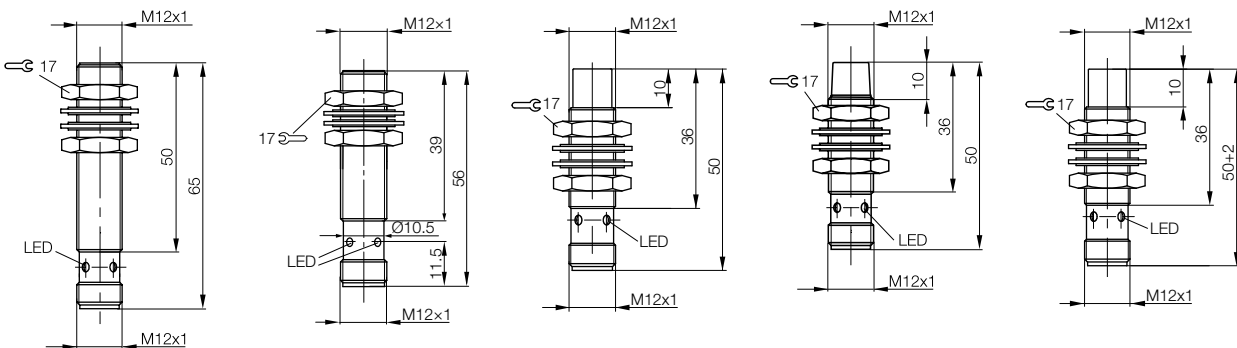
Large designs

Ring sensors

Tube sensors

Analog distance measurement

Accessories



Inductive Sensors with Special Properties

Factor 1

M12x1, M18x1

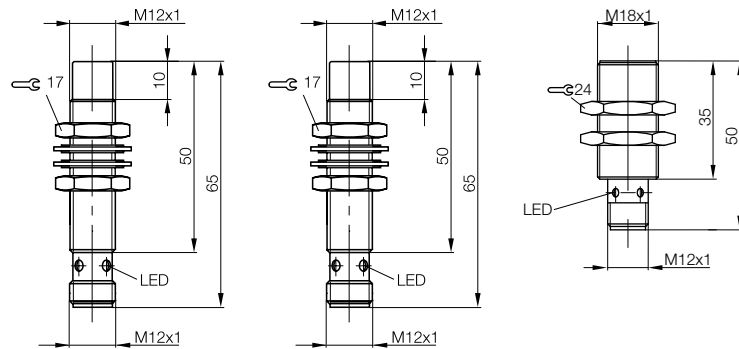


	M12x1	M12x1	M18x1
Housing size	M12x1	M12x1	M18x1
Installation type (observe instructions in the Basic Information chapter)	Non-flush	Non-flush	Flush
Rated switching distance s_n	8 mm	8 mm	5 mm
Assured switching distance s_a	0...6.5 mm	0...6.3 mm	0...4 mm
Sensing distance	2X	2X	1X
PNP, NO	Ordering code	BES02K5	BES02K6
	Part number	BES M12ML-PSC80E-S04G-W	BES M12ML-PSC80E-S04G-W01
		BES01R3	BES M18MF-PSC50A-S04G
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.	2.5 V	2.5 V	2.5 V
Rated insulation voltage U_i (protection class)	250 V AC (II)	250 V AC (II)	250 V AC (II)
Rated operating current I_e	200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70 °C	-25...+70 °C	-25...+70 °C
Switching frequency f max.	2 kHz	2 kHz	2.5 kHz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67
Approvals	CE	CE	CE
Special properties	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields
Material	Housing	Brass, PTFE coated	Brass, coated
	Sensing surface	LCP, PTFE coated	Ceramic coating
Connection	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.





Inductive Sensors with Special Properties

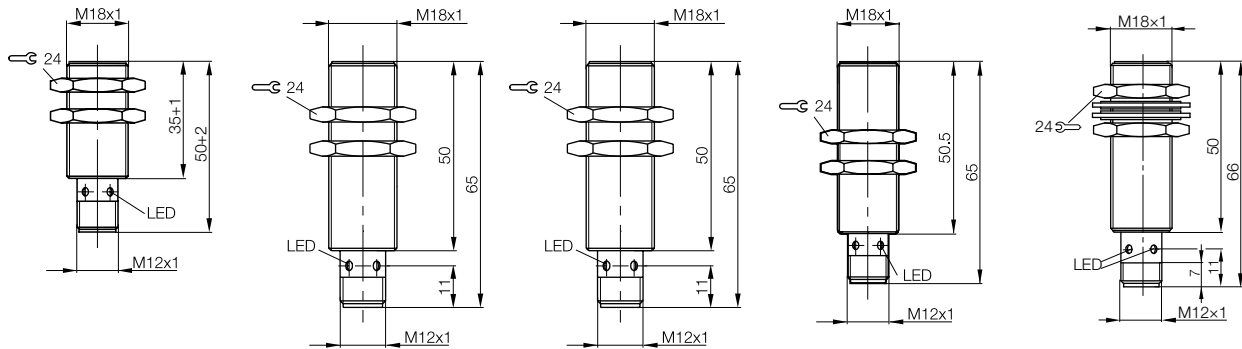
Factor 1 M18x1



M18x1	M18x1	M18x1	M18x1	M18x1	M18x1
Flush	Flush	Flush	Flush	Flush	Flush
5 mm	5 mm	5 mm	5 mm	5 mm	8 mm
0...4 mm	0...4 mm	0...3.9 mm	0...4 mm	0...4 mm	0...6.4 mm
1X	1X	1X	1X	1X	2X
BES02K9	BES02KJ	BES02KK	BES01R1	BES03YT	
BES M18MF1-PSC50A-S04G-W	BES M18ML-PSC50A-S04G-W	BES M18ML-PSC50A-S04G-W01	BES M18EL-PSH50A-S04G	BES M18MG-PSC80A-S04G-W	
10...30 V DC	10...30 V DC	10...30 V DC	10...55 V DC	10...30 V DC	
2.5 V	2.5 V	2.5 V	2 V	3 V	
250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)	60 V DC (□)	
200 mA	200 mA	200 mA	200 mA	200 mA	
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	
-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C	
2.5 kHz	2.5 kHz	2.5 kHz	600 Hz	350 Hz	
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED	
IP 67	IP 67	IP 67	IP 67	IP 67	
CE	CE	CE	CE	CE	
Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	
Brass, PTFE coated	Brass, PTFE coated	Brass, PTFE coated	Stainless steel	Brass, PTFE coated	
LCP, PTFE coated	LCP, PTFE coated	Ceramic coating	LCP	PPS	
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties**
- High-pressure sensors
- Strokemaster sensors
- Steelface sensors
- High temperature sensors
- Harsh environment sensors
- Factor 1 sensors
- Weld field immune sensors
- Large designs
- Ring sensors
- Tube sensors
- Analog distance measurement
- Accessories



Inductive Sensors with Special Properties

Factor 1 M18x1

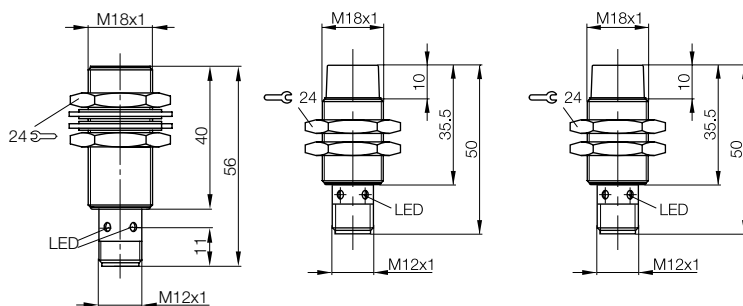


Housing size	M18x1	M18x1	M18x1
Installation type (observe instructions in the Basic Information chapter)	Flush	Non-flush	Non-flush
Rated switching distance s_n	8 mm	12 mm	12 mm
Assured switching distance s_a	0...6.4 mm	0...9.7 mm	0...9.7 mm
Sensing distance	2X	2X	2X
PNP, NO	Ordering code Part number	BES03YU BES M18MI-PSC80A-S04G-W	BES01R2 BES M18MD-PSC12E-S04G
PNP, NC	Ordering code Part number	BES02K7 BES M18MD-PSC12E-S04G-W	
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.	3 V	2.5 V	2.5 V
Rated insulation voltage U_i (protection class)	60 V DC (□)	250 V AC (□)	250 V AC (□)
Rated operating current I_e	200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70 °C	-25...+70 °C	-25...+70 °C
Switching frequency f max.	600 Hz	2.5 kHz	2.5 kHz
Output function indicator	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67
Approvals	CE	CE	CE
Special properties	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields
Material	Housing	Brass, PTFE coated	Brass, coated
	Sensing surface	PPS	LCP, PTFE coated
Connection	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.





Inductive Sensors with Special Properties

Factor 1 M18x1



M18x1	M18x1	M18x1	M18x1	
Non-flush	Non-flush	Non-flush	Quasi-flush	
12 mm	12 mm	12 mm	12 mm	
0...9.7 mm	0...9.5 mm	0...10.8 mm	0...9.7 mm	
2X	2X	2X	2X	
BES02KF	BES02KH		BES03YW	
BES M18ML-PSC12E-S04G-W	BES M18ML-PSC12E-S04G-W01		BES M18MG-PSC12A-S04G-W	
		BES01R0		
		BES M18EL-POC12E-S04G		
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	
2.5 V	2.5 V	2 V	3 V	
250 V AC (□)	250 V AC (□)	250 V AC (□)	60 V DC (□)	
200 mA	200 mA	200 mA	200 mA	
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	
-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C	
2.5 kHz	2.5 kHz	300 Hz	600 Hz	
Yellow LED	Yellow LED	Yellow LED	Yellow LED	
IP 67	IP 67	IP 67	IP 67	
CE	CE	CE	CE	
Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	
Brass, PTFE coated	Brass, PTFE coated	Stainless steel	Brass, PTFE coated	
LCP, PTFE coated	Ceramic coating	LCP	PPS	
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

High-pressure sensors

Strokemaster sensors

Steelface sensors

High temperature sensors

Harsh environment sensors

Factor 1 sensors

Weld field immune sensors

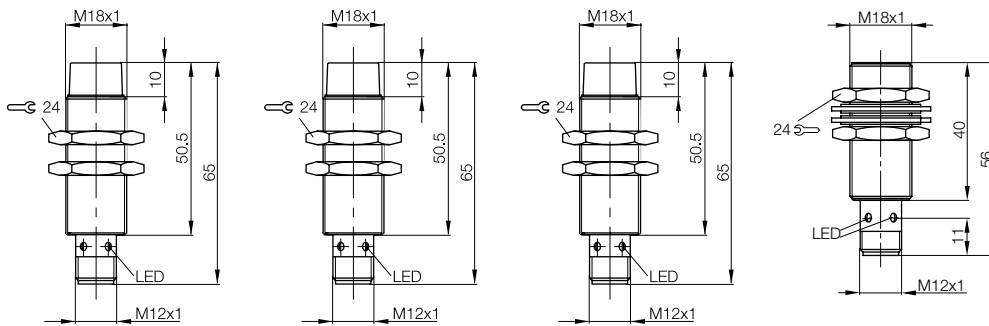
Large designs

Ring sensors

Tube sensors

Analog distance measurement

Accessories



Inductive Sensors with Special Properties

Factor 1 M30x1.5



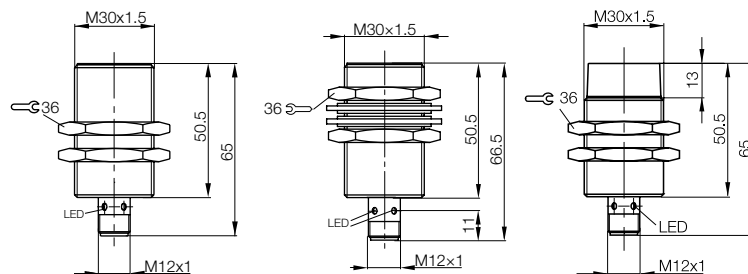
CE

Housing size		M30x1.5	M30x1.5	M30x1.5
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush	Non-flush
Rated switching distance s_n		10 mm	15 mm	20 mm
Assured switching distance s_a		0...8.1 mm	0...12.1 mm	0...16 mm
Sensing distance		1X	2X	2X
PNP, NO	Ordering code	BES02KM	BES0454	BES02KP
	Part number	BES M30ML-PSC10A-S04G-W	BES M30MI-PSC15A-S04G-W12	BES M30ML-PSC20E-S04G-W
PNP, complementary	Ordering code			
	Part number			
Supply voltage U_B		10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.		2.5 V	3 V	2.5 V
Rated insulation voltage U_i (protection class)		250 V AC (□)	60 V DC (□)	250 V AC (□)
Rated operating current I_e		200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70 °C	-25...+70 °C	-25...+70 °C
Switching frequency f max.		600 Hz	250 Hz	1 kHz
Output function/power-on indicator		Yellow LED/No	Yellow LED/No	Yellow LED/No
Degree of protection as per IEC 60529		IP 67	IP 67	IP 67
Approvals		CE	CE	CE
Special properties		Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields
Material	Housing	Brass, PTFE coated	Brass, PTFE coated	Brass, PTFE coated
	Sensing surface	LCP, PTFE coated	LCP, PTFE coated	LCP, PTFE coated
Possible installation variations				
Connection		M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable		BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

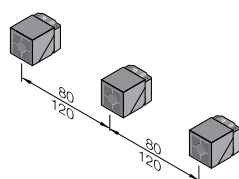
Additional cable lengths and PUR cable jacket material available on request.



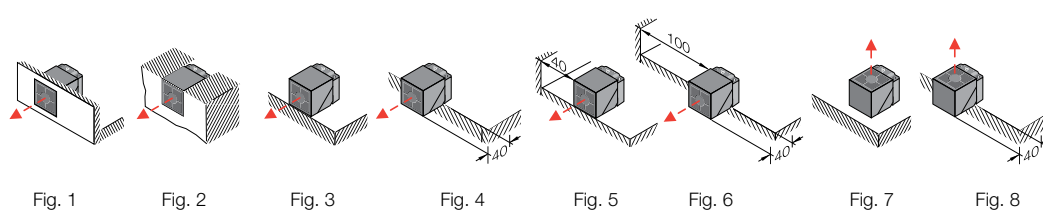
Row mounting

Flush 80 mm

Ø 120 mm non-flush



Permissible installation options





Inductive Sensors with Special Properties

Factor 1 M30x1.5, 40x40 mm Unicomact



M30x1.5	40x40 mm	40x40 mm
Non-flush	Flush	Flush
20 mm	15 mm	15 mm
0...16 mm	0...11.9 mm	0...11.9 mm
2X	1X	1X
BES03MZ	BES021P	BES021T
BES M30ML-PSC20E-S04G-W01	BES Q40KFU-PSC15A-S04G	BES Q40KFU-PSC15A-S04G-W01
	BES022K	BES0214
	BES Q40KFU-PAC15A-S04G	BES Q40KFU-PAC15A-S04G-W01
10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2.5 V	2.5 V
250 V AC (□)	250 V AC (□)	250 V AC (□)
200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70 °C	-25...+70 °C	-25...+70 °C
1 kHz	400 Hz	400 Hz
Yellow LED/No	Green LED/Yellow LED	Green LED/Yellow LED
IP 67	IP 67	IP 67
CE	CE	CE
Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields
Brass, PTFE coated	PBT	PBT, ceramic coating
Ceramic coating	PBT	PBT, ceramic coating
	Fig. 1...8	Fig. 1...8
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

High-pressure sensors

Strokemaster sensors

Steelface sensors

High temperature sensors

Harsh environment sensors

Factor 1 sensors

Weld field immune sensors

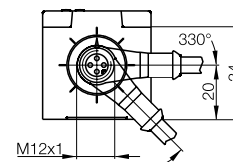
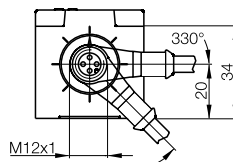
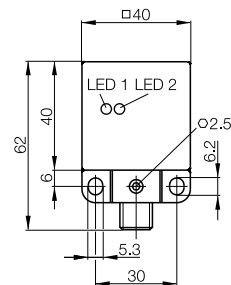
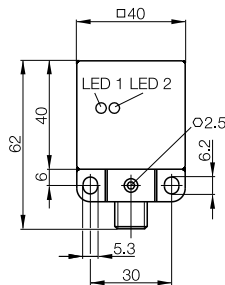
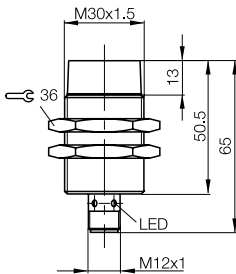
Large designs

Ring sensors

Tube sensors

Analog distance measurement

Accessories



Inductive Sensors with Special Properties

Factor 1

40x40 mm Unicompat

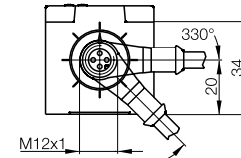
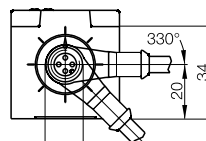
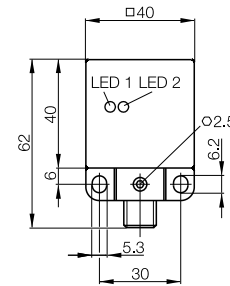
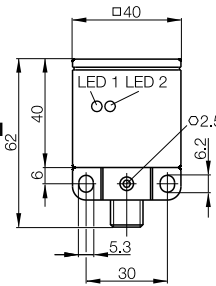


Housing size	40x40 mm	40x40 mm
Installation type (observe instructions in the Basic Information chapter)	Flush	Non-flush
Rated switching distance s_n	20 mm	25 mm
Assured switching distance s_a	0...16 mm	0...20.2 mm
Sensing distance	2X	1X
PNP, NO	Ordering code Part number	BES021U BES Q40KFU-PSC20A-S04G
PNP, complementary	Ordering code Part number	BES0216 BES Q40KFU-PAC20A-S04G
		BES021A BES Q40KFU-PAC25E-S04G
Supply voltage U_B	10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.	2.5 V	2.5 V
Rated insulation voltage U_i (protection class)	250 V AC (II)	250 V AC (II)
Rated operating current I_e	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-25...+70 °C	-25...+70 °C
Switching frequency f max.	400 Hz	250 Hz
Output function/power-on indicator	Green LED/Yellow LED	Green LED/Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 67
Approvals	CE	CE
Special properties	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields
Material	Housing: PBT Sensing surface: PBT	PBT PBT
Possible installation variations	Fig. 1...8	Fig. 3...8
Connection	M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.

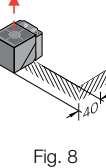
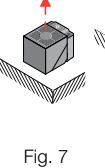
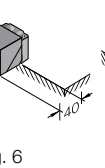
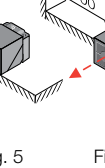
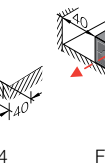
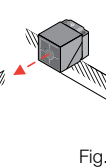
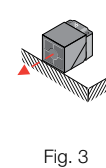
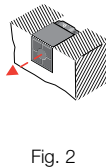
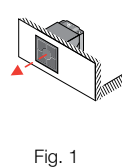
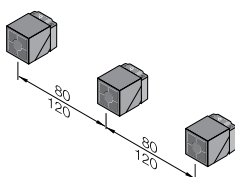


Row mounting

Flush 80 mm

Ø 120 mm non-flush

Permissible installation options





Inductive Sensors with Special Properties

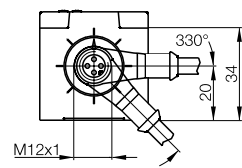
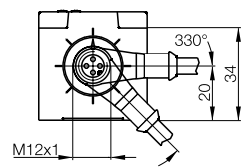
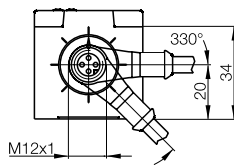
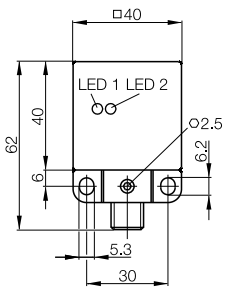
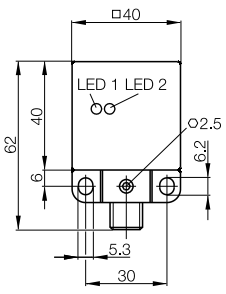
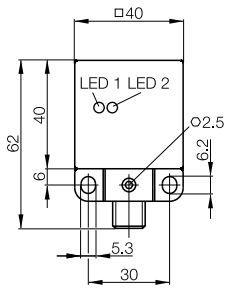
Factor 1 40x40 mm Unicompat



40x40 mm	40x40 mm	40x40 mm
Non-flush	Non-flush	Non-flush
35 mm	35 mm	40 mm
0...28.4 mm	0...28.1 mm	0...32.4 mm
1X	1X	2X
BES0220	BES0221	BES0223
BES Q40KFU-PSC35E-S04G	BES Q40KFU-PSC35E-S04G-W01	BES Q40KFU-PSC40E-S04G
BES021H	BES021K	
BES Q40KFU-PAC35E-S04G	BES Q40KFU-PAC35E-S04G-W01	
10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2.5 V	2.5 V
250 V AC (□)	250 V AC (□)	250 V AC (□)
200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-10...+70 °C	-10...+70 °C	-10...+70 °C
250 Hz	250 Hz	100 Hz
Green LED/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED
IP 67	IP 67	IP 67
CE	CE	CE
Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields
PBT	PBT, ceramic coating	PBT
PBT	PBT, ceramic coating	PBT
Fig. 3...8	Fig. 4...8	Fig. 4...8
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties**
- High-pressure sensors
- Strokemaster sensors
- Steelface sensors
- High temperature sensors
- Harsh environment sensors
- Factor 1 sensors
- Weld field immune sensors
- Large designs
- Ring sensors
- Tube sensors
- Analog distance measurement
- Accessories



Inductive Sensors with Special Properties

Weld field immune sensors/Factor 1

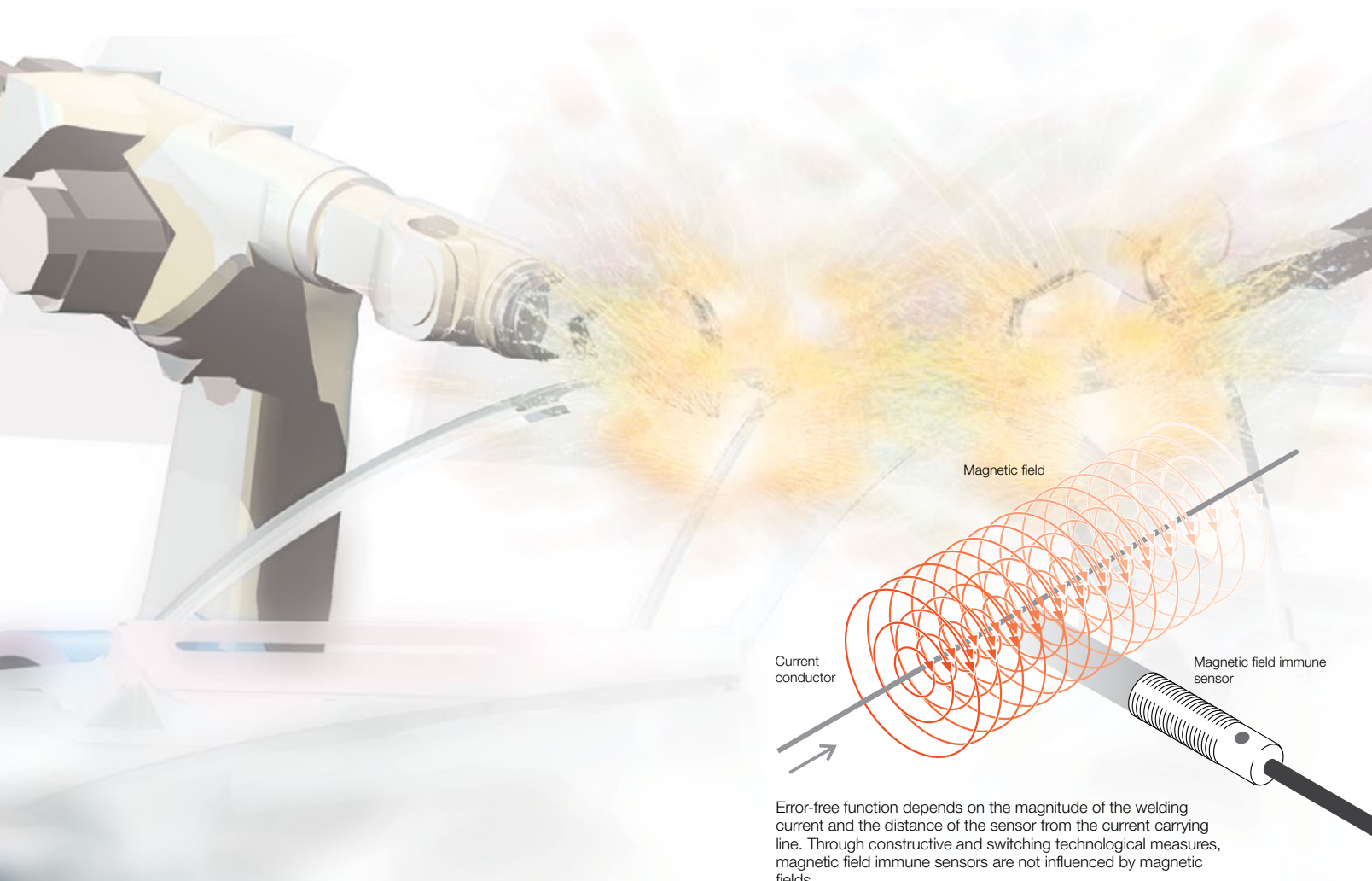
Weld field immune/Factor 1

Weld-immune sensors – for rough industrial applications

Magnetic field immune: Insensitive to magnetic fields which are created from electrical weld currents up to 25 kA (at a distance to the current conductor of approx. 5 cm).

Weld spatter-resistant: Resistant to weld slag which is created during welding processes.

Factor 1: Identical switching distance with metals such as steel, stainless steel, aluminum or brass.



Error-free function depends on the magnitude of the welding current and the distance of the sensor from the current carrying line. Through constructive and switching technological measures, magnetic field immune sensors are not influenced by magnetic fields.

Inductive Sensors with Special Properties

Weld field immune sensors

M12x1



CE



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

High-pressure sensors

Strokemaster sensors

Steelface sensors

High temperature sensors

Harsh environment sensors

Factor 1 sensors

Weld field immune sensors

Large designs

Ring sensors

Tube sensors

Analog distance measurement

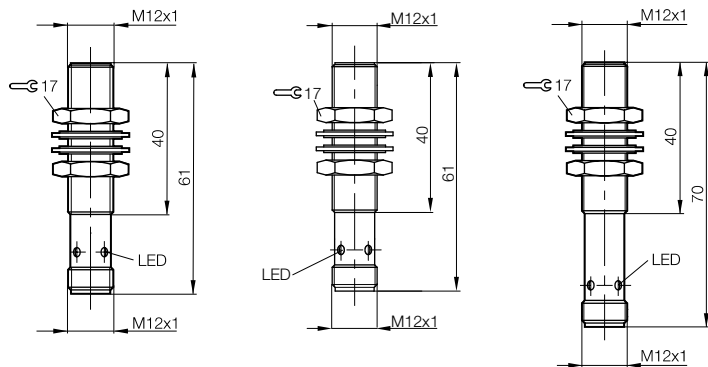
Accessories

Housing size		M12x1	M12x1	M12x1
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush	Flush
Rated switching distance s_n		2 mm	2 mm	2 mm
Assured switching distance s_a		1.6 mm	1.6 mm	1.6 mm
Sensing distance		1X	1X	1X
PNP, NO	Ordering code	BES02J6	BES02J5	BES02J7
	Part number	BES 516-325-S4-W	BES 516-325-S4-CW	BES 516-325-S4-WR
Supply voltage U_B		10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.		2.5 V	2.5 V	2.5 V
Rated insulation voltage U_i (protection class)		250 V AC (II)	250 V AC (II)	75 V DC
Rated operating current I_e		200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70 °C	-25...+70 °C	-25...+70 °C
Switching frequency f max.		1 kHz	1 kHz	1 kHz
Output function indicator		Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67	IP 67
Approvals		CE	CE	CE
Special properties		Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields
Material	Housing	Brass, PTFE coated	Stainless steel, PTFE coated	Stainless steel
	Sensing surface	LCP, PTFE coated	PTFE	Ceramic
Connection		M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable		BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



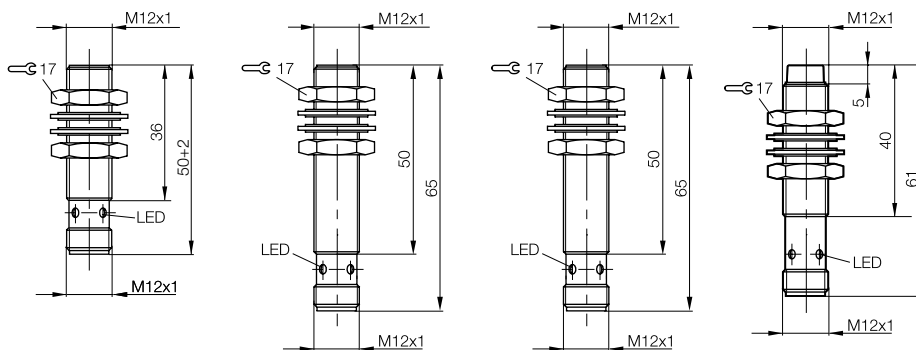


		M12x1	M12x1	M12x1	M12x1
Housing size		M12x1	M12x1	M12x1	M12x1
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush	Flush	Non-flush
Rated switching distance s_n		3 mm	3 mm	3 mm	4 mm
Assured switching distance s_a		2.2 mm	2.4 mm	2.2 mm	3.2 mm
Sensing distance		2X	2X	2X	1X
PNP, NO	Ordering code	BES02K0	BES02K1	BES02K2	BES02JN
	Part number	BES M12MF1-PSC30A-S04G-W01	BES M12MI-PSC30B-S04G-W	BES M12MI-PSC30B-S04G-W01	BES 516-356-S4-W
Supply voltage U_B		10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.		2.5 V	2.5 V	2.5 V	2.5 V
Rated insulation voltage U_i (protection class)		250 V AC (II)	250 V AC (II)	250 V AC (II)	250 V AC (II)
Rated operating current I_e		200 mA	200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-25...+70 °C	-5...+60 °C	-5...+60 °C	-25...+70 °C
Switching frequency f max.		2 kHz	300 Hz	300 Hz	1 kHz
Output function indicator		Yellow LED	Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67	IP 67	IP 67
Approvals		CE	CE	CE	CE
Special properties		Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields
Material	Housing	Brass, PTFE coated	Brass, PTFE coated	Brass, PTFE coated	Stainless steel, PTFE coated
	Sensing surface	Ceramic coating	LCP, PTFE coated	Ceramic coating	PTFE
Connection		M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable		BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



Inductive Sensors with Special Properties

Weld field immune sensors

M12x1, M18x1



M12x1	M18x1	M18x1	M18x1	M18x1
Non-flush	Flush	Flush	Flush	Flush
8 mm	4 mm	5 mm	5 mm	5 mm
6.3 mm	3.2 mm	3.9 mm	4 mm	4 mm
2X	1X	1X	1X	1X
BES02JY	BES03MY	BES02KA	BES02JA	BES02JC
BES M12MD1-PSC80E-S04G-W01	BES M18MI-PSC40B-S04G-W03	BES M18MF1-PSC50A-S04G-W01	BES 516-326-S4-W	BES 516-326-S4-WR
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
2.5 V	2.5 V	2.5 V	1.5 V	2.5 V
250 V AC (□)	75 V DC (□)	250 V AC (□)	250 V AC (□)	75 V DC
200 mA	200 mA	200 mA	200 mA	200 mA
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C
2 kHz	50 Hz	2.5 kHz	500 Hz	100 Hz
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED
IP 67	IP 67	IP 67	IP 67	IP 67
CE	CE	CE	CE	CE
Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields
Brass, PTFE coated	Brass, PTFE coated	Brass, PTFE coated	Brass, PTFE coated	Brass, PTFE coated
Ceramic coating	Ceramic coating	Ceramic coating	PTFE	Ceramic
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

High-pressure sensors

Strokemaster sensors

Steelface sensors

High temperature sensors

Harsh environment sensors

Factor 1 sensors

Weld field immune sensors

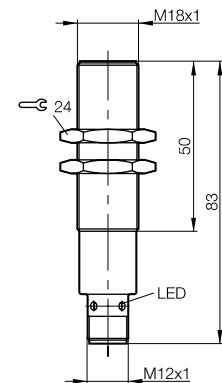
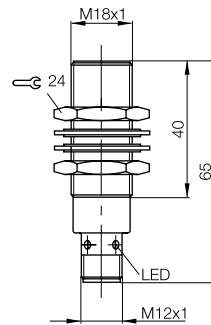
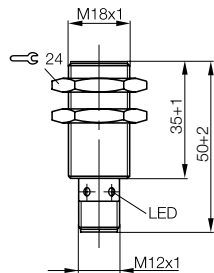
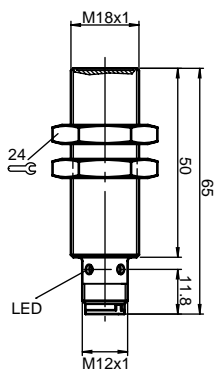
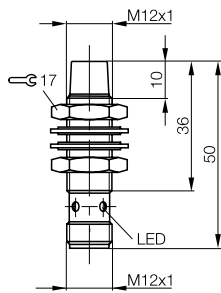
Large designs

Ring sensors

Tube sensors

Analog distance measurement

Accessories



Inductive Sensors with Special Properties

Weld field immune sensors/Factor 1 M18x1

Weld field immune/Factor 1

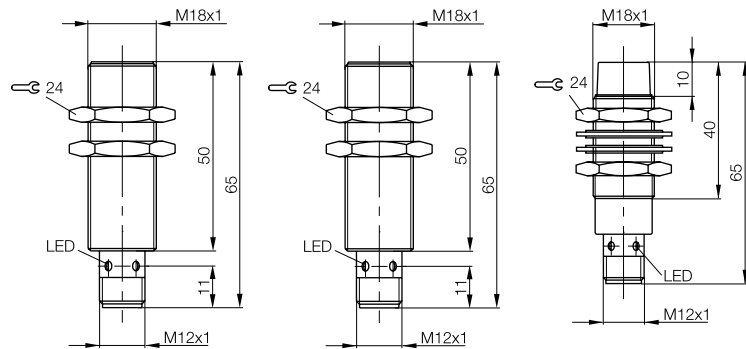


		M18x1	M18x1	M18x1
Housing size		M18x1	M18x1	M18x1
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush	Non-flush
Rated switching distance s_n		7 mm	7 mm	8 mm
Assured switching distance s_a		5.6 mm	5.5 mm	6.4 mm
Sensing distance		2X	2X	1X
PNP, NO	Ordering code	BES02KC	BES02KE	BES02JR
	Part number	BES M18MI-PSC70B-S04G-W	BES M18MI-PSC70B-S04G-W01	BES 516-360-S4-W
Supply voltage U_B		10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.		2.5 V	2.5 V	1.5 V
Rated insulation voltage U_i (protection class)		250 V AC (II)	250 V AC (II)	75 V DC
Rated operating current I_e		200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected		Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a		-5...+60 °C	-5...+60 °C	-25...+70 °C
Switching frequency f max.		50 Hz	50 Hz	200 Hz
Output function indicator		Yellow LED	Yellow LED	Yellow LED
Degree of protection as per IEC 60529		IP 67	IP 67	IP 67
Approvals		CE	CE	CE
Special properties		Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields
Material	Housing	Brass, PTFE coated	Brass, PTFE coated	Brass, PTFE coated
	Sensing surface	LCP, PTFE coated	Ceramic coating	PTFE
Connection		M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
Suggested mating cable		BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



Inductive Sensors with Special Properties

Weld field immune sensors/Factor 1

M18x1, M30x1.5



M18x1	M30x1.5	M30x1.5	M30x1.5	M30x1.5	M30x1.5
Non-flush	Flush	Flush	Flush	Flush	Flush
12 mm	10 mm	10 mm	10 mm	10 mm	13 mm
9.5 mm	8.1 mm	7.9 mm	8.1 mm	8.1 mm	10.5 mm
2X	1X	1X	1X	1X	1X
BES02K8	BES02JJ	BES02KN	BES02JK	BES02KL	
BES M18MD-PSC12E-S04G-W01	BES 516-327-S4-W	BES M30ML-PSC10A-S04G-W01	BES 516-327-S4-WR	BES M30MI-PSC13B-S04G-W	
10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	
2.5 V	1.5 V	2.5 V	2.5 V	2.5 V	
250 V AC (□)	250 V AC (□)	250 V AC (□)	75 V DC	250 V AC (□)	
200 mA	200 mA	200 mA	200 mA	200 mA	
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	
-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C	-5...+60 °C	
2.5 Hz	100 Hz	600 Hz	50 Hz	30 Hz	
Yellow LED	Yellow LED	Yellow LED	Yellow LED	Yellow LED	
IP 67	IP 67	IP 67	IP 67	IP 67	
CE	CE	CE	CE	CE	
Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	
Brass, PTFE coated	Brass, PTFE coated	Brass, PTFE coated	Brass, PTFE coated	Brass, PTFE coated	
Ceramic coating	PTFE	Ceramic coating	Ceramic	LCP, PTFE coated	
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

High-pressure sensors

Strokemaster sensors

Steelface sensors

High temperature sensors

Harsh environment sensors

Factor 1 sensors

Weld field immune sensors

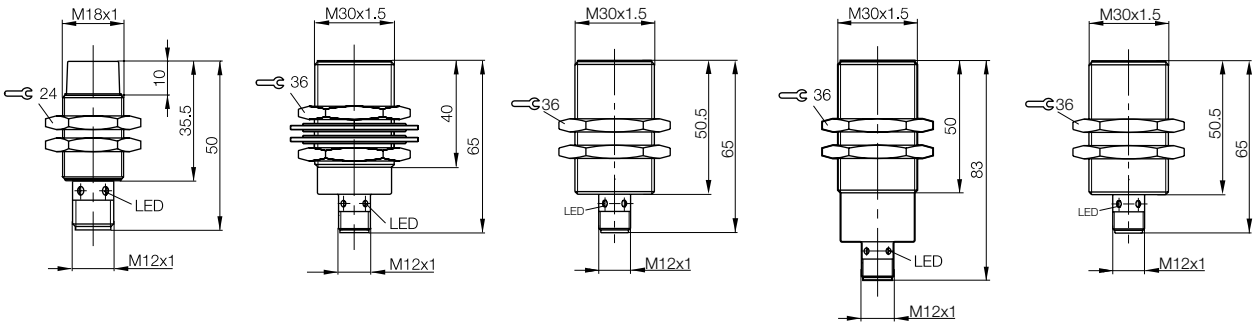
Large designs

Ring sensors

Tube sensors

Analog distance measurement

Accessories



Inductive Sensors with Special Properties

Weld field immune sensors/Factor 1 M30×1.5, 32×20×8 mm R01

Weld field immune/Factor 1

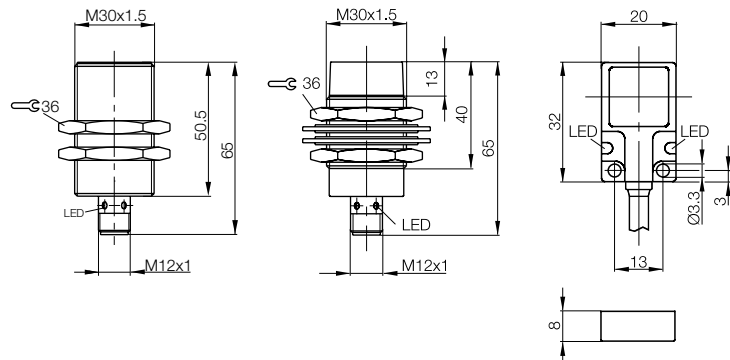


	M30×1.5	M30×1.5	32×20×8 mm R01
Housing size	M30×1.5	M30×1.5	32×20×8 mm R01
Installation type (observe instructions in the Basic Information chapter)	Flush	Non-flush	Flush
Rated switching distance s_n	13 mm	15 mm	5 mm
Assured switching distance s_a	10.3 mm	12.2 mm	4 mm
Sensing distance	1X	1X	1X
PNP, NO	Ordering code	BES03F1	BES02KW
	Part number	BES M30MI-PSC13B-S04G-W01	BES R01ZC-PSC50B-BX05-W01
Supply voltage U_B	10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop U_d at I_e max.	2.5 V	1.5 V	2.5 V
Rated insulation voltage U_i (protection class)	250 V AC (□)	250 V AC (□)	75 V DC
Rated operating current I_e	200 mA	200 mA	200 mA
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Ambient temperature T_a	-5...+60 °C	-25...+70 °C	-25...+70 °C
Switching frequency f max.	30 Hz	100 Hz	100 Hz
Output function/power-on indicator	Yellow LED/No	Yellow LED/No	Green LED/Yellow LED
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67
Approvals	CE	CE	CE
Special properties	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields	Interference-proof against magnetic AC and DC fields
Material	Housing	Brass, PTFE coated	Cast zinc
	Sensing surface	Ceramic coating	Ceramic coating
Connection	M12 connector, 4-pin	M12 connector, 4-pin	5 m PUR cable cross-linked, 24 AWG
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

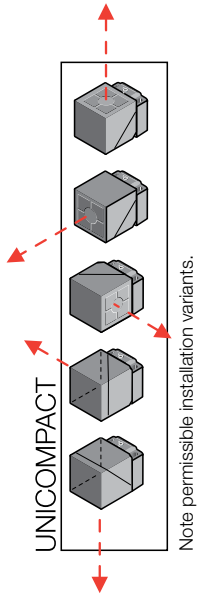
Additional cable lengths and PUR cable jacket material available on request.



Inductive Sensors with Special Properties

Weld field immune sensors/Factor 1

40x40 mm Unicompat

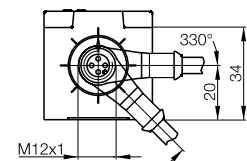
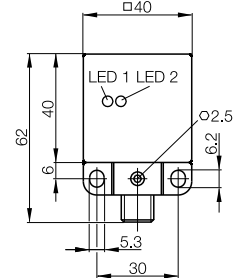


Housing size	40x40x62 mm	
Installation type (observe instructions in the Basic Information chapter)	Non-flush	
Rated switching distance s_n	40 mm	
Assured switching distance s_a	32.4 mm	
Sensing distance	2X	
PNP, complementary	Ordering code	BES02JR
	Part number	BES Q40KFU-PAC40E-S04G
Supply voltage U_B	10...30 V DC	
Voltage drop U_d at I_e max.	2.5 V	
Rated insulation voltage U_i (protection class)	250 V AC (II)	
Rated operating current I_e	200 mA	
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	
Ambient temperature T_a	-10...+70 °C	
Switching frequency f max.	100 Hz	
Output function/power-on indicator	Green LED/Yellow LED	
Degree of protection as per IEC 60529	IP 67	
Approvals	CE	
Special properties	Interference-proof against magnetic AC and DC fields	
Material	Housing	PBT
	Sensing surface	PBT
Possible installation variations	Fig. 3...8	
Connection	M12 connector, 4-pin	
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

High-pressure sensors

Strokemaster sensors

Steelface sensors

High temperature sensors

Harsh environment sensors

Factor 1 sensors

Weld field immune sensors

Large designs

Ring sensors

Tube sensors

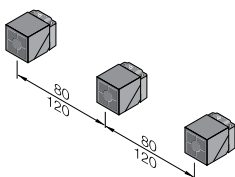
Analog distance measurement

Accessories

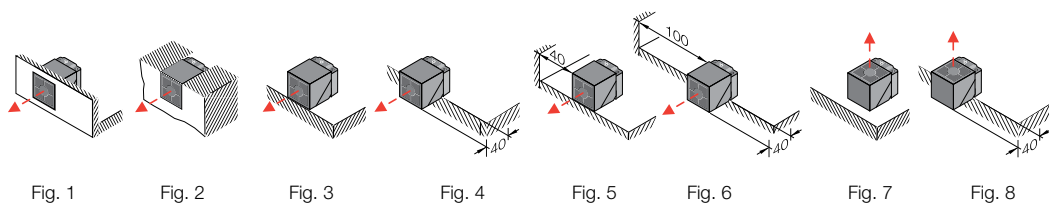
Row mounting

Flush 80 mm

Ø 120 mm non-flush



Permissible installation options



Inductive Sensors with Special Properties

Large housing

Extended switching distance

Large Housing Sensors

Certain inductive sensor applications call for exceptionally long sensing ranges. With their large-diameter sensing coils, Balluff's large housing inductive sensors meet these requirements. Available in round housing diameters from 80 mm to 163 mm and in rectangular housing dimensions of 100x35x35 mm or 200x35x35 mm, with sensing distances up to 100 mm in some models. A choice of AC or DC versions suit a wide range of control interface needs.

- AC Long Range Pancake Style
- DC Long Range Pancake Style
- Bar Style



Inductive Sensors with Special Properties

AC long range pancake style



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

High-pressure sensors

Strokemaster sensors

Steelface sensors

High temperature sensors

Harsh environment sensors

Factor 1 sensors

Weld field immune sensors

Large designs

Ring sensors

Tube sensors

Analog distance measurement

Accessories

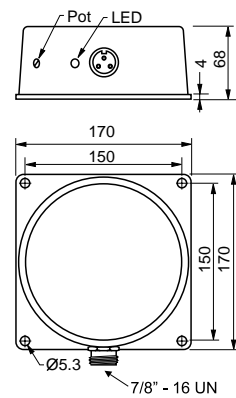
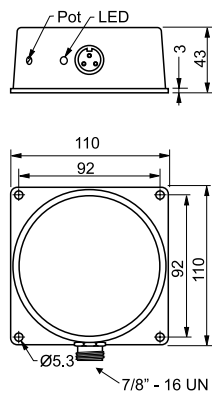
Housing size	Ø 100 mm	Ø 163 mm
Mounting	non-flush	non-flush
Rated operating distance S_n	35-105 mm	50-120 mm
AC Normally-open	Ordering code BES02T0	BES02T5
	Part number BES IKN-S5-070-W-4-S	BES IKO-S5-100-W-4-S
AC Normally-closed	Ordering code BES02T0	BES02T4
	Part number BES IKN-S5-070-W-4-O	BES IKO-S5-100-W-4-O
Nominal sensing distance S_n	70mm	100mm
Adjustable range	35...105mm	50...120 mm
Supply voltage	15-350 Vdc, 20-260 Vac	85-140 Vac
Supply frequency	45-65 Hz	45-65 Hz
Target	Steel, 1 mm thick	Steel, 1 mm thick
Switching hysteresis	$\leq 15\%$ of S_n	$\leq 15\%$ of S_n
Repeatability	$\leq 5\%$ of S_n	$\leq 5\%$ of S_n
Ambient temperature range	-25° C...+70° C	-25° C...+70° C
Temperature drift	$\leq 5\%$ of S_n	$\leq 10\%$ of S_n
Function display	LED	LED
Current consumption minimum	5 mA	5 mA
Current consumption maximum	300 mA	500 mA
Short-time load current maximum	1 A/100 msec	1 A/100 msec
Short circuit protection	yes	yes
Leakage current	≤ 1.5 ma @ 110 Vac	≤ 1.5 ma @ 110 Vac
Voltage drop V_d	≤ 10 V at 5 mA load	≤ 10 V at 5 mA load
Overload protection	yes	yes
Housing material	Makrolon Polyester	Makrolon Polyester
Mounting type	Surface mounting - 4 mounting holes	Surface mounting - 4 mounting holes
Protection class per DIN 40050	IP 67, NEMA 4, 4X, 6, 12, 13	IP 67, NEMA 4, 4X, 6, 12, 13
Recommended connector	BCC A313-0000-10-071-VX43W6-050	BCC A313-0000-10-071-VX43W6-050

For wiring diagram see page 958.

These sensors are specifically designed for use in heavy industrial environments such as:

- Automotive Manufacturing
- Steel Mills
- Assembly and Fabrication Lines
- Pipe and Rod Mills
- Conveyors

Additional models may be available. Refer to company website for details

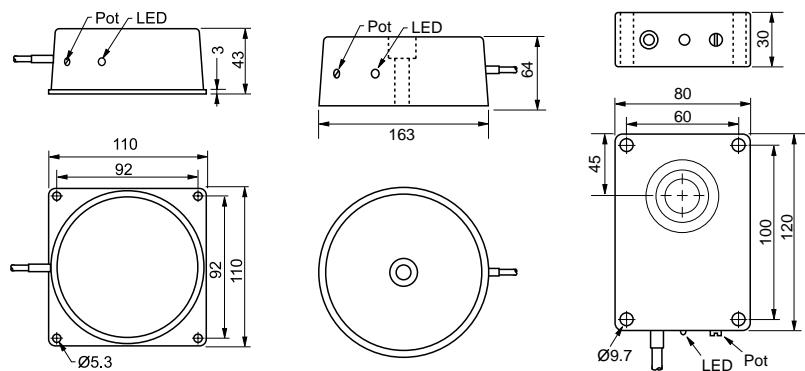




Housing size	Ø 100 mm	Ø 163 mm	120 x 80 x 30
Mounting	non-flush	non-flush	non-flush
Rated operating distance S_n	70 mm	100 mm	50 mm
PNP Normally-open	Ordering code	BES02RW	BES02T8
	Part number	BES IKN-K-070-P-1-S	BES IKRD-K-050-P-1-S
PNP Normally-closed	Ordering code		BES02T7
	Part number		BES IKRD-K-050-P-1-O
NPN Normally-open	Ordering code		BES02T6
	Part number		BES IKRD-K-050-N-1-S
Rated operational voltage U_o	24 Vdc	24 Vdc	24 Vdc
Supply voltage U_B	10...30 Vdc	10...30 Vdc	10...30 Vdc
Voltage drop U_d at I_o	≤ 2.5 V	≤ 2.5 V	≤ 2.5 V
Rated insulation voltage U_i	75 Vdc	75 Vdc	75 Vdc
Load current capacity	≤ 400 mA	≤ 500 mA	≤ 200 mA
Current consumption (closed/open)	≤ 25 mA / ≤ 12 mA	≤ 25 mA / ≤ 12 mA	≤ 25 mA / ≤ 12 mA
Protected against polarity reversal	yes	yes	yes
Short circuit protected	yes	yes	yes
Load capacitance	≤ 1 μ F $\leq 5\%$	≤ 1 μ F $\leq 5\%$	≤ 1 μ F $\leq 5\%$
Repeat accuracy R	-25°...+70°C	-25°...+70°C	-25°...+70°C
Ambient temperature range T_a	80 Hz	100 Hz	100 Hz
Operating frequency f	yes	yes	yes
Function indication	IP 67*	IP 67*	IP 67*
Degree of protection per IEC 60529	plastic PBT	plastic	plastic
Housing material	plastic PBT	plastic	plastic
Material of sensing face	cable	cable	cable
Connection	3 x 22 AWG	3 x 22 AWG	3 x 22 AWG

* Meets IP67 when potentiometer cover screw is properly installed.

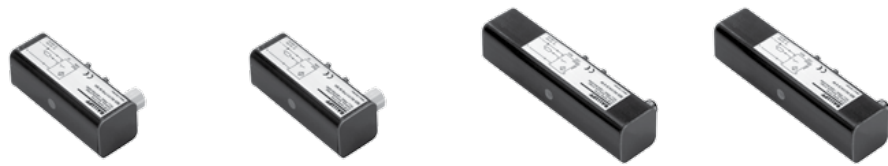
For wiring diagram see page 958.



Inductive Sensors with Special Properties

3-wire DC, 2-wire AC

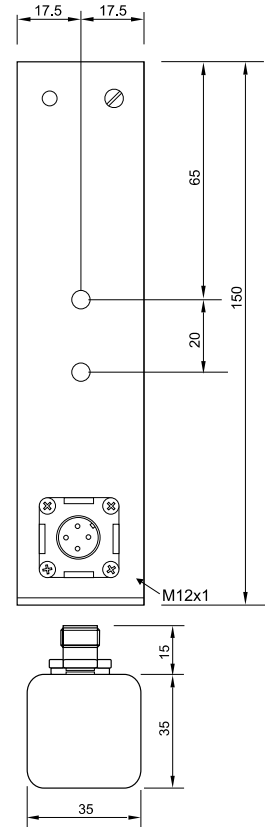
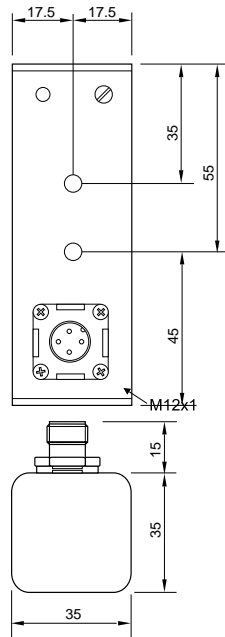
Long range bar style



Housing size	100 x 35 x 35	100 x 35 x 35	150 x 35 x 35	150 x 35 x 35
Mounting	non-flush	non-flush	non-flush	non-flush
Rated operating distance S_n	5...45 mm adjustable	30 mm factory set	5...45 mm adjustable	12 mm factory set
PNP	BES02TC	BES02TE	BES02TH	BES02TK
Normally-open	Ordering code	Part number	Part number	Part number
	BES IKU-011-P-1-S-S4-SA1	BES IKU-011.23-G-S4-SA2	BES IKU-015-23-G-S4	BES IKU-015.23-G-S4-SA1
Rated operational voltage	24 Vdc	24 Vdc	24 Vdc	24 Vdc
Supply voltage	10...30Vdc	10...30Vdc	10...30Vdc	10...30 Vdc
Voltage drop at output	≤ 2.0 V	≤ 2.0 V	≤ 2.0 V	≤ 2.0 V
Load current capacity	≤ 400 mA	≤ 400 mA	≤ 400 mA	≤ 400 mA
Reverse polarity protection	yes	yes	yes	yes
Short circuit protected	yes	yes	yes	yes
Ambient temperature range	-25...+70°C	-25...+70°C	-25...+70°C	-25...+70°C
Operating frequency (max.)	50 Hz	50 Hz	50 Hz	50 Hz
Function indication	yes	yes	yes	yes
Degree of protection per IEC 60529	IP 65	IP 65	IP 65	IP 65
Housing material	plastic	plastic	plastic	plastic
Sensing face material	plastic	plastic	plastic	plastic
Connection	connector	connector	connector	connector
Recommended connector	BCC M415-0000-1A-003-VX44T2-050	BCC M415-0000-1A-003-VX44T2-050	BCC M415-0000-1A-003-VX44T2-050	BCC M415-0000-1A-003-VX44T2-050

- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties**
- High-pressure sensors
- Strokemaster sensors
- Steelface sensors
- High temperature sensors
- Harsh environment sensors
- Factor 1 sensors
- Weld field immune sensors
- Large designs
- Ring sensors
- Tube sensors
- Analog distance measurement
- Accessories

For wiring diagram see page 958.



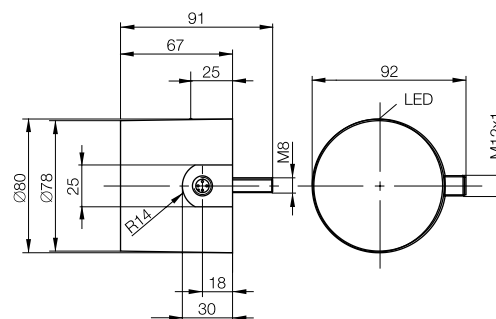


Housing size	Ø 80x67 mm	
Installation type (observe instructions in the Basic Information chapter)	Non-flush	
Rated switching distance s_n	50 mm	
Assured switching distance s_a	0...40.5 mm	
Sensing distance	1X	
PNP, NO	Ordering code	BES02RN
	Part number	BES IKJ-S-050-P-2-S-S4-C
PNP, complementary	Ordering code	
	Part number	
Supply voltage U_B	10...55 V DC	
Voltage drop U_d at I_e max.	2 V	
Rated insulation voltage U_i	75 V DC	
Rated operating current I_e	200 mA	
Output resistance R_a	Open collector	
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	
Ambient temperature T_a	-25...+70 °C	
Switching frequency f max.	100 Hz	
Output function/power-on indicator	Red LED/No	
Degree of protection as per IEC 60529	IP 67	
Approvals	CE	
Material	Housing	PBT
	Sensing surface	PBT
Connection	M12 connector, 4-pin	
Suggested mating cable	BCC M415-0000-1A-003-EX44T2-020	

See technical section (page 963-966) for installation instructions.

For wiring diagram see page 958.

Additional cable lengths and PUR cable jacket material available on request.



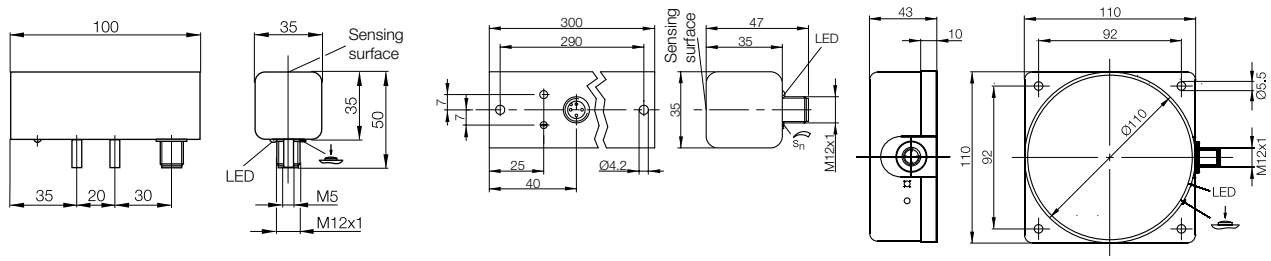
Inductive Sensors with Special Properties

Large designs



35×35×100 mm	35×35×300 mm	110×110×43 mm
Non-flush	Non-flush	Non-flush
30 mm (adjustable with teach-in key)	30 mm (adjustable)	70 mm (adjustable with teach-in key)
0...24.3 mm	0...24.3 mm	0...56.7 mm
1X	1X	1X
BES02TF	BES02TN	BES02RU
BES IKU-011T.28-G-S4	BES IKU-031.28-S4	BES IKN-070T.38-G-S4
10...30 V DC	10...30 V DC	10...55 V DC
2 V	2 V	2 V
75 V DC	75 V DC	75 V DC
400 mA	200 mA	200 mA
Open collector	Open collector	Open collector
Yes/Yes/Yes	Yes/Yes/No	Yes/Yes/Yes
-25...+70 °C	-25...+70 °C	0...+70 °C
50 Hz	50 Hz	50 Hz
Red LED/No	Red LED/No	Red LED/Green LED (1 LED with color change)
IP 65	IP 65	IP 67
CE	CE	CE
PVC	PVC	PBT
PVC	PVC	PBT
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020

- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties**
- High-pressure sensors
- Strokemaster sensors
- Steelface sensors
- High temperature sensors
- Harsh environment sensors
- Factor 1 sensors
- Weld field immune sensors
- Large designs
- Ring sensors
- Tube sensors
- Analog distance measurement
- Accessories



Inductive Sensors with Special Properties

Ring sensors

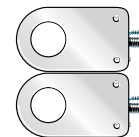
Ring sensors



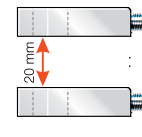
Housing size	
Installation type (observe instructions in the Basic Information chapter)	
Inside diameter d_w	
Minimum object size steel taper (St 37)	
Target velocity max.	
PNP, NO	Ordering code
	Part number
Supply voltage U_B	
Voltage drop U_d at I_e max.	
Rated insulation voltage U_i	
Rated operating current I_e	
Output resistance R_a	
Polarity reversal protected/transposition protected/short-circuit protected	
Ambient temperature T_a	
Switching frequency f max.	
Output function/power-on indicator	
Degree of protection as per IEC 60529	
Approvals	
Material	Housing
	Sensing surface
Connection	
Suggested mating cable	
Pulse stretching	

For wiring diagram see page 958.

Installation in series:



Installation in a stack:



- Easy installation (since they can be mounted side-by-side and universally installed and can be stacked with a spacing of > 20 mm)
- Very reliable (due to inductive sensor principle)
- Optimal for detecting small parts (with integrated pulse extension, permanently set)

Applications

- Detection of nails, screws, welded studs, rivets, etc.
- Eject monitoring
- Part counting
- Checking for wire breaks
- Nail machines for creating pallets
- Feed check in assembly technology
- Blockage warning in feed hoses

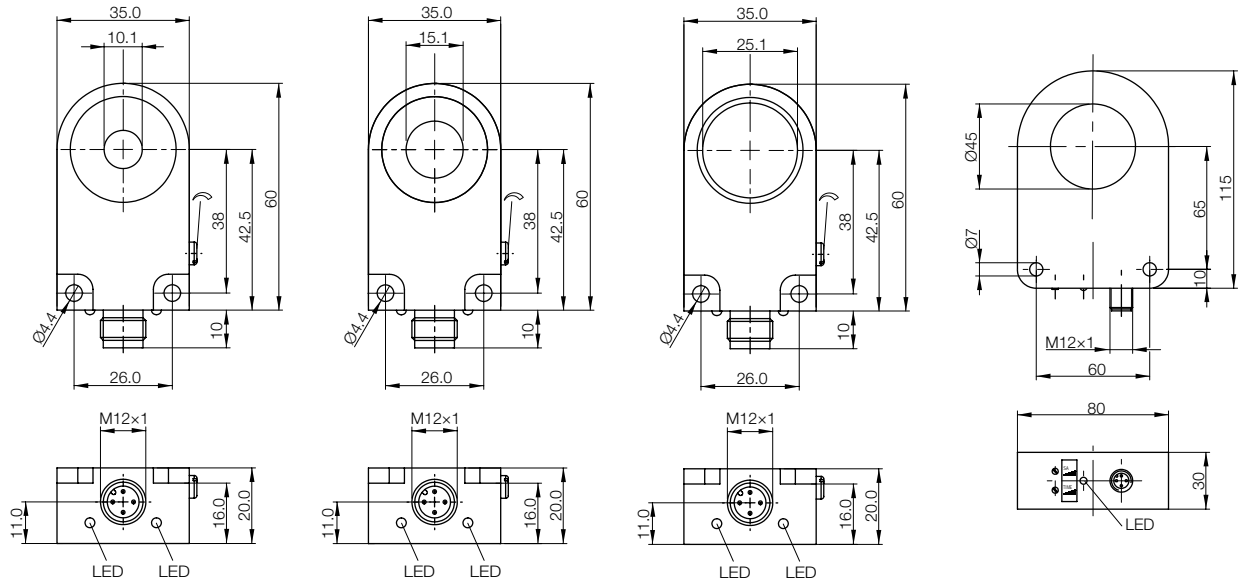
Inductive Sensors with Special Properties

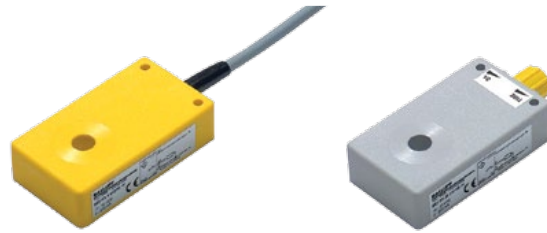
Ring sensors, 35×60×20 mm, 115×80×30 mm



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties**
- High-pressure sensors
- Strokemaster sensors
- Steelface sensors
- High temperature sensors
- Harsh environment sensors
- Factor 1 sensors
- Weld field immune sensors
- Large designs
- Ring sensors
- Tube sensors
- Analog distance measurement
- Accessories

35×60×20 mm	35×60×20 mm	35×60×20 mm	115×80×30 mm
Non-flush	Non-flush	Non-flush	Non-flush
Ø 10.1 mm	Ø 15.1 mm	Ø 25.1 mm	Ø 45 mm
Ø 2 mm	Ø 3 mm	Ø 4 mm	Ø 9 mm
60 m/s	60 m/s	60 m/s	20 m/s
BES03JA	BES03JC	BES03JH	BES02TJ
BES IKVS-010.23-G-S4	BES IKVS-015.23-G-S4	BES IKVS-025.23-G-S4	BES IKV-045.23-G-Z-S4
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
400 mA	400 mA	400 mA	200 mA
Open collector	Open collector	Open collector	Open collector
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C
16 Hz	16 Hz	16 Hz	16 Hz
Green LED/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED	Green LED/Yellow LED
IP 65	IP 65	IP 65	IP 65
CE	CE	CE	CE
PBT	PBT	PBT	PBT
PVC	PVC	PVC	PBT
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020
60 ms	60 ms	60 ms	Can be set between 2.5...250 ms



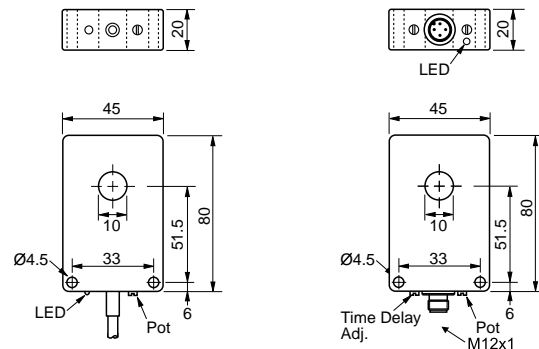


Housing size	80 x 45 mm	80 x 45 mm	
Mounting	flush**	flush	
Rated operating distance S_n	Ø 10 mm	Ø 10 mm	
PNP Normally-open	Ordering code	BES02U1	
	Part number	BES IKV-K-010-PS-1-Y	
PNP Normally-closed	Ordering code	BES02U0	
	Part number	BES IKV-K-010-PO-1-Y	
NPN Normally-open	Ordering code		BES02U8
	Part number		BES IKV-S4-010-NS-1-Y-TD
NPN Normally-closed	Ordering code		
	Part number		
Rated operational voltage U_o	24 Vdc	24 Vdc	
Supply voltage U_B	10...30 Vdc	10...30 Vdc	
Voltage drop U_d at I_o	≤ 3.5 Vdc	≤ 2.0 Vdc	
Load current capacity	≤ 200 mA	≤ 200 mA	
Current consumption (closed/open)	≤ 12 mA	≤ 12 mA	
Protected against polarity reversal	yes	yes	
Short circuit protected	yes	yes	
Repeat accuracy R	≤ 5%	≤ 5%	
Ambient temperature range T_a	-25... +70°C	-25... +70°C	
Operating frequency f	≤ 1000 Hz	4-400 Hz	
Function indication	yes	yes	
Degree of protection per IEC 60529	IP 65	IP 65	
Housing material	plastic	plastic	
Material of sensing face	plastic	plastic	
Connection	3 x 20 AWG	M12 connector, 4-pin	
No. of wires x gauge			
Recommended connector		BCC M415-0000-1A-003-EX44T2-020	

For wiring diagram see page 958.

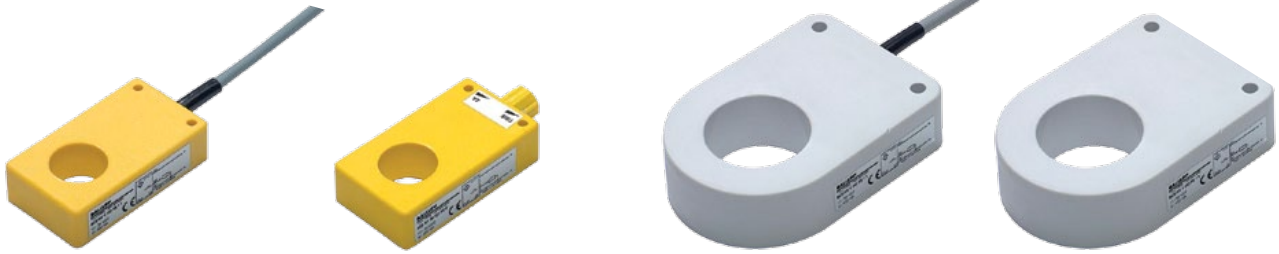
Standard cable length = 2 m PVC
 Other cable lengths and jacket materials may be available. Additional models may also exist. Refer to company website for details.

** Flush mounting is possible when adjusted for minimum sensing distance.



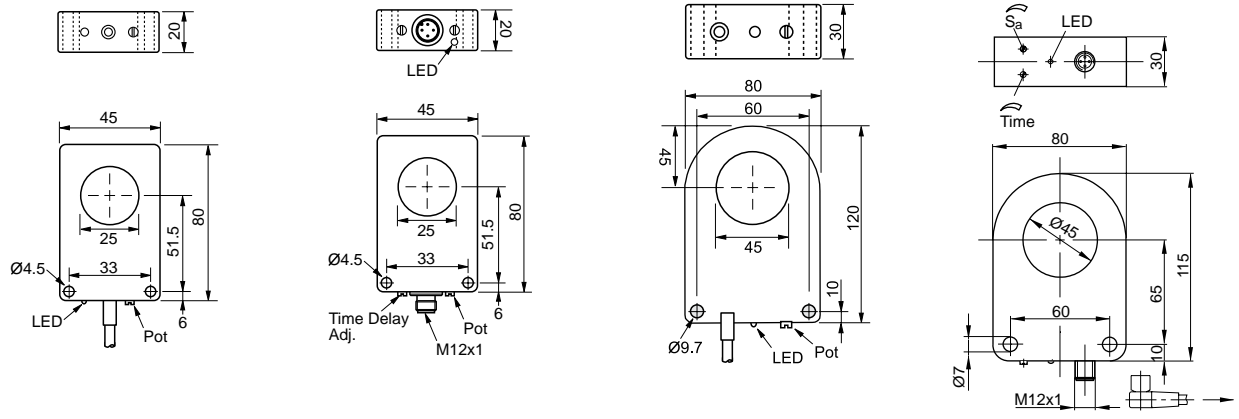
Inductive Sensors with Special Properties

DC 3/4-wire ring sensors, 35×60×20 mm, 115×80×30 mm



80 x 45 mm	80 x 45 mm	120 x 80 mm	115 x 80 mm
non-flush	non-flush	non-flush	non-flush
Ø 25 mm	Ø 25 mm	Ø 45 mm	Ø 45 mm
BES02UY	BES02TW	BES02U7	BES02TY
BES IKV-K-025-PS-1-Y	BES IKV-025.23-G-Z-S4	BES IKV-K-045-PS-1-Y	BES IKV-045.23-G-Z-S4
BES02U3		BES02U6	
BES IKV-K-025-PO-1-Y		BES IKV-K-045-PO-1-Y	
	BES02UE	BES02U5	
	BES IKV-S4-025-NS-1-Y-TD	BES IKV-K-045-NS-1-Y	
BES02U2			
BES IKV-K-025-NS-1-Y			
24 Vdc	24 Vdc	24 Vdc	24 Vdc
10...30 Vdc	10...30 Vdc	10...30 Vdc	18...30 Vdc
≤ 3.5 Vdc	≤ 2.0 Vdc	≤ 3.5 Vdc	≤ 20 Vdc
≤ 200 mA	≤ 200 mA	≤ 400 mA	≤ 200 mA
≤ 12 mA	≤ 12 mA	≤ 12 mA	≤ 12 mA
yes	yes	yes	yes
yes	yes	yes	yes
≤ 5%	≤ 5%	≤ 5%	≤ 5%
-25... +70°C	-25... +70°C	-25... +70°C	-25... +70°C
≤ 1000 Hz	4-400 Hz	≤ 100 Hz	yes
yes	yes	yes	IP 65
IP 65	IP 65	IP 65	plastic
plastic	plastic	plastic	plastic
plastic	plastic	plastic	M12 connector, 4-pin
3 x 20 AWG	M12 connector, 4-pin	3 x 20 AWG	
	BCC M415-0000-1A-003-EX44T2-020		BCC M415-0000-1A-003-EX44T2-020

- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
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- Steelface sensors
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- Harsh environment sensors
- Factor 1 sensors
- Weld field immune sensors
- Large designs
- Ring sensors
- Tube sensors
- Analog distance measurement
- Accessories



Inductive Sensors with Special Properties

Tube sensors, 17x78.5x11.9 mm

Tube sensors

Inductive tube sensors BES extend our line of ring sensors. Optimized for tube infeeds in automated assembly, they detect small parts easily and reliably.

- Simple attachment to the infeed tube
- Pulse extension of 150 ms results in a reliable detection of fast-moving parts.
- Object speed max. 20 m/s



Inductive Sensors with Special Properties

Tube sensors, 17×78.5×11.9 mm



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

High-pressure sensors

Strokemaster sensors

Steelface sensors

High temperature sensors

Harsh environment sensors

Factor 1 sensors

Weld field immune sensors

Large designs

Ring sensors

Tube sensors

Analog distance measurement

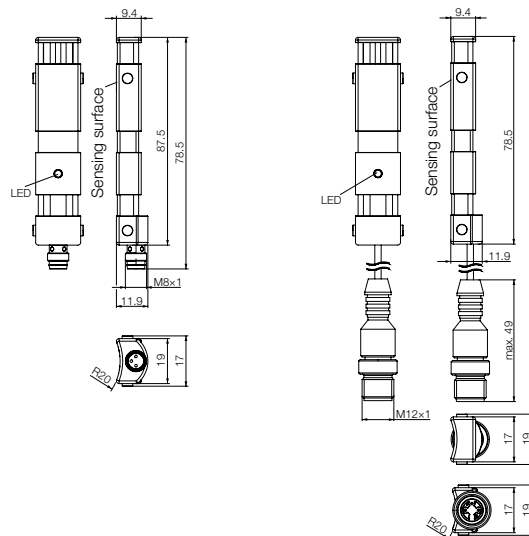
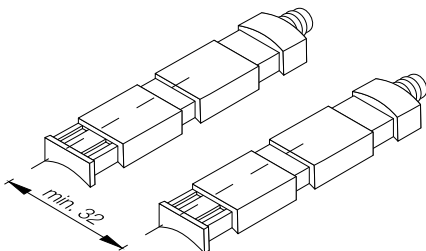
Accessories

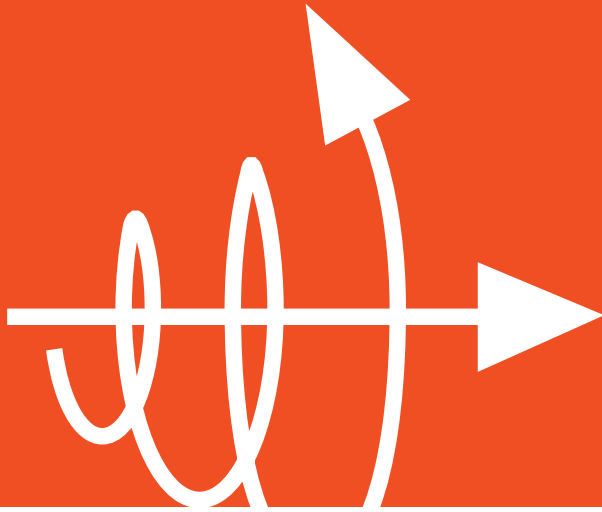
Housing size	17×78.5×11.9 mm		17×78.5×11.9 mm
Installation type (observe instructions in the Basic Information chapter)	Non-flush		Non-flush
Minimum object size	Screw M3×5		Screw M3×5
Rated switching distance s_n	16 mm		16 mm
Assured switching distance s_a	12.8 mm		12.8 mm
Sensing distance	1X		1X
PNP, NO	Ordering code	BES0428	BES0429
	Part number	BES Z06K-PSC16F-S49G	BES Z06K-PSC16F-BP00,1-GS04
Supply voltage U_B	10...30 V DC		10...30 V DC
Voltage drop U_d at I_o max.	2.5 V		2.5 V
Rated insulation voltage U_i	75 V DC		75 V DC
Rated operating current I_o	200 mA		200 mA
Output resistance R_a	Open collector		Open collector
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes		Yes/Yes/Yes
Ambient temperature T_a	-25...+70 °C		-25...+70 °C
Switching frequency f max.	10 Hz		10 Hz
Output function indicator	Yellow LED		Yellow LED
Degree of protection as per IEC 60529	IP 67		IP 67
Approvals	CE		CE
Material	Housing	PA 6.6	PA 6.6
	Sensing surface	UN 3082	UN 3082
Connection	M8 connector, 3-pin		0.1 m PUR cable with M12 connector, 3-pin
Suggested mating cable	BCC M313-0000-10-001-EX43T2-020		BCC M415-0000-1A-003-EX44T2-020
Pulse stretching	150 ms		150 ms

For wiring diagram see page 958.

Rated switching distance s_n relative to steel plate FE360 (18×18×1 mm)

Centerline spacing for side-by-side mounting





Inductive Sensors

Inductive sensors for analog distance measurement

Balluff inductive distance sensors BAW provide an absolute voltage- or current signal that changes proportionally to the distance of a metallic target. Objects of varying shape and size made of ferrous or non-ferrous materials damp the sensor to different degrees. This provides a simple way of detecting positions, distances and material differences.





Inductive Sensors for Analog Distance Measurement

Contents

Tubular-style housings

Ø 6.5	720
M8×1	720
M12×1	721
M18×1	725
M30×1.5	728
PG36	729
M12×1 high-pressure resistant	730

Block designs

10×30×6 mm (R03)	731
20×30×8 mm (R06)	732
14×38.5×17 (Z05)	733
80×80×40 mm	734



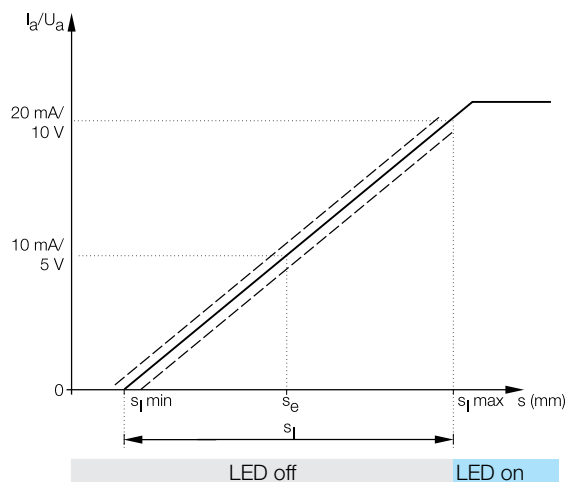
Inductive Sensors for Analog Distance Measurement

Features, approach curve, processing programmable switch points

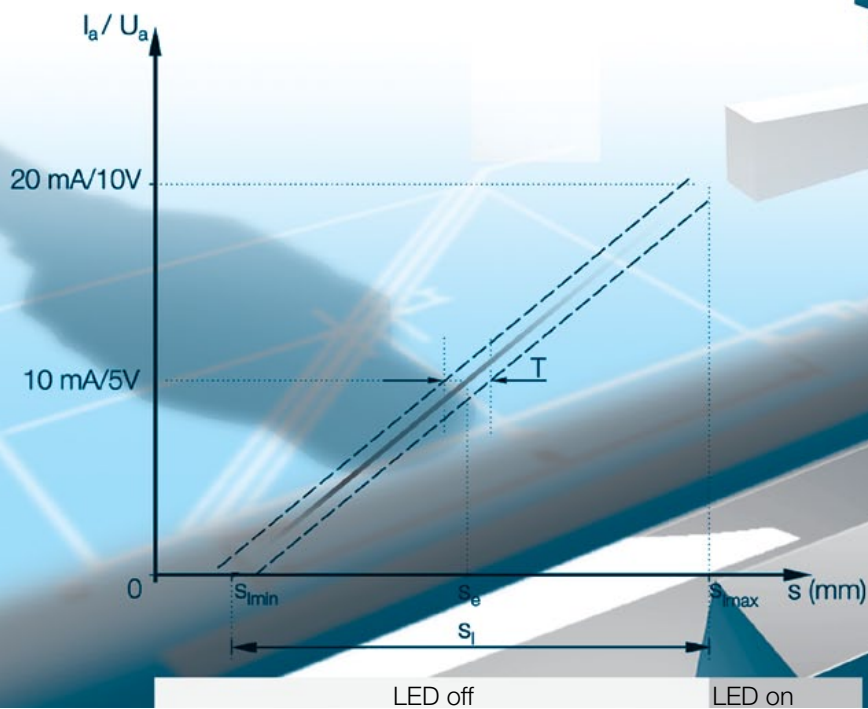
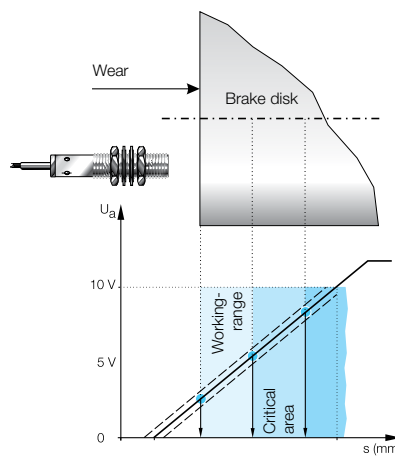
Features

- Distance-proportional analog output signal
- Contactless, absolute measuring principle
- Wide variety of designs: cylindrical and cubical
- Measuring ranges from 0.5...50 mm
- High repeat accuracy
- Optimal linearity
- Low temperature drift
- LED for setup aid
- Compact, sealed, rugged and reliable

Output characteristics



Evaluating programmed switching points (brake disk example)



Inductive Sensors for Analog Distance Measurement

Sensors in Use



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Tubular housings

Block designs

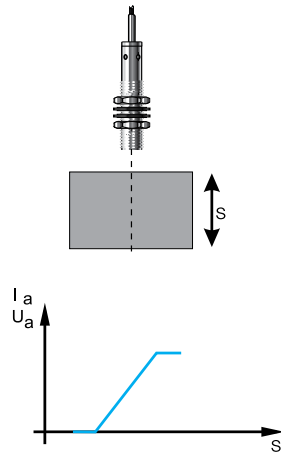
Accessories

Applications

Some of the numerous applications in measuring and controlling include:

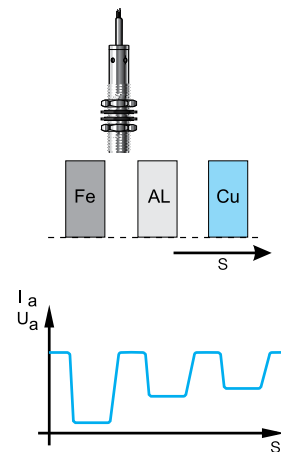
- Distance measurement
- Thickness measurement
- Run-off measurement
- Belt/band width measurement
- Detection of surface waves
- Counting
- Positioning
- Position monitoring
- Selection of parts of various sizes and materials

Axial approach



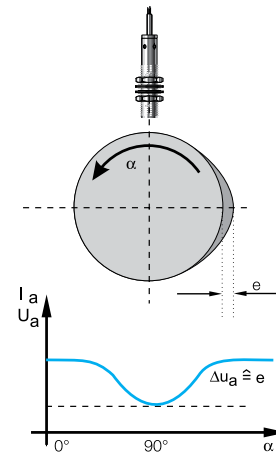
Distance changes in the sensor axis result in output signals proportional to distance.

Sensing various materials



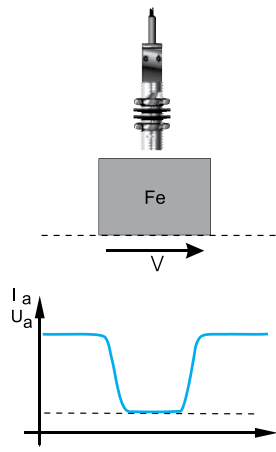
When the distance is kept constant, the output signal changes only when the object material is different.

Sensing a rotating object



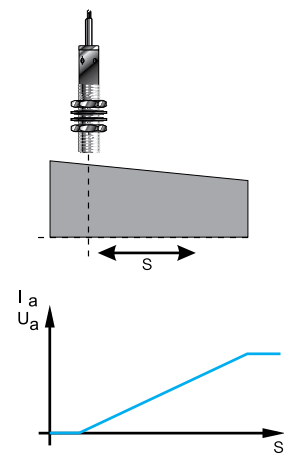
Eccentrics, cams or unbalanced motion result in a periodic change in the output signal.

Distance measurements at high object travel speeds



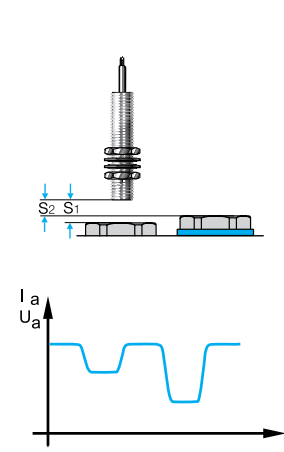
Even at high traverse speeds distances can be precisely measured.

Lateral approach



Detecting longer distances by sensing an inclined plane.

Detecting installed seal rings

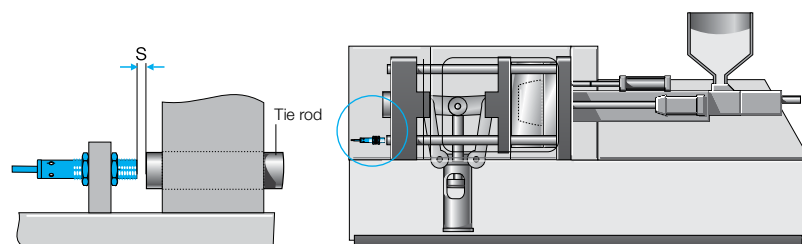


The seal ring effectively reduces the distance between the nut/screw and the sensor, thereby changing the output signal.

Resolution Application Notes:

- BAW sensors are a pure analog device with theoretically infinite resolution.
- Application resolution depends on ambient electrical noise level.
- Typical industrial application noise level is 10-15mV.
- If application level noise proves troublesome, a connectorized model and shielded cordset are recommended.

Tie rod length change on an injection molding machine



In injection molding machines, the clamping force of the tool is built up through a toggle joint and a hydraulic cylinder. The extension of the machine tie rods is thereby directly proportional to the clamping force, and can be easily determined using an inductive distance sensor.

Inductive Sensors for Analog Distance Measurement

Tubular housings, Ø 6.5 mm, M8x1



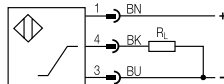
Temperature output

Series	Ø 6.5 mm	Ø 6.5 mm	M8 x 1
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Output signal	Voltage, 0...10 V	Voltage, 0...10 V	Voltage, 0...10 V
Linear range s_L	0.5...2 mm	0.5...2 mm	0.5...1.5 mm
Ordering code	BAW000L	BAW000J	BAW000N
Part name	BAW G06EF-UAC20B-S49G	BAW G06EE-UAF20B-EP03-K	BAW M08EI-UAD15B-BP00,2-GS04
Supply voltage U_B	15...30 V DC	21.6...26.4 V DC	15...30 V DC
Rated insulation voltage U_i (protection class)	75 V DC	75 V DC	250 V AC (II)
Effective distance s_e	1.25 mm	1.25 mm	1 mm
Load resistance $R_{L \min}$	2 kΩ	5 kΩ	2 kΩ
Load resistance $R_{L \max}$			
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	No/No/No	Yes/Yes/Yes
Adjustment display (LED)	Yes	No	No
Ambient temperature T_a	+10...+60°C*	+10...+60°C*	-10...+70 °C
Repeat accuracy R_{BWN}	±40.0 μm	±10.0 μm	±8.0 μm
Non-linearity max.	±45 μm	±45 μm	±30 μm
Limit frequency (-3 dB)	1 kHz	1 kHz	1 kHz
Response time	0.5 ms	1 ms	0.5 ms
Temperature coefficient, typically in range from +10...+50 °C	-0.6 μm/K	-1 μm/K	-1 μm/K
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67
Approvals	CE, cULus	CE	CE, cULus
Material	Housing: Stainless steel Sensing surface: PBT	Stainless steel PBT	Stainless steel PBT
Connection	M8 connector, 3-pin	3 m PUR cable, 26 AWG	0.2 m PUR cable with M12 connector, 3-pin
Suggested mating cable	Unshielded: BCC M313-0000-10-001-EX43T2-020 Shielded: BCC M313-0000-10-036-VS8334-020		BCC M415-0000-1A-003-EX44T2-020 BCC M415-0000-1A-014-VS8434-020

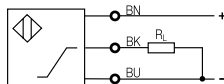
* The function is assured over a range of -10...+70 °C

Wiring diagrams

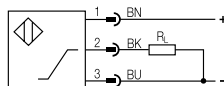
Connector, voltage output



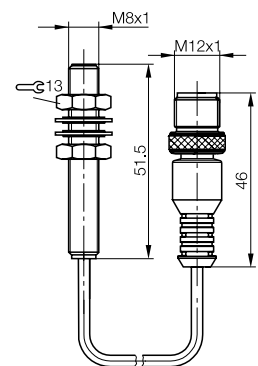
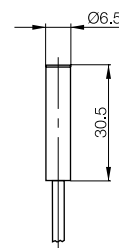
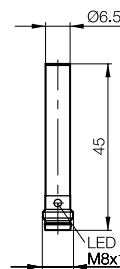
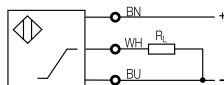
Cable, voltage output



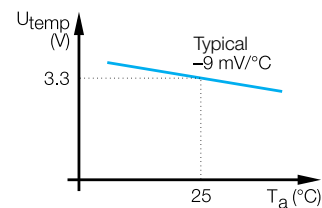
Connector, current output



Cable, current output



Temperature output



The temperature output (not short-circuit protected) provides a signal representing a precisely measured temperature change.

Inductive Sensors for Analog Distance Measurement

Tubular housings, M8x1, M12x1



M8 x 1	M8 x 1	M8 x 1	M8 x 1	M12x1
Flush	Flush	Flush	Not flush	Flush
Voltage, 0...10 V	Voltage, 0...10 V	Voltage, 0...10 V	Voltage, 0...10 V	Current, 4...20 mA
0.5...1.5 mm	0.5...1.5 mm	0.5...1.5 mm	0.5...2.5 mm	0.5...2 mm
BAW003R	BAW000M	BAW000T	BAW000W	BAW001F
BAW M08EH-UAD15B-S04G	BAW M08EF-UAC15B-S49G	BAW M08EI-UAD15B-BP03	BAW M08EI-UAD25F-BP03	BAW M12MG2-ICC20B-BP00,2-GS04
15...30 V DC	15...30 V DC	15...30 V DC	15...30 V DC	10...30 V DC
250 V AC	250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)
1 mm	1 mm	1 mm	1.5 mm	1.25 mm
2 kΩ	2 kΩ	2 kΩ	2 kΩ	500 Ω
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
No	Yes	No	No	Yes
-10...+70 °C	-10...+70 °C	-10...+70 °C	-10...+60 °C*	-10...+70 °C
±40.0 μm	±40.0 μm	±8.0 μm	±10.0 μm	±5.0 μm
±30 μm	±30 μm	±30 μm	±60 μm	±45 μm
1 kHz	1 kHz	1 kHz	1 kHz	500 Hz
0.5 ms	0.5 ms	0.5 ms	1 ms	0.5 ms
0 μm/K	0 μm/K	-1 μm/K	-1.5 μm/K	-0.5 μm/K
IP 67	IP 67	IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Brass, coated
PBT	PBT	PBT	PBT	PBT
M12 connector, 3-pin	M8 connector, 3-pin	3 m PUR cable, 26 AWG	3 m PUR cable, 26 AWG	0.2 m PUR cable with M12 connector, 3-pin
BCC M415-0000-1A-003-EX44T2-020	BCC M313-0000-10-001-EX43T2-020			BCC M415-0000-1A-003-EX44T2-020
BCC M415-0000-1A-014-VS8434-020	BCC M313-0000-10-036-VS8334-020			BCC M415-0000-1A-014-VS8434-020



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

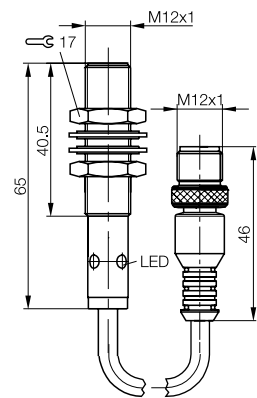
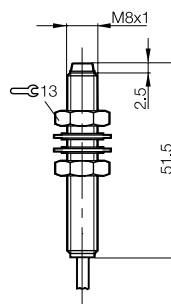
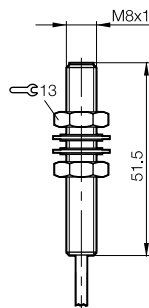
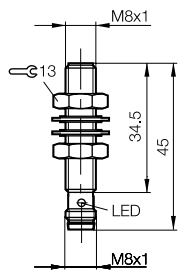
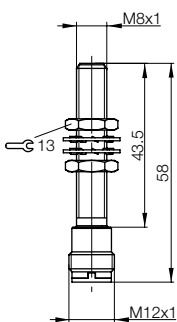
Special properties

Analog distance measurement

Tubular housings

Block designs

Accessories



Inductive Sensors for Analog Distance Measurement

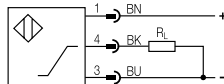
Tubular housings, M12x1



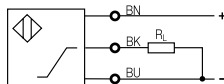
Series	M12x1	M12x1	M12x1
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Output signal	Current, 4...20 mA	Voltage, 0...10 V	Voltage, 0...10 V
Linear range s_L	0.5...2 mm	0.5...2 mm	0.5...2 mm
Ordering code	BAW001H	BAW001J	BAW001P
Part name	BAW M12MG2-ICC20B-BP03	BAW M12MG2-UAC20B-BP00,2-GS04	BAW M12MI-UAC20B-S04G
Supply voltage U_B	10...30 V DC	15...30 V DC	15...30 V DC
Rated insulation voltage U_i (protection class)	250 V AC (II)	250 V AC (II)	250 V AC (II)
Effective distance s_e	1.25 mm	1.25 mm	1.3 mm
Load resistance $R_{L \min}$		2 k Ω	2 k Ω
Load resistance $R_{L \max}$	500 Ω		
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Adjustment display (LED)	Yes	Yes	Yes
Ambient temperature T_a	-10...+70 °C	-10...+70 °C	-10...+70 °C
Repeat accuracy R_{BWN}	$\pm 6.0 \mu\text{m}$	$\pm 8.0 \mu\text{m}$	$\pm 8.0 \mu\text{m}$
Non-linearity max.	$\pm 45 \mu\text{m}$	$\pm 45 \mu\text{m}$	$\pm 45 \mu\text{m}$
Limit frequency (-3 dB)	500 Hz	500 Hz	500 Hz
Response time	0.5 ms	0.5 ms	0.5 ms
Temperature coefficient, typically in range from +10...+50 °C	-0.5 $\mu\text{m}/\text{K}$	-1 $\mu\text{m}/\text{K}$	-0.5 $\mu\text{m}/\text{K}$
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67
Approvals	CE, cULus	CE, cULus	CE, cULus
Material	Housing: Brass, coated Sensing surface: PBT	Brass, coated PBT	Brass, coated PBT
Connection	3 m PUR cable, 22 AWG	0.2 m PUR cable with M12 connector, 3-pin	M12 connector, 3-pin
Suggested mating cable	Unshielded	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020
	Shielded	BCC M415-0000-1A-014-VS8434-020	BCC M415-0000-1A-014-VS8434-020

Wiring diagrams

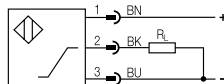
Connector, voltage output



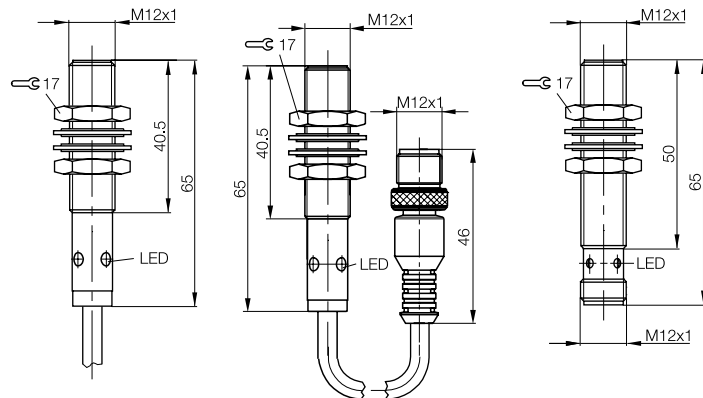
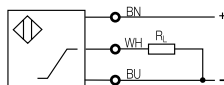
Cable, voltage output



Connector, current output



Cable, current output



Inductive Sensors for Analog Distance Measurement

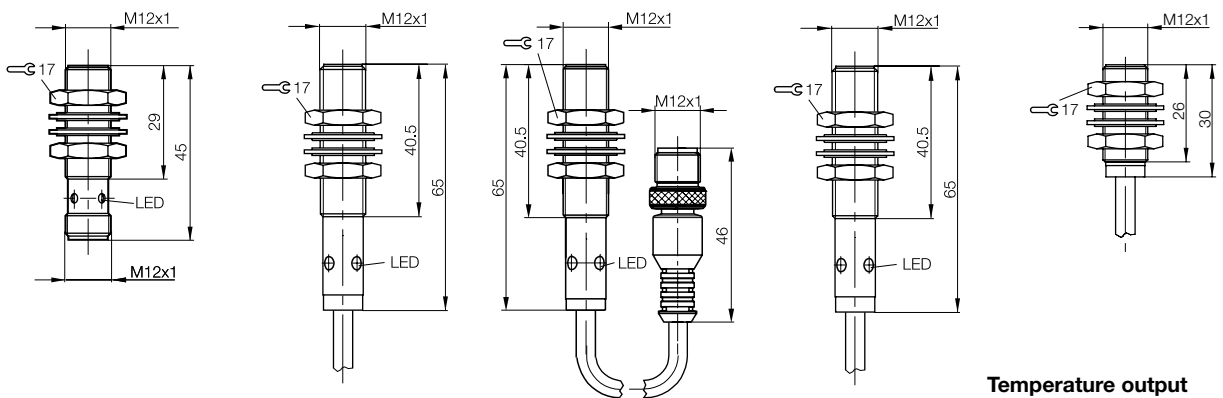
Tubular housings, M12x1



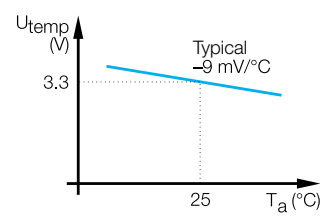
M12x1	M12x1	M12x1	M12x1	M12x1	M12x1
Flush	Flush	Flush	Flush	Flush	Quasi-flush
Voltage, 0...10 V	Voltage, 0...10 V	Current, 0...20 mA	Current, 0...20 mA	Current, 0...20 mA	Voltage, 0...10 V
0.5...2 mm	0.5...2 mm	0.5...2 mm	0.5...2 mm	0.5...2 mm	1...5 mm
BAW0010	BAW001L	BAW0019	BAW001C	BAW001C	BAW0011
BAW M12ME-UAC20B-S04G	BAW M12MG2-UAC20B-BP03	BAW M12MG2-IAC20B-BP00,2-GS04	BAW M12MG2-IAC20B-BP03	BAW M12MG2-IAC20B-BP03	BAW M12ME-UAD50B-BP01
15...30 V DC	15...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	15...30 V DC
250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)	250 V AC (□)	75 V DC
1.25 mm	1.25 mm	1.25 mm	1.25 mm	1.25 mm	3 mm
2 kΩ	2 kΩ				2 kΩ
		500 Ω	500 Ω	500 Ω	
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Yes	Yes	Yes	Yes	Yes	No
-10...+70 °C	-10...+70 °C	-10...+70 °C	-10...+70 °C	-10...+70 °C	0...+60 °C
±20.0 μm	±8.0 μm	±5.0 μm	±5.0 μm	±5.0 μm	±10.0 μm
±45 μm	±45 μm	±45 μm	±45 μm	±45 μm	±160 μm
500 Hz	500 Hz	500 Hz	500 Hz	500 Hz	1 kHz
0.5 ms	0.5 ms	0.5 ms	0.5 ms	0.5 ms	2 ms
0 μm/K	-1 μm/K	-1 μm/K	-1 μm/K	-1 μm/K	-1.5 μm/K
IP 67	IP 67	IP 67	IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Brass, coated	Brass, coated	Brass, coated	Brass, coated	Brass, coated	Brass, coated
PBT	PBT	PBT	PBT	PBT	PA 12
M12 connector, 3-pin	3 m PUR cable, 22 AWG	0.2 m PUR cable with M12 connector, 3-pin	3 m PUR cable, 22 AWG	3 m PUR cable, 22 AWG	1 m PUR cable, 24 AWG
BCC M415-0000-1A-003-EX44T2-020		BCC M415-0000-1A-003-EX44T2-020			
BCC M415-0000-1A-014-VS8434-020		BCC M415-0000-1A-014-VS8434-020			



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties
- Analog distance measurement
- Tubular housings
- Block designs
- Accessories



Temperature output



The temperature output (not short-circuit protected) provides a signal representing a precisely measured temperature change.

Inductive Sensors for Analog Distance Measurement

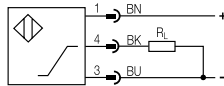
Tubular housings, M12x1



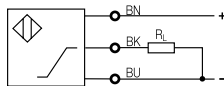
Series	M12x1	M12x1	M12x1
Installation type (pay attention to the note in the Basic Information chapter)	Not flush	Not flush	Not flush
Output signal	Voltage, 0...10 V	Voltage, 0...10 V	Voltage, 0...10 V
Linear range s_L	1...4 mm	1...4 mm	1...4 mm
Ordering code	BAW0014	BAW000Z	BAW0017
Part name	BAW M12MF2-UAC40F-BP00,2-GS04	BAW M12MD-UAC40F-S04G	BAW M12MF2-UAC40F-BP03
Supply voltage U_B	15...30 V DC	15...30 V DC	15...30 V DC
Rated insulation voltage U_i (protection class)	250 V AC (□)	250 V AC (□)	250 V AC (□)
Effective distance s_e	2.5 mm	2.5 mm	2.5 mm
Load resistance $R_{L \min}$	2 k Ω	2 k Ω	2 k Ω
Load resistance $R_{L \max}$			
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Adjustment display (LED)	Yes	Yes	Yes
Ambient temperature T_a	-10...+70 °C	-10...+70 °C	-10...+70 °C
Repeat accuracy R_{BWN}	$\pm 10.0 \mu\text{m}$	$\pm 10.0 \mu\text{m}$	$\pm 10.0 \mu\text{m}$
Non-linearity max.	$\pm 90 \mu\text{m}$	$\pm 90 \mu\text{m}$	$\pm 90 \mu\text{m}$
Limit frequency (-3 dB)	500 Hz	500 Hz	500 Hz
Response time	1 ms	1 ms	1 ms
Temperature coefficient, typically in range from +10...+50 °C	0 $\mu\text{m}/\text{K}$	-2 $\mu\text{m}/\text{K}$	0 $\mu\text{m}/\text{K}$
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67
Approvals	CE, cULus	CE, cULus	CE, cULus
Material	Housing: Brass, coated Sensing surface: PBT	Brass, coated PBT	Brass, coated PBT
Connection	0.2 m PUR cable with M12 connector, 3-pin	M12 connector, 3-pin	3 m PUR cable, 22 AWG
Suggested mating cable	Unshielded: BCC M415-0000-1A-003-EX44T2-020 Shielded: BCC M415-0000-1A-014-VS8434-020	BCC M415-0000-1A-003-EX44T2-020 BCC M415-0000-1A-014-VS8434-020	

Wiring diagrams

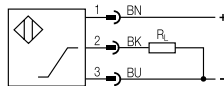
Connector, voltage output



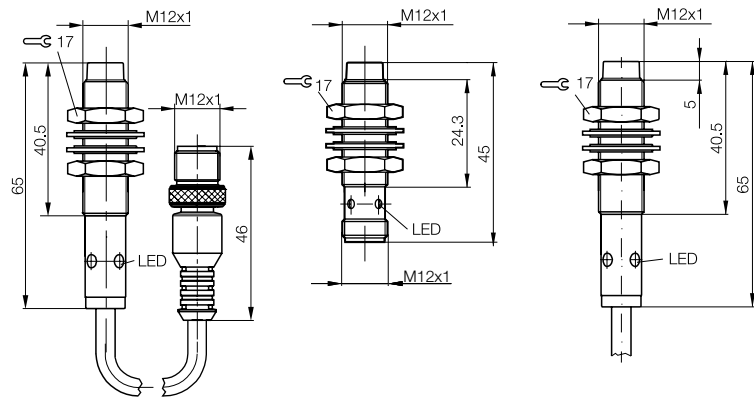
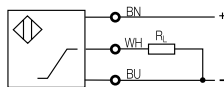
Cable, voltage output



Connector, current output



Cable, current output



Inductive Sensors for Analog Distance Measurement

Tubular housings, M12×1, M18×1



Temperature output

M12×1	M18×1	M18×1	M18×1	M18×1
Not flush	Flush	Flush	Flush	Flush
Current, 4...20 mA	Voltage, 0...10 V	Voltage, 0...10 V	Voltage, 0...10 V	Voltage, 0...10 V
1...4 mm	1...5 mm	1...5 mm	1...5 mm	1...5 mm
BAW003N	BAW001Z	BAW002K	BAW0026	BAW0025
BAW M12MH1-ICC40F-S04G	BAW M18ME-UAC50B-BP00,2-GS04	BAW M18MI-UAC50B-S04G	BAW M18ME-UAE50B-S04G-K	BAW M18ME-UAC50B-S04G
10...30 V DC	15...30 V DC	15...30 V DC	21.6...26.4 V DC	15...30 V DC
250 V AC (□)	75 V DC	250 V AC (□)	75 V DC	75 V DC
2.5 mm		3 mm	3 mm	3 mm
	2 kΩ	2 kΩ	2 kΩ	2 kΩ
500 ohms				
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Yes	Yes	Yes	Yes	Yes
-10...+70 °C	-10...+70 °C	-10...+70 °C	-10...+70 °C	-10...+70 °C
±120 μm	±8.0 μm	±8.0 μm	±8.0 μm	±8.0 μm
500 Hz	±120 μm	±120 μm	±120 μm	±120 μm
0.5 ms	500 Hz	500 Hz	500 Hz	500 Hz
	1 ms	1 ms	1 ms	1 ms
	-1 μm/K	-2 μm/K	-1 μm/K	-2 μm/K
IP 67	IP 67	IP 67	IP 67	IP 67
CE, cULus	IP 67	IP 67	IP 67	IP 67
Brass, coated	CE, cULus	CE, cULus	CE, cULus	CE, cULus
PBT	Brass, coated	Brass, coated	Brass, coated	Brass, coated
M12 connector, 3-pin	PBT	PBT	PBT	PBT
	0.2 m PUR cable with M12 connector, 3-pin	M12 connector, 3-pin	M12 connector, 4-pin	M12 connector, 3-pin
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020
BCC M415-0000-1A-014-VS8434-020	BCC M415-0000-1A-014-VS8434-020	BCC M415-0000-1A-014-VS8434-020	BCC M415-0000-1A-014-VS8434-020	BCC M415-0000-1A-014-VS8434-020



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

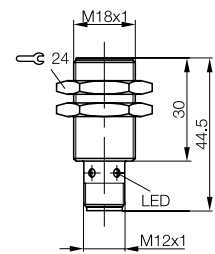
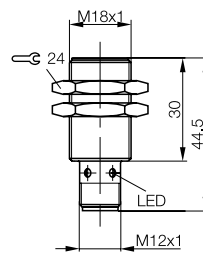
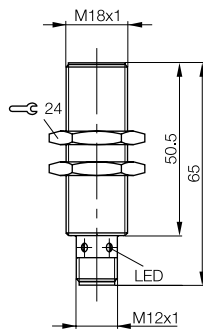
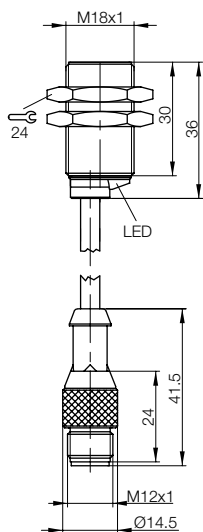
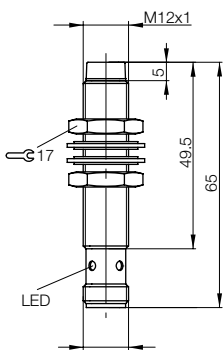
Special properties

Analog distance measurement

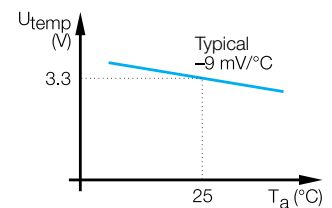
Tubular housings

Block designs

Accessories



Temperature output



The temperature output (not short-circuit protected) provides a signal representing a precisely measured temperature change.

Inductive Sensors for Analog Distance Measurement

Tubular housings, M18x1



With teach-in,
3 switching points



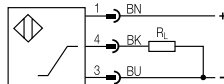
With Teach-in



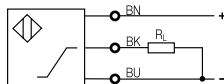
Series	M18x1	M18x1	M18x1
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush	Flush
Output signal	Voltage, 0...10 V	Voltage, 0...10 V	Voltage, 0...10 V
Linear range s_L	1...5 mm	1...5 mm	1...5 mm
Ordering code	BAW002M	BAW002U	BAW0022
Part name	BAW M18MI2-UAC50B-BP05-002	BAW M18MM-UAZ50B-BP05-505	BAW M18ME-UAC50B-BP03
Supply voltage U_B	15...30 V DC	21.6...26.4 V DC	15...30 V DC
Rated insulation voltage U_i (protection class)	250 V AC (II)	250 V AC (II)	75 V DC
Effective distance s_e	3 mm	3 mm	3 mm
Load resistance $R_{L \min}$	2 k Ω	2 k Ω	2 k Ω
Load resistance $R_{L \max}$			
Polarity reversal protected/transposition protected/short-circuit protected	Yes/No/Yes	Yes/No/Yes	Yes/Yes/Yes
Adjustment display (LED)	Yes	No	Yes
Ambient temperature T_a	-10...+70 °C	-10...+70 °C	-10...+70 °C
Repeat accuracy R_{BWN}	$\pm 8.0 \mu\text{m}$	$\pm 8.0 \mu\text{m}$	$\pm 8.0 \mu\text{m}$
Non-linearity max.	$\pm 120 \mu\text{m}$	$\pm 120 \mu\text{m}$	$\pm 120 \mu\text{m}$
Limit frequency (-3 dB)	500 Hz	500 Hz	500 Hz
Response time	1 ms	1 ms	1 ms
Temperature coefficient, typically in range from +10...+50 °C	-1.5 $\mu\text{m}/\text{K}$	0 $\mu\text{m}/\text{K}$	-1 $\mu\text{m}/\text{K}$
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67
Approvals	CE, cULus	CE, cULus	CE, cULus
Material	Housing: Brass, coated Sensing surface: PBT	Brass, coated PBT	Brass, coated PBT
Connection	5 m PUR cable, 24 AWG	5 m PUR cable, 24 AWG	5 m PUR cable, 22 AWG
Suggested mating cable	Unshielded Shielded		

Wiring diagrams

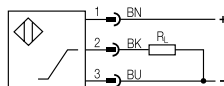
Connector, voltage output



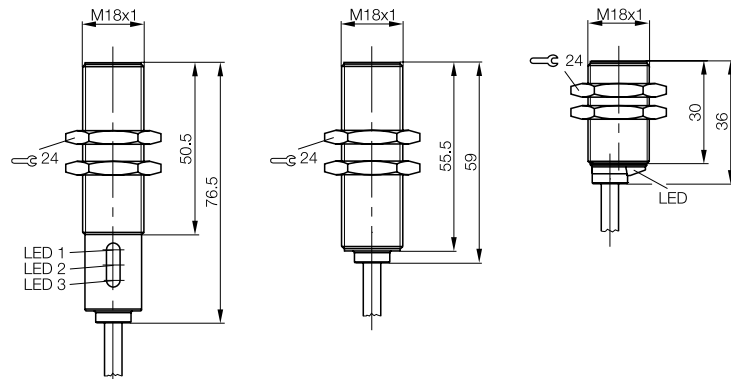
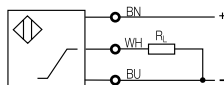
Cable, voltage output



Connector, current output



Cable, current output



Inductive Sensors for Analog Distance Measurement

Tubular housings, M18x1

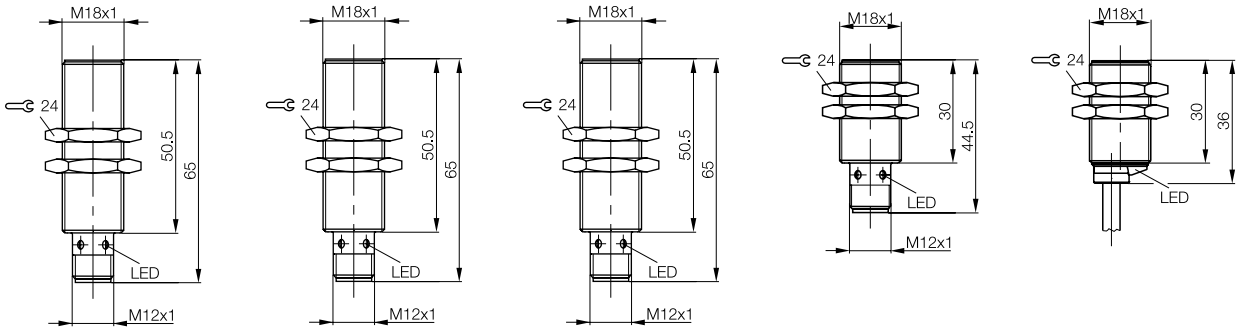


IO-Link



M18x1	M18x1	M18x1	M18x1	M18x1
Flush	Flush	Flush	Flush	Flush
IO-Link, falling with rising proximity	Current, 0...20 mA	Current, 4...20 mA	Current, 4...20 mA	Current, 4...20 mA
1...5 mm	1...5 mm	1...5 mm	1...5 mm	1...5 mm
BAW002F	BAW002H	BAW002J	BAW001U	BAW001T
BAW M18MI-BLC50B-S04G	BAW M18MI-IAC50B-S04G	BAW M18MI-ICC50B-S04G	BAW M18ME-ICC50B-S04G	BAW M18ME-ICC50B-BP03
18...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	15...30 V DC
250 V AC (□)	250 V AC (□)	250 V AC (□)	75 V DC	75 V DC
3 mm	3 mm	3 mm	3 mm	3 mm
	500 Ω	500 Ω	500 Ω	500 Ω
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Yes	Yes	Yes	Yes	Yes
-10...+70 °C	-10...+70 °C	-10...+70 °C	-10...+70 °C	-10...+70 °C
±10.0 μm	±8.0 μm	±8.0 μm	±8.0 μm	±8.0 μm
±120 μm	±120 μm	±120 μm	±120 μm	±120 μm
500 Hz	500 Hz	500 Hz	500 Hz	500 Hz
2 ms	1 ms	1 ms	1 ms	1 ms
-2 μm/K	-1 μm/K	-5 μm/K	-3 μm/K	-3 μm/K
IP 67	IP 67	IP 67	IP 67	IP 67
CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Brass, coated	Brass, coated	Brass, coated	Brass, coated	Brass, coated
PBT	PBT	PBT	PBT	PBT
M12 connector, 3-pin	M12 connector, 3-pin	M12 connector, 3-pin	M12 connector, 3-pin	3 m PVC cable, 22 AWG
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	
BCC M415-0000-1A-014-VS8434-020	BCC M415-0000-1A-014-VS8434-020	BCC M415-0000-1A-014-VS8434-020	BCC M415-0000-1A-014-VS8434-020	

- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties
- Analog distance measurement
- Tubular housings
- Block designs
- Accessories



Inductive Sensors for Analog Distance Measurement

Tubular housings, M18x1, M30x1.5



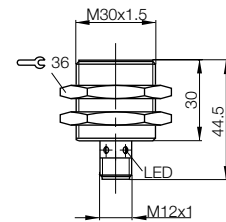
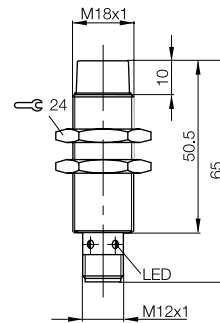
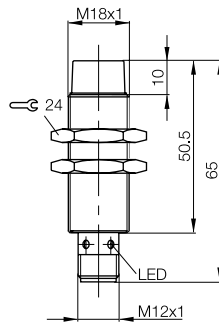
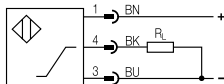
Temperature output

Series	M18x1	M18x1	M30x1.5	
Installation type (observe instructions in the Basic Information chapter)	Not flush	Not flush	Flush	
Output signal	Voltage, 0...10 V	Voltage, 0...10 V	Voltage, 0...10 V	
Linear range s_L	2...8 mm	4...16 mm	2...10 mm	
Ordering code	BAW002C	BAW0029	BAW002W	
Part name	BAW M18MG-UAC80F-S04G	BAW M18MG-UAC16F-S04G-K	BAW M30ME-UAC10B-S04G	
Supply voltage U_B	15...30 V DC	15...30 V DC	15...30 V DC	
Rated insulation voltage U_i (protection class)	250 V AC (II)	250 V AC (II)	250 V AC (II)	
Effective distance s_e	5 mm	10 mm	6 mm	
Load resistance $R_{L, min.}$	2 k Ω	2 k Ω	2 k Ω	
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	
Adjustment display (LED)	Yes	Yes	Yes	
Ambient temperature T_a	-10...+70 °C	+10...+60°C*	-10...+70 °C	
Repeat accuracy R_{BWN}	$\pm 12.0 \mu\text{m}$	$\pm 200.0 \mu\text{m}$	$\pm 10.0 \mu\text{m}$	
Non-linearity max.	$\pm 180 \mu\text{m}$	$\pm 360 \mu\text{m}$	$\pm 240 \mu\text{m}$	
Limit frequency (-3 dB)	500 Hz	500 Hz	500 Hz	
Response time	1.5 ms	3 ms	1.5 ms	
Temperature coefficient, typically in range from +10...+50 °C	-3 $\mu\text{m}/\text{K}$	8 $\mu\text{m}/\text{K}$	1.5 $\mu\text{m}/\text{K}$	
Degree of protection as per IEC 60529	IP 67	IP 67	IP 67 per BWN Pr. 14	
Approvals	CE, cULus	CE, cULus	CE, cULus	
Material	Housing: Brass, coated Sensing surface: PBT	Brass, coated PBT	Brass, coated PBT	
Connection	M12 connector, 3-pin	M12 connector, 3-pin	M12 connector, 3-pin	
Suggested mating cable	Unshielded: BCC M415-0000-1A-003-EX44T2-020 Shielded: BCC M415-0000-1A-014-VS8434-020	BCC M415-0000-1A-003-EX44T2-020 BCC M415-0000-1A-014-VS8434-020	BCC M415-0000-1A-003-EX44T2-020 BCC M415-0000-1A-014-VS8434-020	

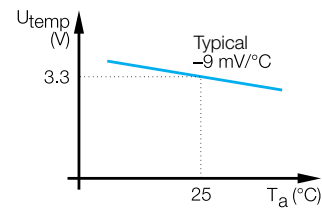
* The function is guaranteed over a range of -10...+70 °C

Wiring diagram

Connector, voltage output



Temperature output



The temperature output (not short-circuit protected) provides a signal representing a precisely measured temperature change.

Inductive Sensors for Analog Distance Measurement

Tubular housings, M30×1.5, PG36



M30×1.5	PG36	
Not flush	Flush	
Voltage, 0...10 V	Voltage, 0...10 V	
3...15 mm	0...20 mm	
BAW002Y	BAW003M	
BAW M30ME-UAC15F-S04G	BAW MKZ-471.19-S4	
15...30 V DC	20...30 V DC	
250 V AC (□)	75 V DC	
9 mm	10 mm	
2 kΩ	10 kΩ	
Yes/Yes/Yes	Yes/Yes/Yes	
Yes	Yes	
-10...+70 °C	-10...+70 °C	
±12.0 μm	±5.0 μm	
±360 μm	±600 μm	
350 Hz	20 Hz	
3 ms		
1.5 μm/K	-1 μm/K	
IP 67	IP 67	
CE, cULus	CE	
Brass, coated	Brass, coated	
PBT	PBT	
M12 connector, 3-pin	M12 connector, 3-pin	
BCC M415-0000-1A-003-EX44T2-020	BCC M415-0000-1A-003-EX44T2-020	
BCC M415-0000-1A-014-VS8434-020	BCC M415-0000-1A-014-VS8434-020	

Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

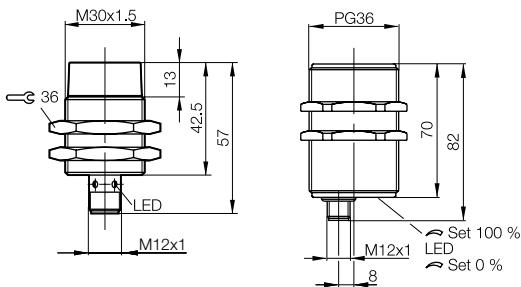
Special properties

Analog distance measurement

Tubular housings

Block designs

Accessories



Inductive Sensors for Analog Distance Measurement

Tubular housings, high-pressure resistant M12×1

- Analog for control of valves or soft stop
- Measurements of valves and cylinders possible
- Ceramic on medium side – robust
- Oil pressure up to 500 bar

Application areas

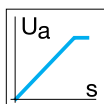
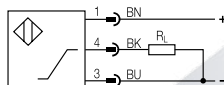
- Control of valves
- Parked position of cranes
- Final position of installation supports
- Service measurements of valves
- Position monitoring in mobile hydraulic systems
- Control of agricultural technology



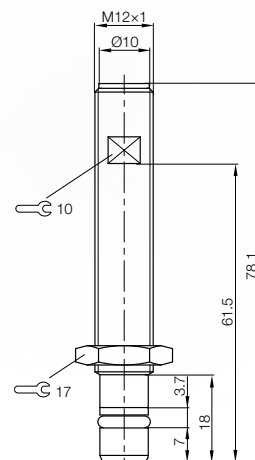
Series	M12×1	
Installation (observe instructions in the Basic Information chapter)	Flush	
Output signal	Voltage, 0...10 V	
Linear range s_l	0.5...2 mm	
Ordering code	BAW0040	
Part name	BAW Z08EO-UAD20B-S04G-H11	
Supply voltage U_B	15...30 V DC	
Rated insulation voltage U_i (protection class)	75 V DC	
Effective distance s_e	1.25 mm	
Load resistance $R_{L\ min.}$	2 k Ω	
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	
Adjustment display (LED)	No	
Ambient temperature T_a	-25...+85 °C	
Repeat accuracy R_{BWN}	±8.0 μ m	
Non-linearity max.	±45 μ m	
Limit frequency (-3 dB)	1 kHz	
Response time	1 ms	
Temperature coefficient, typically in range from +10...+50 °C	-1 μ m/K	
Degree of protection as per IEC 60529	IP 68	
Approvals	CE, cULus	
Material	Housing	Stainless steel
	Sensing surface	Ceramic
Connection	M12 connector, 3-pin	
Suggested mating cable	Unshielded	BCC M415-0000-1A-003-EX44T2-020
	Shielded	BCC M415-0000-1A-014-VS8434-020

Wiring diagram

Connector, voltage output



500 bar



Inductive Sensors for Analog Distance Measurement

Block design, 10×30×6 mm

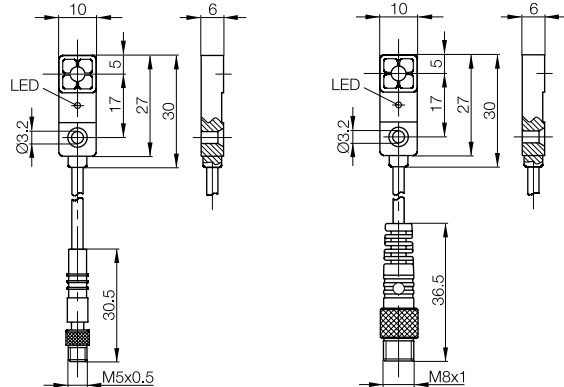
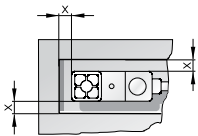


- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties
- Analog distance measurement
- Tubular housings
- Block designs
- Accessories

Series	10×30×6 mm R03	10×30×6 mm R03
Installation (observe instructions in the Basic Information chapter)	Flush	Flush
Output signal	Voltage, 0...10 V	Voltage, 0...10 V
Linear range s_l	1...4 mm	1...4 mm
Ordering code	BAW0030	BAW0031
Part name	BAW R03KC-UAE40B-BP00,3-GS26	BAW R03KC-UAE40B-BP00,3-GS49
Supply voltage U_B	21.6...26.4 V DC	21.6...26.4 V DC
Rated insulation voltage U_i (protection class)	75 V DC	75 V DC
Effective distance s_e	2.5 mm	
Load resistance $R_{L \min}$	5 k Ω	5 k Ω
Polarity reversal protected/transposition protected/short-circuit protected	No/No/No	No/No/No
Adjustment display (LED)	Yes	Yes
Ambient temperature T_a	0...+70 °C	0...+70 °C
Repeat accuracy R_{BWN}	$\pm 35.0 \mu\text{m}$	$\pm 35.0 \mu\text{m}$
Non-linearity max.	$\pm 150 \mu\text{m}$	$\pm 150 \mu\text{m}$
Limit frequency (-3 dB)	1 kHz	1 kHz
Response time	0.5 ms	0.5 ms
Temperature coefficient, typically in range from +10...+50 °C	4.7 $\mu\text{m}/\text{K}$	4.7 $\mu\text{m}/\text{K}$
Degree of protection as per IEC 60529	IP 67	IP 67
Approvals	CE, cULus	CE, cULus
Material		
Housing	No/No/No	PA6-FG30
Sensing surface	PA6-FG30	PA6-FG30
Connection	0.3 m PUR cable with M5 connector, 3-pin	0.3 m PUR cable with M8 connector, 3-pin
Suggested mating cable		
Unshielded	BKS-B-25-3-PU-03	BCC M313-0000-10-001-EX43T2-020
Shielded		BCC M313-0000-10-036-VS8334-020

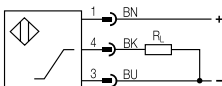
Installation note for BAW R03...

Material	Installation dimensions x
Steel	0 mm
Brass	5 mm
Aluminum	5 mm
Stainless steel	5 mm



Wiring diagram

Connector, voltage output



Inductive Sensors for Analog Distance Measurement

Block designs, 10×30×6 mm, 20×30×8 mm

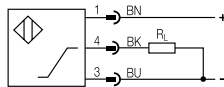


Series	10×30×6 mm R03	20×30×8 mm R06
Installation type (observe instructions in the Basic Information chapter)	Flush	Flush
Output signal	Voltage, 0...10 V	Voltage, 0...10 V
Linear range s_L	1...4 mm	0.5...2 mm
Ordering code	BAW0032	BAW0034
Part name	BAW R03KC-UAE40B-BP03	BAW R06AC-UAF20B-S49G
Supply voltage U_B	21.6...26.4 V DC	21.6...26.4 V DC
Rated insulation voltage U_i (protection class)	75 V DC	75 V DC
Effective distance s_e	2.5 mm	1.3 mm
Load resistance $R_{L \min}$	5 k Ω	5 k Ω
Polarity reversal protected/transposition protected/short-circuit protected	No/No/No	No/No/No
Adjustment display (LED)	Yes	No
Ambient temperature T_a	0...+70 °C	-10...+70 °C
Repeat accuracy R_{BWN}	$\pm 35.0 \mu\text{m}$	$\pm 12.0 \mu\text{m}$
Non-linearity max.	$\pm 150 \mu\text{m}$	$\pm 45 \mu\text{m}$
Limit frequency (-3 dB)	1 kHz	1 kHz
Response time	0.5 ms	0.5 ms
Temperature coefficient, typically in range from +10...+50 °C	5 $\mu\text{m}/\text{K}$	0.5 $\mu\text{m}/\text{K}$
Degree of protection as per IEC 60529	IP 67	IP 67
Approvals	CE, cULus	CE
Material	Housing: PA6-FG30 Sensing surface: PA6-FG30	Anodized aluminum PBT
Connection	3 m PUR cable, 26 AWG	M8 connector, 3-pin
Suggested mating cable	Unshielded	BCC M313-0000-10-001-EX43T2-020
	Shielded	BCC M313-0000-10-036-VS8334-020

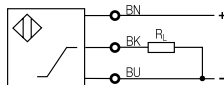
* The function is guaranteed over a range of -10...+70 °C

Wiring diagrams

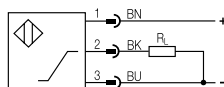
Connector, voltage output



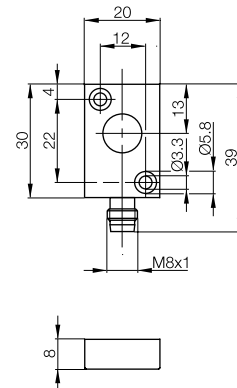
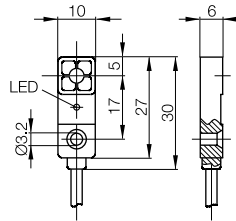
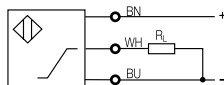
Cable, voltage output



Connector, current output



Cable, current output



Inductive Sensors for Analog Distance Measurement

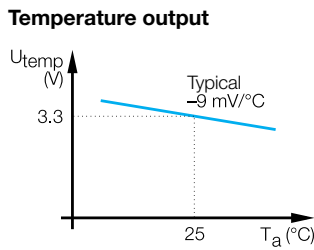
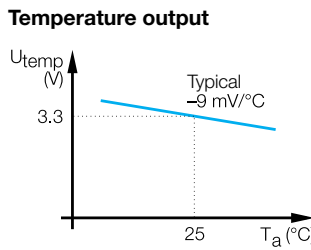
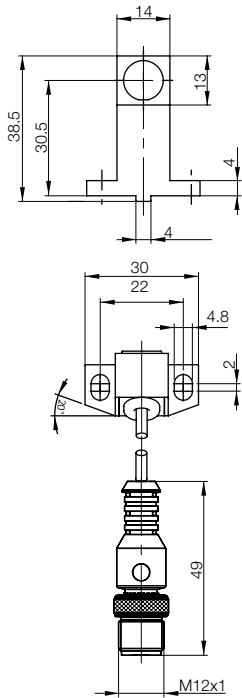
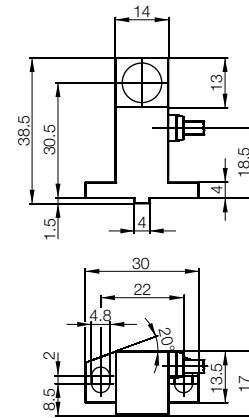
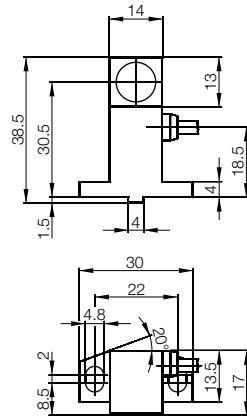
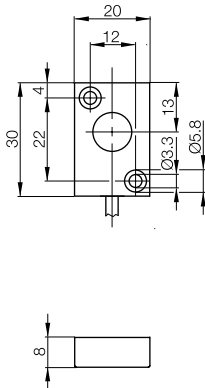
Block designs 20×30×8 mm, 14×38.5×17 mm



20×30×8 mm R06	14×38.5×17 mm Z01	14×38.5×17 mm Z01	14×38.5×17 mm Z05
Flush			
Voltage, 0...10 V	Voltage, 0...10 V	IO-Link, falling with rising proximity	IO-Link, falling with rising proximity
0.5...2 mm	1...5 mm	1...5 mm	1...5 mm
BAW0033	BAW003E	BAW003A	BAW003W
BAW R06AC-UAF20B-EP03	BAW Z01AC-UAD50B-DP03-K	BAW Z01AC-BLD50B-DP03	BAW Z05AC-BLD50B-BP00,75-GS04
21.6...26.4 V DC	15...30 V DC	18...30 V DC	18...30 V DC
75 V DC	75 V DC	75 V DC	75 V DC
1.25 mm	3 mm	3 mm	3 mm
5 kΩ	2 kΩ		
No/No/No	Yes/No/Yes	Yes/Yes/Yes	Yes/Yes/Yes
No	No		
+10...+60°C*	-10...+60 °C	-10...+60 °C	-10...+60 °C
±12.0 μm	±10.0 μm	±10.0 μm	±10.0 μm
±45 μm	±120 μm	±150 μm	±150 μm
1 kHz	1 kHz	200 Hz	200 Hz
0.5 ms	1 ms	5 ms	5 ms
0.5 μm/K	-3 μm/K	-3 μm/K	-3 μm/K
IP 67	IP 67	IP 67	IP 67
CE	CE, cULus	CE, cULus	CE, cULus
Anodized aluminum	Anodized aluminum	Anodized aluminum	Anodized aluminum
PBT	PA 12	LCP	LCP
3 m PUR cable, 3×0.14 mm ²	3 m PUR cable, 4×0.14 mm ²	3 m PUR cable, 4×0.14 mm ²	0.75 m PUR cable with M12 connector, 3-pin



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The temperature output (not short-circuit protected) provides a signal representing a precisely measured temperature change.

The temperature output (not short-circuit protected) provides a signal representing a precisely measured temperature change.

Inductive Sensors for Analog Distance Measurement

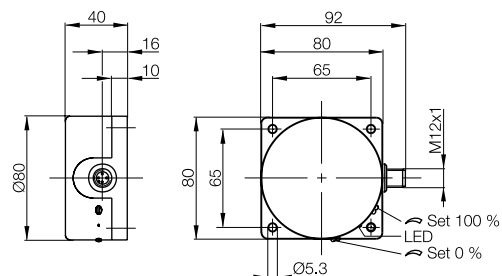
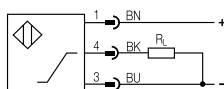
Block designs, 80×80×40 mm



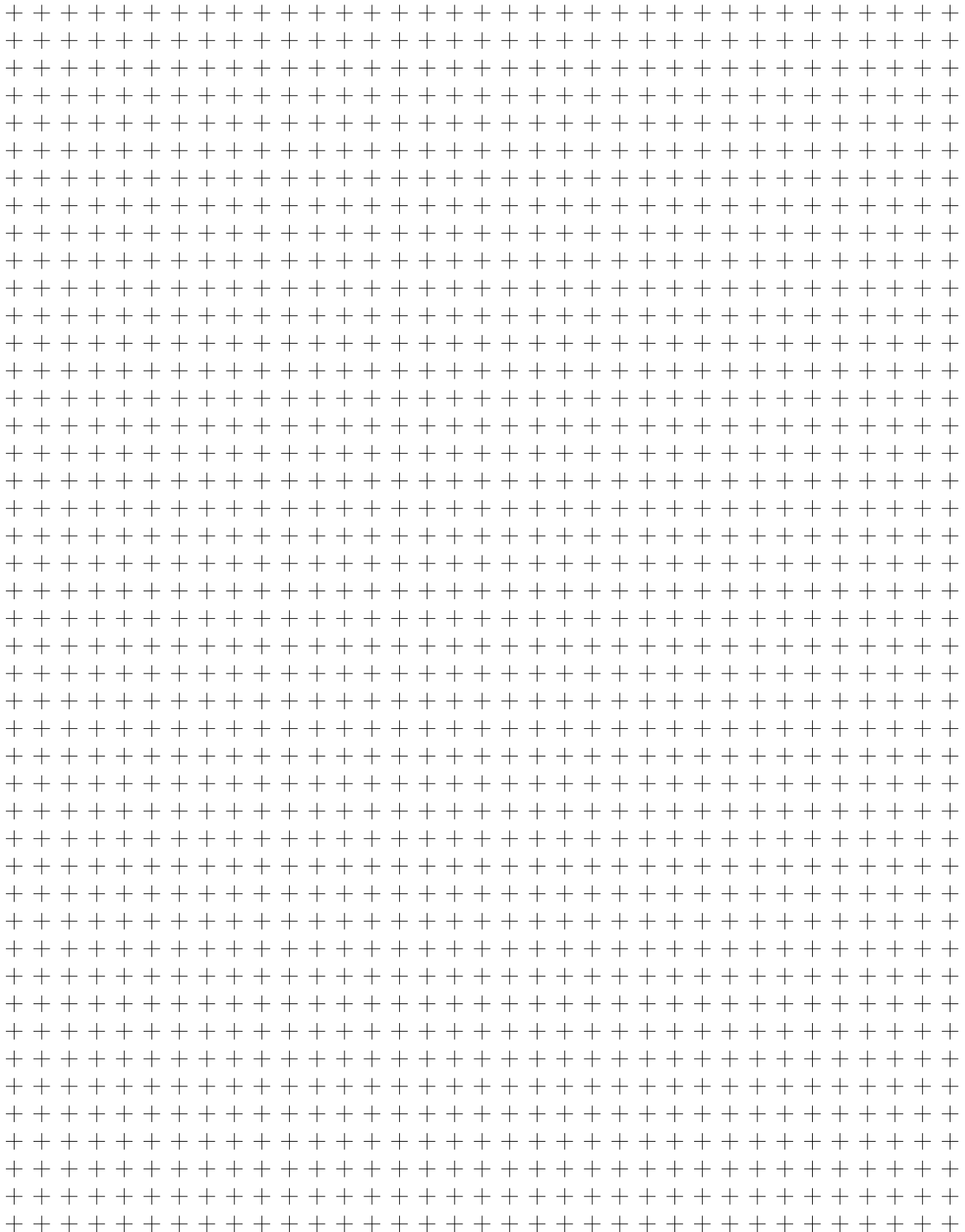
Series	80×80×40 mm Maxisensor	
Installation type (observe instructions in the Basic Information chapter)	Not flush	
Output signal	Voltage, 0...10 V	
Linear range s_l	0...50 mm	
Ordering code	BAW003K	
Part name	BAW MKK-050.19-S4	
Supply voltage U_B	20...30 V DC	
Rated insulation voltage U_i	75 V DC	
Effective distance s_e	25 mm	
Load resistance $R_{L \min}$	10 k Ω	
Polarity reversal protected/transposition protected/short-circuit protected	Yes/Yes/Yes	
Adjustment display (LED)	No	
Ambient temperature T_a	-10...+70 °C	
Repeat accuracy R_{BWN}	$\pm 12.0 \mu\text{m}$	
Non-linearity max.	$\pm 1500 \mu\text{m}$	
Limit frequency (-3 dB)	15 Hz	
Temperature coefficient, typically in range from +10...+50 °C	15 $\mu\text{m}/\text{K}$	
Degree of protection as per IEC 60529	IP 67	
Approvals	CE	
Material	Housing	PBT
	Sensing surface	PBT
Connection	M12 connector, 3-pin	
Suggested mating cable	Unshielded	BCC M415-0000-1A-003-EX44T2-020
	Shielded	BCC M415-0000-1A-014-VS8434-020

Wiring diagram

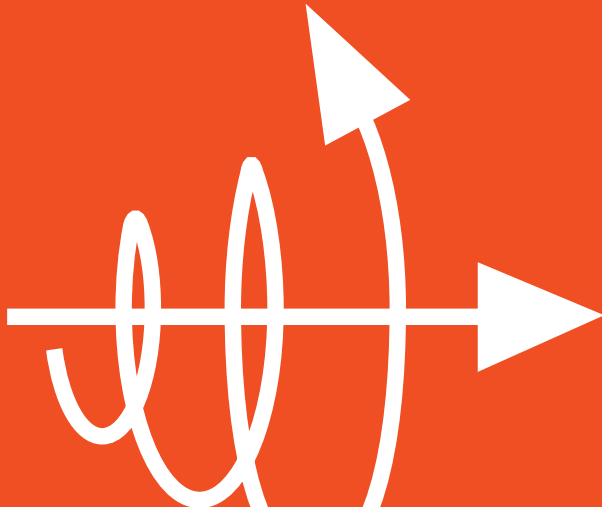
Connector, voltage output



Inductive Sensors for Analog Distance Measurement



- Inductive sensors
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Inductive Sensors

Accessories for inductive sensors

We offer special accessories for our inductive sensors. With products optimally suited to each other. Alongside switching devices, there are also assembly aids and protective equipment for the most varied inductive sensors.



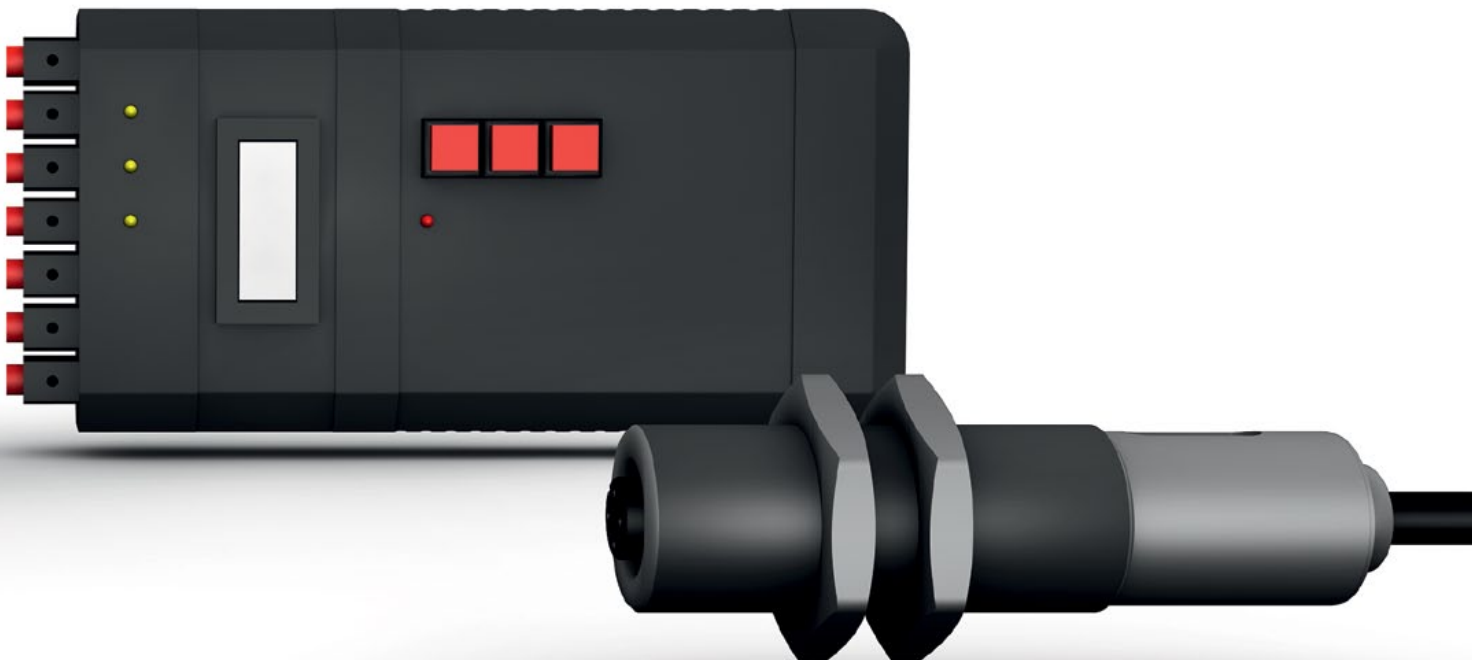


Accessories for Inductive Sensors

Contents

Accessories for inductive sensors

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Accessories for Inductive Sensors

Pulse stretching

Detecting fast motion

Rapid motions on machines mean that the sensors are only actuated for a short time. Therefore, the sensor pulse can be too short to guarantee a secure evaluation. Due to its cycle time, the controller does not detect the output signal, with the consequence that important information in the controller sequence is lost. This can pose a risk to your machine!

The solution is the Balluff pulse extender **BES 516-IV 2**.

For controlling this device, the rising or falling edge of the sensor output signal is sufficient to generate a pulse that your controller can recognize. The length is adjustable from 2 ms to 1 sec. Small and space-saving, the device can be snapped onto a rail in accordance with EN 50022-35.



Accessories for Inductive Sensors

Pulse stretching



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse Extension

Sensor tester, testing and setting device

Analog switching device

Assembly aids for Uni and Unicomact sensors

Protective covering for Unicomact sensors

Protective nuts

Positive stop

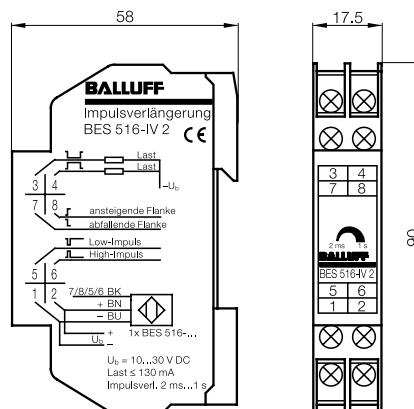
Tube switch

Banking screw

Cushioned mounts

Clamping holder overview

Description	Pulse stretching
Use	Ensures secure output signals from inductive, capacitive or optoelectronic sensors to the controller
Ordering code	BAE0073
Part number	BES 516-IV 2
Output (display by LEDs)	Positive-switching (PNP), complementary
Adjustable pulse stretching	2 ms...1 s
Set value	200 ms (+50 ms)
Input 7/8	Referenced to the respective edge of the input signal
Input 5/6	Referenced to the pulse end of the input signal
Repeatability	< 10 %
Input	1 PNP or 1 NPN - NO or NC
Min. input pulse length	1.5 ms
Supply voltage U_S	10...30 V DC (input voltage = output voltage)
Residual ripple	$\leq 15 \%$
No-load current	Approx. 20 mA
Output current	≤ 130 mA
Permissible load capacity	$\leq 0.5 \mu\text{F}/24$ V
Ambient temperature T_a	0...60 °C
Housing attachment	DIN rail EN 50022-35
Max. conductor cross-section	2x2.5 mm ²
Polarity reversal protected	Yes
Short-circuit protected	Yes
Degree of protection as per IEC 60529	Housing IP 40/terminals IP 20
Output	3 Low-pulse, extended 4 High-pulse, extended
Input	7 Falling edge 8 Rising edge 5 Low pulse 6 High pulse 1 $-U_S$ 2 $+U_S$
Falling edge	Output signal is triggered by rising edge
Rising edge	Output signal is triggered by rising edge
Low pulse	PNP-NC/NPN-NO short damped PNP-NO/NPN-NC short undamped
High pulse	PNP-NC/NPN-NO short damped PNP-NO/NPN-NC short undamped



Accessories for Inductive Sensors

Sensor tester, testing and setting device

Testers BES 576-3

Balluff sensor testers are flat, handy, and visually appealing. The testing device is a simple manual testing device for PNP/NPN, normally open and normally closed sensors.

Benefits

- Integrated steel measuring plate for testing sensors
- Automatic shut-off after 30 s of non-use
- Power provided by a 9V battery
- Visual and acoustic signal

Testing and setting device BES 516-4

With this programming device, the following testing and setting functions can be carried out on the sensors:

- Programming the switching distance of analog sensors.
- Sensors with teachable switching points can also be programmed.
- Testing 3-wire sensors.
- Testing 2-wire sensors.



Accessories for Inductive Sensors

Sensor tester, testing and setting device



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse Extension

Sensor tester, testing and setting device

Analog switching device

Assembly aids for Uni and Unicomact sensors

Protective covering for Unicomact sensors

Protective nuts

Positive stop

Tube switch

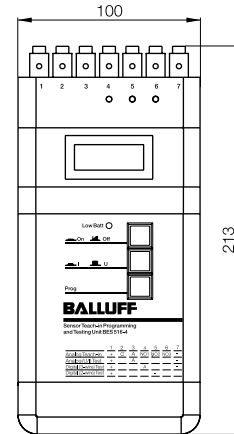
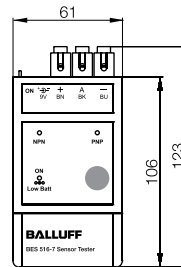
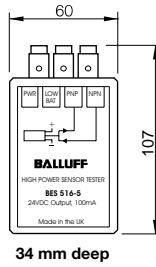
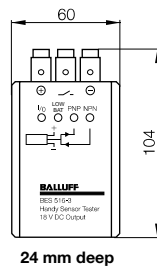
Banking screw

Cushioned mounts

Clamping holder overview

Description	Sensor tester	High Sensor tester	Sensor tester	Testing and setting device
Use	For DC PNP/NPN 3-wire sensors	For DC PNP/NPN 3-wire sensors	For DC PNP/NPN 3-wire sensors	For DC PNP/NPN 2/3-wire sensors and analog sensors
Ordering code	BAE000M	BAE002A	BAE002C	BAE0029
Part number	BES 516-3	BES 516-5	BES 516-7	BES 516-4
Output voltage	18 V DC	20-24 V DC	18 V DC	18 V DC
LED indicators	1 operating indicator	1 operating indicator	1 operating indicator	3 function indicators, 1 operating indicator
Battery type	2x 9 V battery	6 - 1.5 VAA (not included)	1x 9 V battery	2x 9 V batteries
Sensor connection	3 spring-loaded terminals	3 spring-loaded terminals	3 spring-loaded terminals	7 spring-loaded terminals
Degree of protection as per IEC 60529	IP 21	IP 21	IP 40	IP 40
Housing material	Plastic	Plastic	Plastic	Plastic

Acoustic and visual signal, built-in steel measuring plate



Accessories for Inductive Sensors

Analog switching device for onsite assembly for inductive distance sensors BAW

Analog switching device for onsite assembly

This switching device allows you to easily program sensors which have an analog output signal, such as the BOD family, with three switching thresholds, onsite.

In this, the sensor connected to the switching device is brought into the desired switching distance from the object. Then connecting the control line to the (+) side of the supply voltage enables a "Teach-in" mode; in other words, the set distance is assigned to the signal level present and these values are stored in the evaluation device. This procedure is supported with LEDs. During operation, these LEDs are available as switching state indicators.

For sensors with a temperature output, the analog temperature signal is made available in unchanged form on the device output.

Connection example

Analog sensors

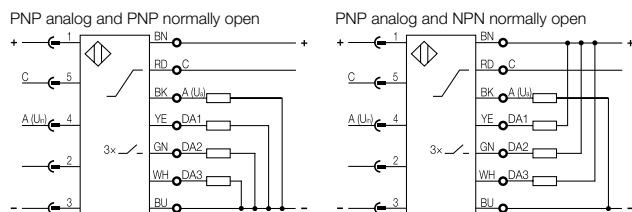
Analog switching amplifier



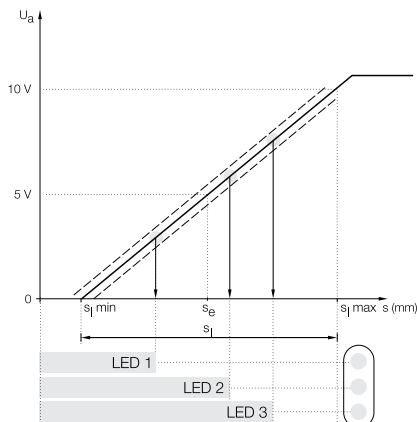
e.g. BOD...

BES 516-615-PS-1-PU-05

Wiring diagrams



Approach curve



Accessories for Inductive Sensors

Analog switching device for onsite assembly for inductive distance sensors BAW



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse

Extension

Sensor tester, testing and setting device

Analog switching device

Assembly aids for Uni and Unicomact sensors

Protective covering for Unicomact sensors

Protective nuts

Positive stop

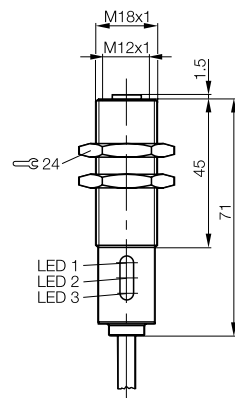
Tube switch

Banking screw

Cushioned mounts

Clamping holder overview

Size	M18x1	
Use	For analog sensors	
PNP analog and PNP NO	Ordering code	BAE0070
	Part number	BES 516-615-PS-1-PU-05
PNP analog and NPN NO	Ordering code	BAE006Z
	Part number	BES 516-615-NS-1-PU-05
Rated operating voltage U_e	15...30 V DC	
Supply voltage U_S	15...30 V DC	
Residual ripple	$\leq 15\%$ of U_e	
Rated insulation voltage U_i	75 V DC	
Rated operating current I_e per output	100 mA	
No-load supply current I_0 max.	≤ 20 mA	
Residual current I_r	≤ 10 μ A	
Polarity reversal protected	Only against \pm -reversal	
Short-circuit protected	Yes	
Ambient temperature T_a	$-10...+70$ °C	
Switching frequency f	2 kHz	
Utilization category	DC 13	
Function indicator for each output	Yes	
Analog input		
Input voltage U_{in}	0...10 V (implemented to output A)	
Input impedance	4.2 k Ω	
Switching outputs		
Freely programmable switching outputs	3	
Hysteresis H	500 mV	
Temperature drift	$\leq 2\%$ of U_{in} max.	
Degree of protection as per IEC 60529	IP 67	
Housing material	CuZn coated	
Connection	Input	M12 connector, 5-pin
	Output	5 m PUR cable, 7x0.25 mm ²



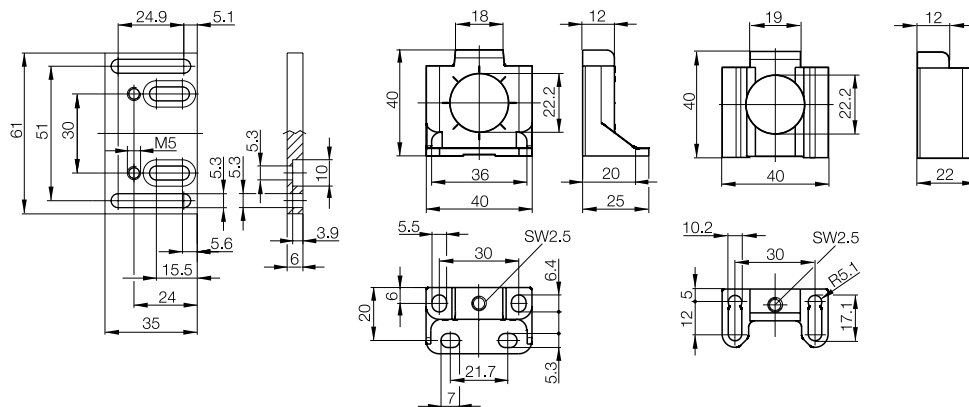
Accessories for Inductive Sensors

Assembly aids for Unicomact sensors

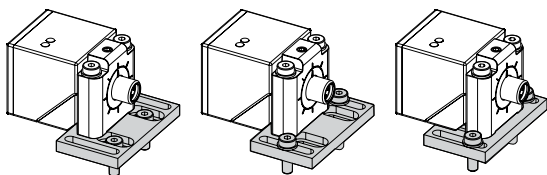


Description	Unicomact mounting bracket	Unicomact mounting base	Unicomact mounting base
Use	for BES Q40KFU-... Unicomact sensors (40x40 mm)	for BES Q40KFU-... Unicomact sensors (40x40 mm)	for BES Q40KFU-... Unicomact sensors (40x40 mm)
Ordering code	BAM00JW	BAM00JY	BAM00JZ
Part number	BES Q40-HW-1	BES Q40-HW-2	BES Q40-HW-3
Material	Anodized aluminum	Anodized aluminum	Anodized aluminum

Please note permissible installation options!



3 different mounting options



Accessories for Inductive Sensors

Assembly aids for Unicomcompact sensors



Description	Unicomcompact holding system	Unicomcompact holding system
Use	Unicomcompact sensors for fastening to profile rails (groove width: 8 mm)	Unicomcompact sensors for fastening to profile rails (groove width: 16 mm)
Ordering code	BAM00JU	BAM00JT
Part number	BES HS-01-P1-C8/Q40	BES HS-01-P1-C16/Q40
Material	Al anodized, CuZn	Al anodized, CuZn



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse

Extension

Sensor tester, testing and setting device

Analog switching device

Assembly aids for Uni and Unicomcompact sensors

Protective covering for Unicomcompact sensors

Protective nuts

Positive stop

Tube switch

Banking screw

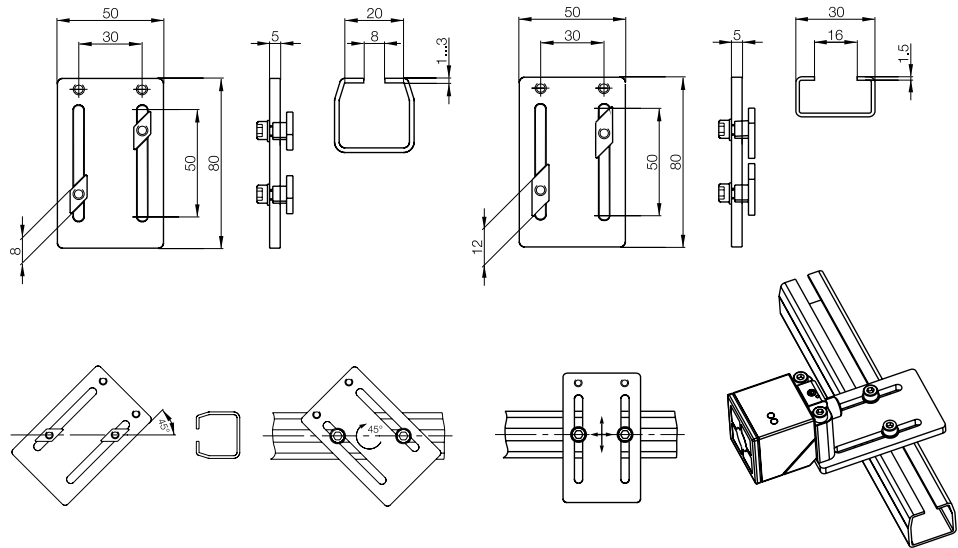
Cushioned mounts

Clamping holder overview

This holding system is used to attach Unicomcompact sensors to extruded rails.

The mounting set consists of:

- 1 mounting plate
- 2 tenon blocks
- 2 M5×10 cheese head screws DIN 912 galvanized
- 2 washers Ø 5.3 DIN 533
- 2 M5×40 cheese head screws ISO 4762

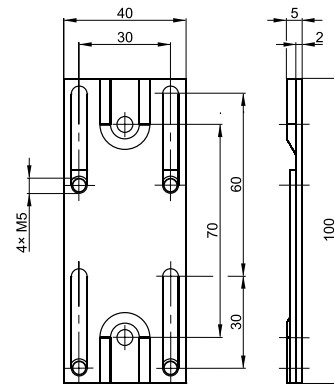


Accessories for Inductive Sensors

Assembly aid for Uni sensors and Unicomact sensors



Description	Mounting plate - Unisensor and Unicomact
Use	For Unisensor and Unicomact sensors (40x40 mm)
Ordering code	
Part number	Montageplatte B 4 - 2057
Material	Anodized aluminum



Unisensors can be adjusted up to 30 mm on this mounting plate while wired.

Loosening the sensor mounting screws (M5x25; included in set) allows the Unisensor to be easily repositioned to the desired location. Then simply tighten the screws.

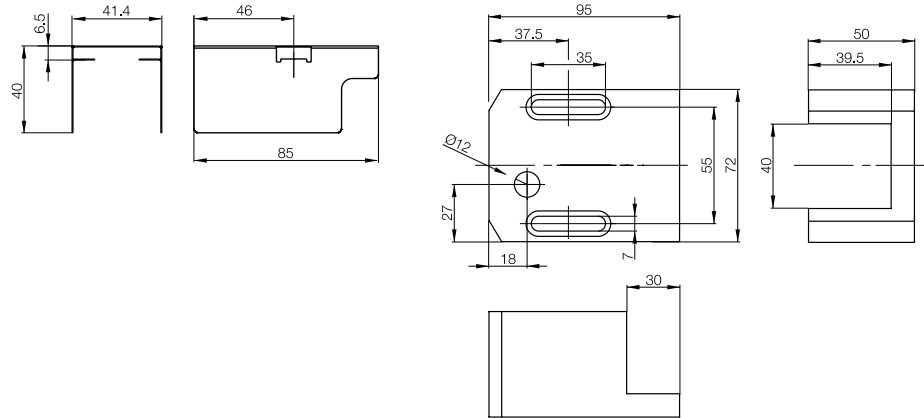


Accessories for Inductive Sensors

Protective coverings for Unicomcompact sensors



Description	Protective cover - Unicomcompact	Protective cap - Unicomcompact
Use	For BES Q40KFU-... magnetic field resistant Unicomcompact sensors (40x40 mm)	for BES Q40KFU-... Unicomcompact sensors (40x40 mm)
Ordering code	BAM00K0	BAM00K1
Part number	BES Q40-SH-1	BES Q40-SH-2
Material	Anodized aluminum	PA 6



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse Extension

Sensor tester, testing and setting device

Analog switching device

Assembly aids for Uni and Unicomcompact sensors

Protective covering for Unicomcompact sensors

Protective nuts

Positive stop

Tube switch

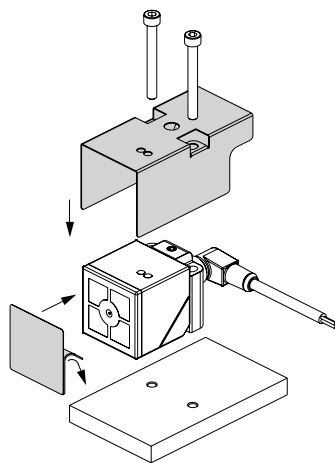
Banking screw

Cushioned mounts

Clamping holder overview

Clamping holder overview

The weld protection consists of a protective cover and a self-adhering PTFE film for protecting the active surface. If the sensor head is replaced, the welding protection must not be removed.



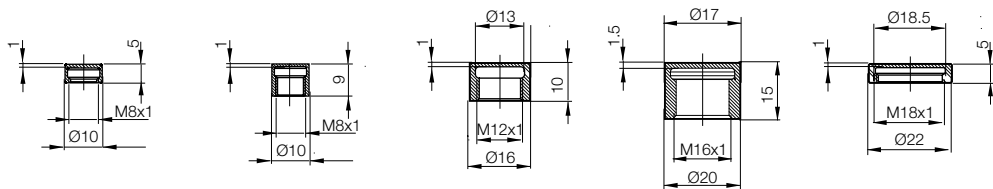
Protective cover
for use with BES 940
Material: **Coated Brass**

Accessories for Inductive Sensors

Protective nuts



Description	Cover nut	Cover nut	Cover nut	Cover nut	Cover nut	
Use	For M8 sensors	For M8 sensors	For M12 sensors	For M16 sensors	For M18 sensors	
Ordering code	BAM009Z	BAM00A0	BAM00C2	BAM00EP	BAM00EZ	
Part number	BES 08-SM-1	BES 08-SM-1F	BES 12-SM-2	BES 16-SM-2	BES 18-SM-1	
Reduction of the rated switching distance	1 mm	1 mm	1 mm	1.5 mm	1 mm	
Material	PTFE	PTFE	POM	PTFE	PTFE	



Increase the life of a sensor with PTFE, Deirin or ceramic screw on cap.

- Increase life of the sensor by protecting sensor face
- Withstands high temperatures
- Used in welding applications
- Easy installation

Material	POM	PTFE
Ambient temperature T_a	-20...+90 °C	-20...+100 °C

Please note!

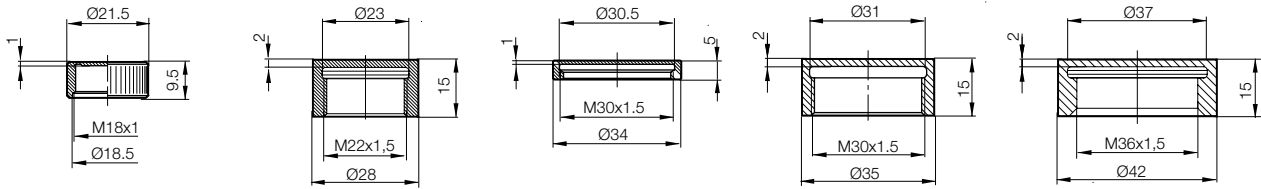
The rated switching distance of sensors is reduced to the wall thickness of the nut when the protective nut is installed.

Accessories for Inductive Sensors

Protective nuts



Cover nut	Cover nut	Cover nut	Cover nut	Cover nut
For M18 sensors	For M18 sensors	For M30 sensors	For M30 sensors	For M36 sensors
BAM00F0	BAM00H8	BAM00HJ	BAM00HK	BAM00JL
BES 18-SM-2	BES 22-SM-2	BES 30-SM-1	BES 30-SM-2	BES 36-SM-2
1 mm	2 mm	1 mm	2 mm	2 mm
POM	PTFE	POM	POM	POM



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse Extension

Sensor tester, testing and setting device

Analog switching device

Assembly aids for Uni and Unicomact sensors

Protective covering for Unicomact sensors

Protective nuts

Positive stop

Tube switch

Banking screw

Cushioned mounts

Clamping holder overview

Description	Cover nut	Cover nut	Cover nut		
Use	For M18 sensors	For M18 sensors			
Order code					
Part number	BES 12-CERAMIC-CAP-1	BES 18-CERAMIC-CAP-1	BES 30-CERAMIC-CAP-1		
Reduction of the rated switching distance	2 mm	2 mm	2 mm		
Material	Ceramic	Ceramic	Ceramic		

Accessories for Inductive Sensors

Positive stop

Positive stops for sensors with diameters of 4 mm or 8 mm

A positive stop that is combined with the corresponding mounting cuff can be added to inductive sensors with housing \varnothing 4 mm or \varnothing 8 mm. The desired switching point between the proximity switch and the trigger pin can be set wherever needed.



Prox Actuator

To avoid sensor damage, Balluff's prox actuators isolate inductive proximity sensors from mechanical contact with targets. They consist of a mounting clamp and a detent holder and are used with either a 4mm or 8mm smooth bore sensor.

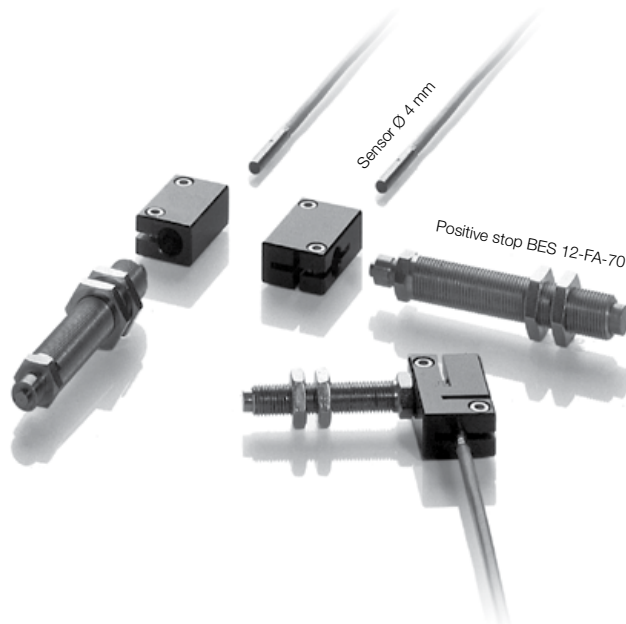
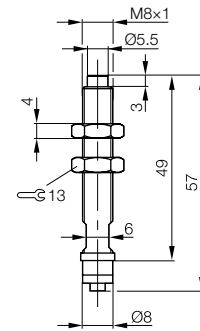
When a target contacts the plunger, the rod moves the detent into the sensing range of the switch, thus activating its output. When the target is removed, the plunger springs back into place and the detent is moved out of the sensing range.

Each prox actuator consists of a threaded barrel, a plunger and rod with spring return and a detent, which is detected by the sensor. The sensor is inserted into one end of the mounting clamp and the detent holder is inserted into the other end. Mounting clamps are available in four configurations:

- Straight and right angle for use with 4mm sensors
- Straight and right angle for 8mm sensors
- Detent holders come in three configurations:
 - M12 x 1, 70mm long
 - M08 x 1, 49mm long
 - M08 x 1, 89mm long

All have a 8mm smooth bore end for insertion into the clamp. Any holder can be used with any clamp. Once the sensor and holder are installed, two allen screws are tightened to hold them in place.

Description	Positive stop	
Use	For inductive sensors for mechanical protection	
Ordering code	BAM009L	
Part number	BES 08-FA-49	
Ordering code		
Part number		
Temperature resistance	-25...+100 °C	
Spring force	3 N	
Impact force $F_{max.}$ (N)	100	
Spring deflection	2 mm	
Permissible torque	15 Nm	
Material	Stainless steel	

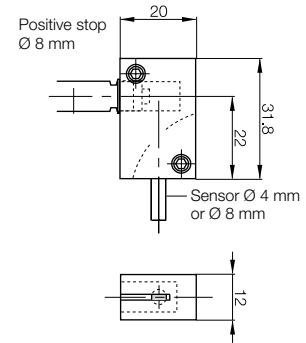
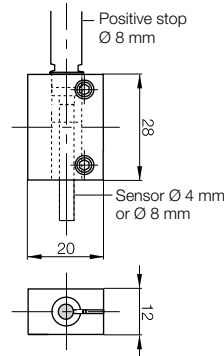
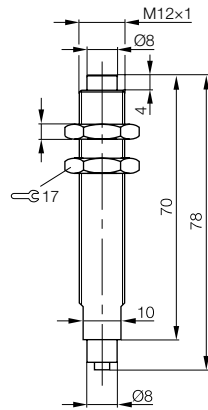
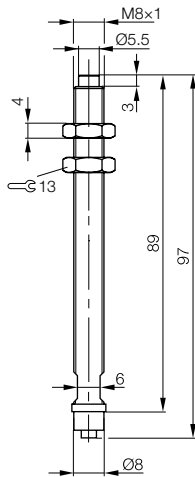


Accessories for Inductive Sensors

Positive stop, mounting cuff for positive stop



	Positive stop	Positive stop	Mounting cuff - straight for positive stop	Mounting cuff - angled for positive stop
	For inductive sensors for mechanical protection	For inductive sensors for mechanical protection	For sensors with \varnothing 4 mm or \varnothing 8 mm	For sensors with \varnothing 4 mm or \varnothing 8 mm
	BAM009M	BAM00AZ	BAM009N	BAM009P
	BES 08-FA-89	BES 12-FA-70	BES 08-FA-BS-4.0-G	BES 08-FA-BS-4.0-W
			BAM009R	BAM009T
			BES 08-FA-BS-8.0-G	BES 08-FA-BS-8.0-W
	-25...+100 °C	-25...+100 °C	-25...+100 °C	-25...+100 °C
	3 N	4 N		
	100	100		
	2 mm	32 mm		
	15 Nm	25 Nm	15 Nm	15 Nm
	Stainless steel	Stainless steel	Anodized Al	Anodized Al



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse Extension

Sensor tester, testing and setting device

Analog switching device

Assembly aids for Uni and Unicomact sensors

Protective covering for Unicomact sensors

Protective nuts

Positive stop

Tube switch

Banking screw

Cushioned mounts

Clamping holder overview

Accessories for Inductive Sensors

Tube switch

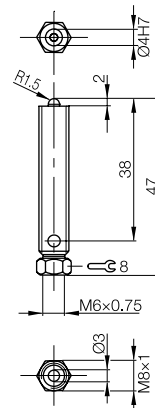
- Mechanical actuation – non-contact switching
- Protects the sensor from mechanical damage
- Plug and safe

Rapid application – high reliability

The set includes a pre-assembled tube switch, which means you only need to set up the sensor. The tube switch also combines the advantages offered by mechanical and inductive switches. Manufactured from stainless steel, it is extremely robust and very reliable, even under difficult conditions.



Description	Tube switch	
Use	For sensors dia. 4 mm for mechanical protection	
Ordering code	BAM01C0	
Part number	BAM FS-XE-002-D4-4	
Spring force F (N)	3	
Impact force F _{max.} (N)	400	
Switching operations min. (with F _{max.})	500000	
Housing material	Stainless steel	



Accessories for Inductive Sensors

Tube switch



Tube switch	Tube switch	Tube switch	
For M5 sensors for mechanical protection	For M5 sensors for mechanical protection	For M8 sensors for mechanical protection	
BAM01AZ	BAM019Y	BAM019W	
BAM FS-XE-001-M5-4	BAM FS-XE-003-M5-4	BAM FS-XE-004-M8-4	
3	3	4	
400	400	400	
500000	500000	500000	
Stainless steel	Stainless steel	Stainless steel	



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse

Extension

Sensor tester, testing and setting device

Analog switching device

Assembly aids for Uni and Unicomact sensors

Protective covering for Unicomact sensors

Protective nuts

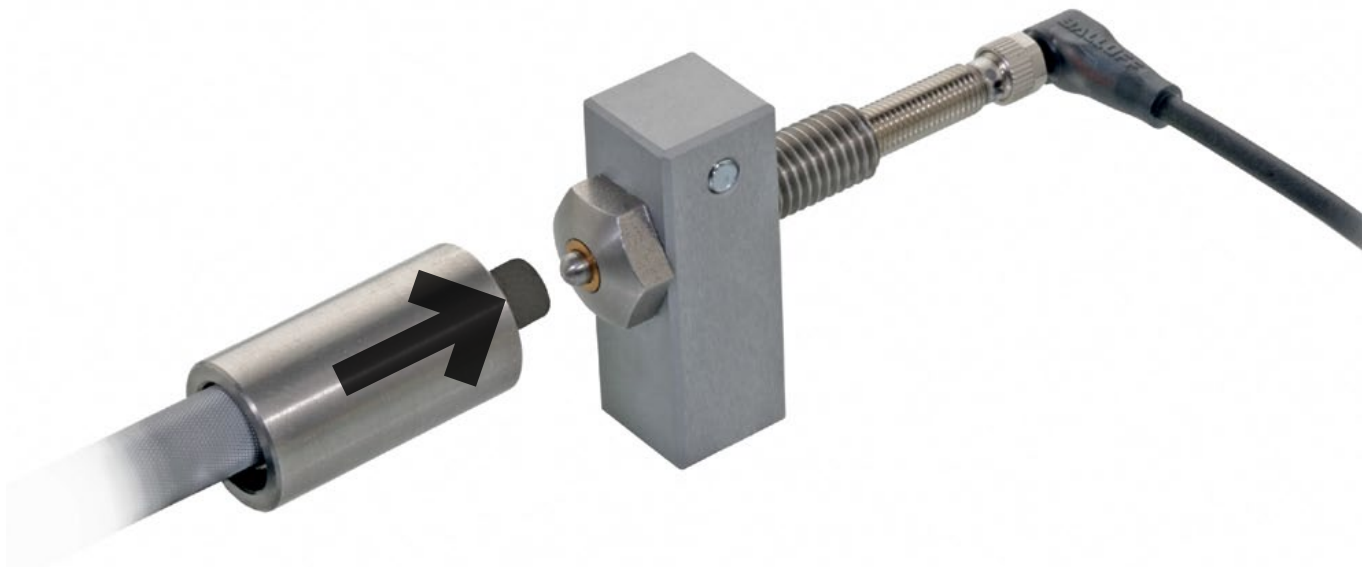
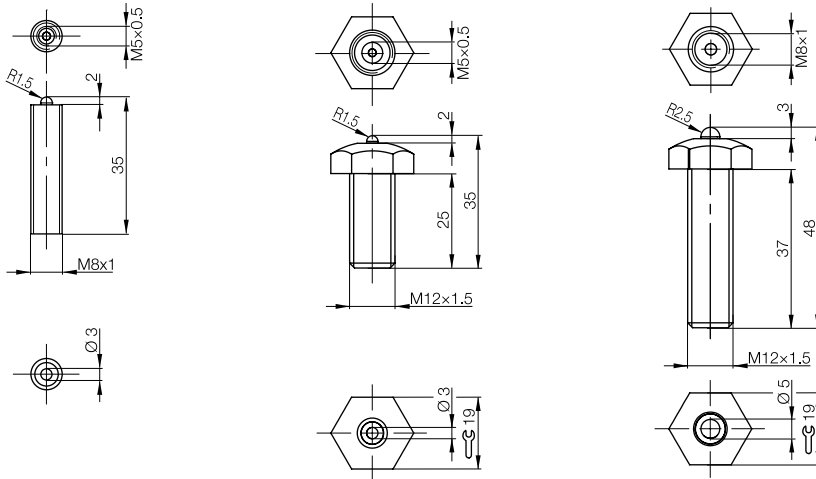
Positive stop

Tube switch

Banking screw

Cushioned mounts

Clamping holder overview



Accessories for Inductive Sensors

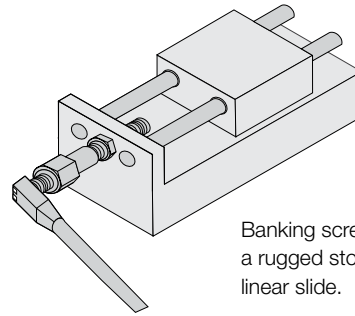
Banking screw actuators

Features:

Banking screw actuators are heat treated alloy steel that will accept any standard (1x) M8, M12 or M18 shielded sensor. Not intended for use with extended range models.

Benefits:

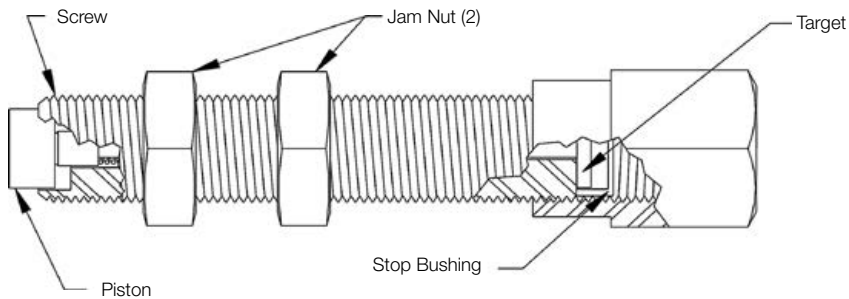
- Solid state output with no mechanical contact with sensor.
- Isolates sensor from impact.
- Allows for positive mechanical contact to plunge without physical contact to sensor.



Banking screw used as a rugged stop for a linear slide.

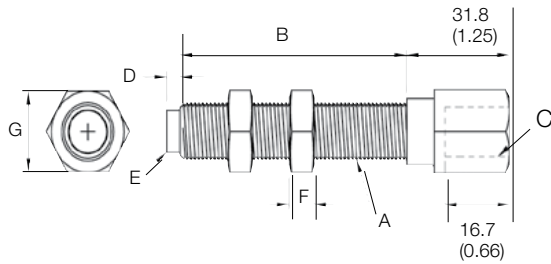
Construction & Operation

Both the screw and piston are heat-treated to withstand heavy use. A connecting rod ties the spring-loaded piston to the target, which triggers the sensor when the piston is displaced. The sensor is isolated from impact and separated from the target with a plastic bushing.



Accessories for Inductive Sensors

Banking screw actuators



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse Extension

Sensor tester, testing and setting device

Analog switching device

Assembly aids for Uni and Unicomact sensors

Protective covering for Unicomact sensors

Protective nuts

Positive stop

Tube switch

Banking screw

Cushioned mounts

Clamping holder overview

Ordering Code	A	B	C	D	E	G
BESA 08-25-08-BANKING-SCREW	M8 X 1	25 mm	M8 X 1	3.16 mm	5.84 mm	11.0 mm
BESA 08-50-08-BANKING-SCREW	M8 X 1	50 mm	M8 X 1	3.16 mm	5.84 mm	11.0 mm
BESA 12-25-12-BANKING-SCREW	M12 X 1	25 mm	M12 X 1	4.32 mm	9.40 mm	15.7 mm
BESA 12-50-12-BANKING-SCREW	M12 X 1	50 mm	M12 X 1	4.32 mm	9.40 mm	15.7 mm
BESA 12-75-12-BANKING-SCREW	M12 X 1	75 mm	M12 X 1	4.32 mm	9.40 mm	15.7 mm
BESA 12-100-12-BANKING-SCREW	M12 X 1	100 mm	M12 X 1	4.32 mm	9.40 mm	15.7 mm
BESA 18-50-18-BANKING-SCREW	M18 X 1	50 mm	M18 X 1	4.32 mm	14.2 mm	22.1 mm
BESA 18-75-18-BANKING-SCREW	M18 X 1	75 mm	M18 X 1	4.32 mm	14.2 mm	22.1 mm
BESA 18-100-18-BANKING-SCREW	M18 X 1	100 mm	M18 X 1	4.32 mm	14.2 mm	22.1 mm

Features:

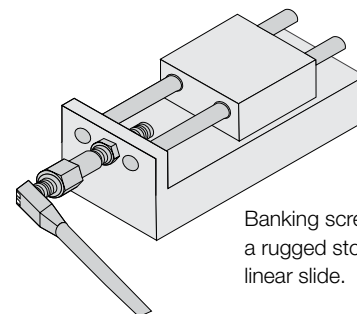
Banking screw actuators are heat treated alloy steel that will accept any standard (1x) M8, M12 or M18 shielded sensor. Not intended for use with extended range models.

Benefits:

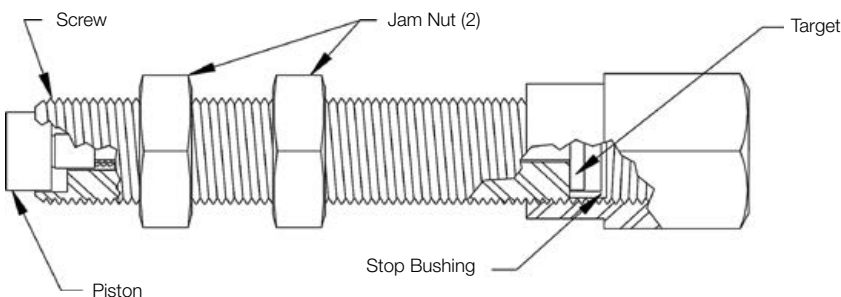
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Construction & Operation

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Banking screw used as a rugged stop for a linear slide.



Accessories for Inductive Sensors

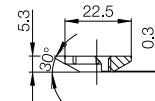
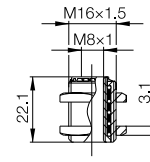
Cushioned Prox mounts

Protects sensor face from welding spatter and abrasives

- Minimal sensing distance affect (0.3-0.5 mm)
- Held in place with epoxy*
- Extends life of sensor
- Provides physical and thermal protection to sensor face



Description	Contact protector	
Use	For M8 sensors for mechanical protection	
Ordering code	BAM015U	
Part number	BESA-08-CM	
WAF	22	
Ambient temperature	-45...+85 °C	
Material	Anodized Al, POM	



Accessories for Inductive Sensors

Cushioned Prox mounts



Contact protector	Contact protector	Contact protector	
For M12 sensors for mechanical protection	For M18 sensors for mechanical protection	For M30 sensors for mechanical protection	
BAM015W	BAM015Y	BAM015Z	
BESA-12-CM	BESA-18-CM	BESA-30-CM	
29	35	51	
-45...+85 °C	-45...+85 °C	-45...+85 °C	
Anodized Al, POM	Anodized Al, POM	Anodized Al, POM	



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse Extension

Sensor tester, testing and setting device

Analog switching device

Assembly aids for Uni and Unicomcompact sensors

Protective covering for Unicomcompact sensors

Protective nuts

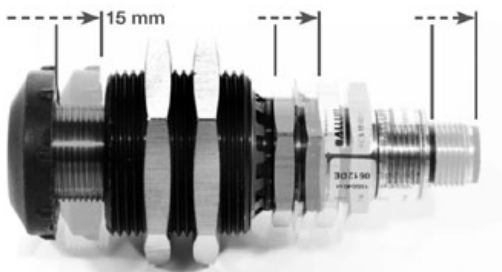
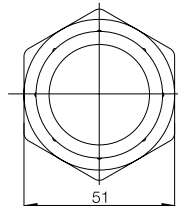
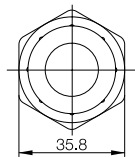
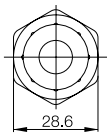
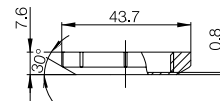
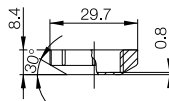
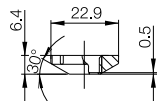
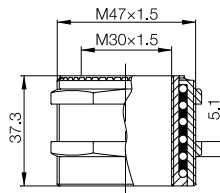
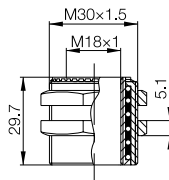
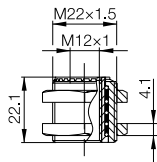
Positive stop

Tube switch

Banking screw

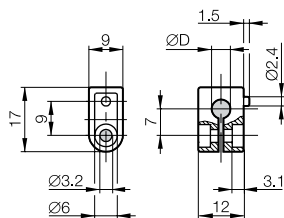
Cushioned mounts

Clamping holder overview



Accessories for Inductive Sensors

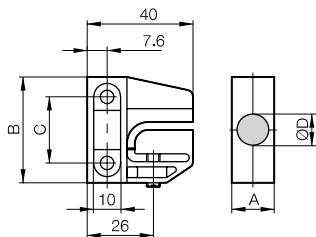
Mounting clamps for tubular sensors



Clamp for tubular sensors \varnothing 4 mm and 5 mm

	$\varnothing D$
BES 04-KB-1	4
BES 05-KB-1	5
BES 06.5-KB-1	6.5

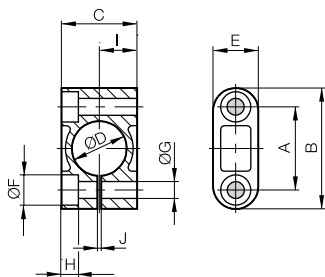
Material: PA6



Clamp for tubular sensors M12 and M18 (stackable)

	A	B	C	$\varnothing D$
BES 12,0-KB-2	16	40	25	12
BES 18,0-KB-2	22	45	30	18

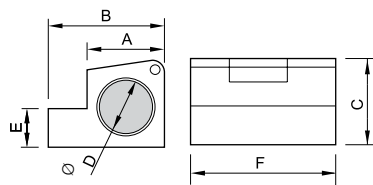
Material: PA6



Clamping cuff

	A	B	C	$\varnothing D$	E	F	G	H	I	J
BES 06.5-BS-1	17	27	16	6.4	12	8	4.5	4.5	8	1
BES 08.0-BS-1	17	27	16	7.9	12	8	4.5	4.5	8	1
BES 12.0-BS-1	22	32	20	11.9	12	8	4.5	4.5	10	1
BES 14.5-BS-1	22	32	20	14.5	12	8	4.5	4.5	10	1
BES 16.0-BS-1	26	36	26	16	12	8	4.5	4.5	13	1
BES 18.0-BS-1	26	36	26	17.9	12	8	4.5	4.5	13	1
BES 20.0-BS-1	32	45	30	20	15	10	5.5	5.5	15	2
BES 22.0-BS-1	32	45	30	21.9	15	10	5.5	5.5	15	2
BES 30.0-BS-1	42	55	38	30	18	10	5.5	5.5	19	1.5
BES 36.0-BS-1	48	61	44	35.9	18	10	5.5	5.5	22	1.5

Material: PA6



Snap clamp with positive stop

	A	B	C	$\varnothing D$	E	F
BES 08.0-KB-5-F	12	20	15	8	7	22
BES 12.0-KB-5-F	16	24	18	12	8	30
BES 18.0-KB-5-F	21	29	24	18	14	30
BES 30.0-KR-5-F	33	41	34.5	30	24	35

Material: Plastic PC



Accessories for Inductive Sensors

Mounting clamps for tubular sensors



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse Extension

Sensor tester, testing and setting device

Analog switching device

Assembly aids for Uni and Unicomact sensors

Protective covering for Unicomact sensors

Protective nuts

Positive stop

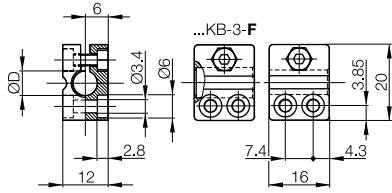
Tube switch

Banking screw

Cushioned mounts

Clamping holder overview

Clamping holder overview



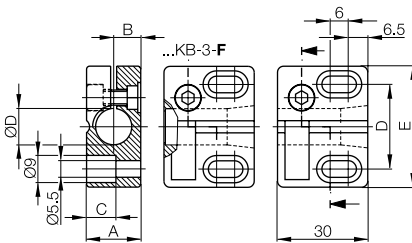
Clamp without positive stop for sensors \varnothing 3 mm to M8

	\varnothing D
BES 03.0-KB-3	3
BES 04.0-KB-3	4
BES 05.0-KB-3	5
BES 06.5-KB-3	6.5
BES 08.0-KB-3	8

Clamp with positive stop for sensors \varnothing 3 mm to M8

BES 08.0-KB-3-F	8
-----------------	---

Material: PA6



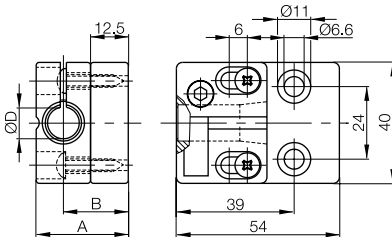
Clamp without positive stop for sensors M12 or M18 non-flush

	\varnothing D	A	B	C	D	E
BES 12.0-KB-3	12	18	9	9.7	28	40
BES 18.0-KB-3	18	24	12	13.5	28	40

Clamp with positive stop for sensors M12, M18 or M30 flush

BES 12.0-KB-3-F	12	18	9	9.7	28	40
BES 18.0-KB-3-F	18	24	12	13.5	28	40
BES 30.0-KB-3-F	30	36	18	19.5	42	54

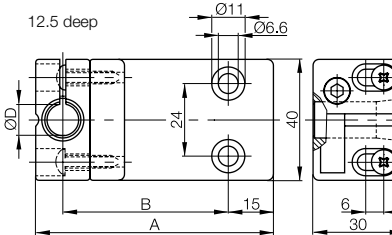
Material: PA6



Clamp with positive stop for vertical insertion of sensors for M12 or M18 flush, with mounting plate

	\varnothing D	A	B
BES 12.0-KB-3-F-SA 1	12	30.5	21.5
BES 18.0-KB-3-F-SA 1	18	36.5	24.5

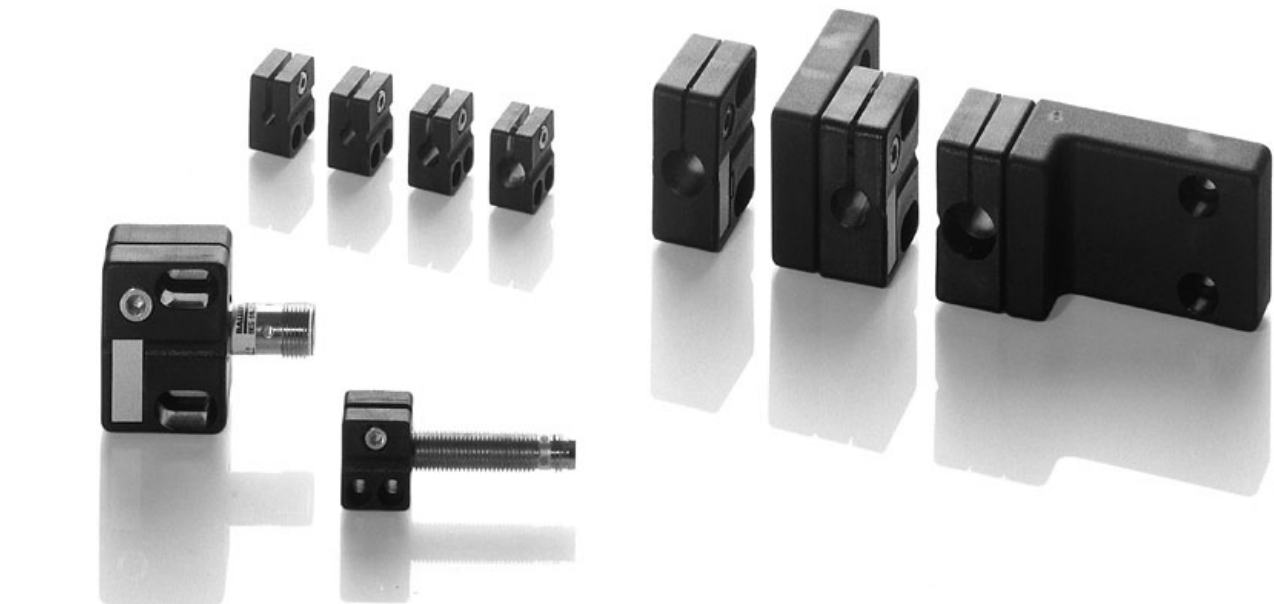
Material: PA6



Clamp with positive stop for horizontal insertion of sensors for M12 or M18 flush, with mounting plate

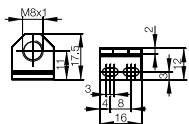
	\varnothing D	A	B
BES 12.0-KB-3-F-SA 2	12	79	55
BES 18.0-KB-3-F-SA 2	18	85	58

Material: PA6



Accessories for Inductive Sensors

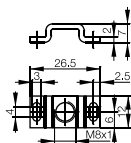
Mounting brackets for tubular sensors



SuperShorties™ "L" mounting bracket

BES 08-HW-4 12x17.5x16 mm

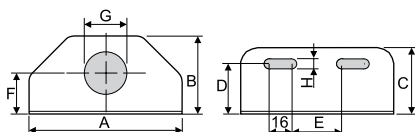
Material: Stainless steel



SuperShorties™ offset mounting bracket

BES 08-HW-5 26.5x7x12 mm

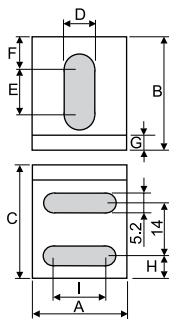
Material: Stainless steel



Universal "L" mounting bracket

	A	B	C	D	E	F	G	H
BES 516-MB-08	76	34	29	17	31	19	8	6
BES 516-MB-12	76	34	29	17	31	19	12	6
BES 516-MB-18	76	34	29	17	31	19	18	6
BES 516-MB-30	108	55	45	25	51	29	30	7

Material: Carbon steel

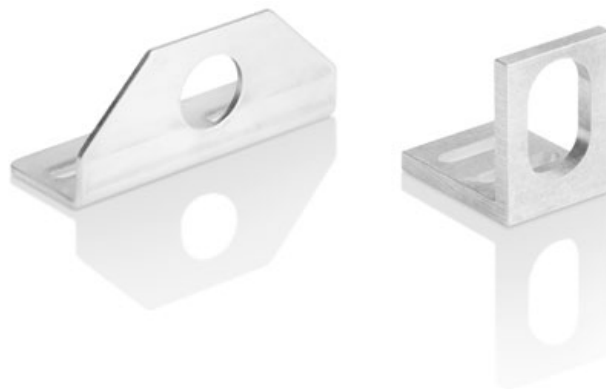


Slotted angle bracket (screws and washers included)

	A	B	C	D	E	F	G	H	I
BES 08-HW-1	25	30	30	8.1	12	7	4	6	14
BES 12-HW-1	25	30	30	12.1	9	8.5	4	6	14
BES 16-HW-1	30	40	40	16.1	12	12	5	10	18
BES 18-HW-1	30	40	40	18.1	11	12	5	10	18
BES 24-HW-1	35	50	40	24.1	13	16	5	10	23
BES 30-HW-1	40	60	40	30.1	18	19	5	10	30
BES 36-HW-1	50	60	40	36.1	13	21	5	10	40

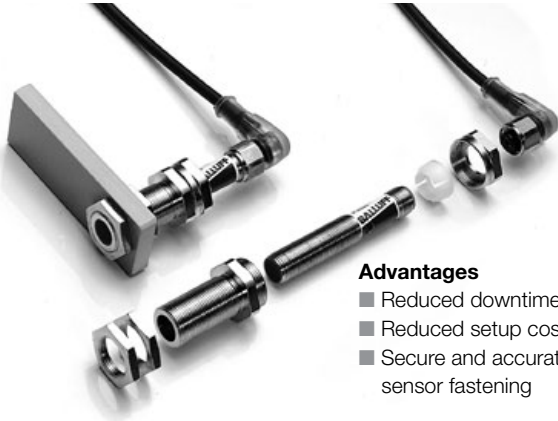
Material: Aluminum

Note: All units are in mm



Accessories for Inductive Sensors

Prox mounts for tubular sensors



Balluff provides a range of mounting solutions to decrease the need to adjust sensors for correct sensing range to reduce downtime and setup costs when sensors are replaced.

Initial Sensor Installation

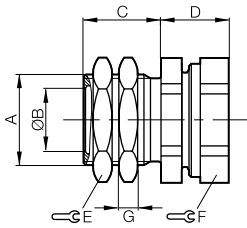
Sensor is assembled into the Prox Mount tube and locked into place with a plastic compression ring and metal nut. The Prox Mount and sensor assembly is then mounted and adjusted as with any tubular sensor, but the Prox Mount will remain in place on future sensor replacement tasks.

Advantages

- Reduced downtime
- Reduced setup costs
- Secure and accurate sensor fastening

Quick Sensor Replacement

Simply loosen the metal nut, allowing the sensor to be quickly removed. Install the new sensor into the Prox Mount mounting tube and lock into place with the compression ring and nut. A positive stop designed into the Prox Mount tube ensures effortless repeatable sensor positioning.



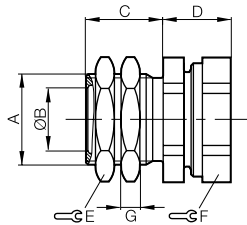
Prox Mounts with positive stop for sensors with thread length 30 mm

	A	Ø B	C	D max.	E	F	G
BES 05.0-KH-2S*	M5x0.5	5	13	11	13	13	4
BES 08.0-KH-2S*	M12x1 [†]	8	17.5	14.5	17	17	4
BES 12.0-KH-2S*	M16x1	12	19.5	14.5	22	22	4
BES 12.0-KH-2S-M18	M18x1 [†]	12	19.5	14.5	22	22	4
BES 18.0-KH-2S*	M24x1.5	18	20.5	15.5	30	30	5
BES 30.0-KH-2S*	M36x1.5	30	20.5	15.5	41	41	6

Material: CuZn, nickel plated

* Also available for welding environments (PTFE coated). Add /W to ordering code.
Ordering example: BES 12.0-KH-2S/W or BES 12.0-KH-2S/W-M18

[†] Allows smaller diameter sensor to replace larger when installed in this prox mount.

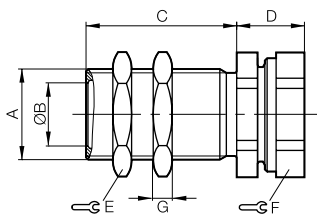


Prox Mounts with positive stop for sensors with thread length 30 mm

	A	Ø B	C	D max.	E	F	G
BES 08.0-KH-11S/W	M12x1 [†]	8	17.5	15.5	17	17	4
BES 12.0-KH-11S/W	M16x1	12	21	15.5	22	22	4
BES 18.0-KH-11S/W	M24x1.5	18	21.5	15.5	30	30	5

Material: Steel, black PTFE coated

[†] Allows smaller diameter sensor to replace larger when installed in this prox mount.
Note: Used with 2X Steelface sensors.

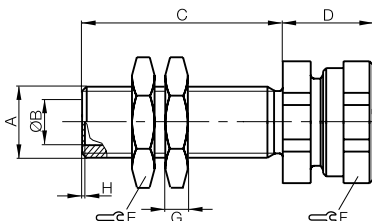


Prox Mounts with positive stop for sensors with thread length 40 mm or longer

	A	Ø B	C	D max.	E	F	G
BES 08.0-KH-2L*	M12x1	8	34	14.5	17	17	4
BES 12.0-KH-2L*	M16x1	12	30	14.5	22	22	4
BES 18.0-KH-2L*	M24x1.5	18	40	18	30	30	5
BES 30.0-KH-2L*	M36x1.5	30	40	18	41	41	6

Material: CuZn, nickel plated

* Also available for welding environments (PTFE coated). Add /W to end of ordering code.
Ordering example: BES 12.0-KH-2L/W



Prox Mounts with enclosed end for sensors in sealed installation

	A	Ø B	C	D max.	E	F	G	H
BES 08.0-KH-3L	M12x1	8	34	14.5	17	17	4	0.5
BES 12.0-KH-3L	M16x1	12	30	14.5	22	22	4	1
BES 18.0-KH-3L	M24x1.5	18	40	19.5	30	30	5	1

Material: PBT fiberglass reinforced



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse

Extension

Sensor tester, testing and setting device

Analog switching device

Assembly aids for Uni and Unicomact sensors

Protective covering for Unicomact sensors

Protective nuts

Positive stop

Tube switch

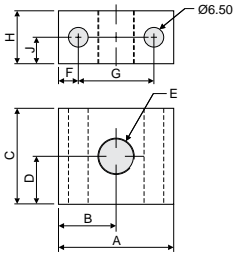
Banking screw

Cushioned mounts

Clamping holder overview

Accessories for Inductive Sensors

Bunker Blocks®



Bunker Block®

Bunker Block®	Prox Mount Required	A	B	C	D	E	F	G	H	J
BES 12.0-KB-9L	BES 08,0-KH-2L/W	38.1	19.05	31.75	15.88	M12	6.55	25	34	17
BES 16.0-KB-9L	BES 12,0-KH-2L/W	38.1	19.05	31.75	15.88	M16	6.55	25	30	15
BES 24.0-KB-9L	BES 18,0-KH-2L/W	50.8	25.4	38.1	19.05	M24	7.9	35	40	20
BES 36.0-KB-9L	BES 30,0-KH-2L/W	63.5	31.75	50.8	25.4	M36	7.75	48	40	20
BES 12.0-KB-9S	BES 08,0-KH-2S/W	38.1	19.05	31.75	15.88	M12	6.55	25	17.5	8.75
BES 16.0-KB-9S	BES 12,0-KH-2S/W	38.1	19.05	31.75	15.88	M16	6.55	25	19.5	9.75
BES 24.0-KB-9S	BES 18,0-KH-2S/W	50.8	25.4	38.1	19.05	M24	7.9	35	20.5	10.25
BES 36.0-KB-9S	BES 30,0-KH-2S/W	63.5	31.75	50.8	25.4	M36	7.75	48	20.5	10.25

Material: Aluminum

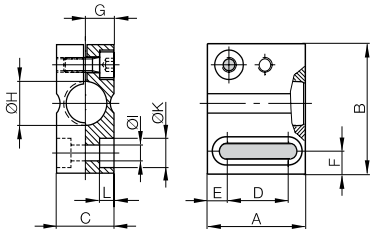
Sensor clamp with positive stop

	A	B	C	D	E	F	G	ØH	ØI	ØK	L
BES 08.0-KB-4-F	28	30	12	20	4	5	6	8	3.4	6	3.4
BES 12.0-KB-4-F	28	35	16	17	5.5	6	8	12	4.3	8	4
BES 18.0-KB-4-F	28	40	22	17	5.5	6	11	18	4.3	8	4
BES 30.0-KB-4-F	34	56	34	22	6	7	17	30	6.4	10	6

Material: Aluminum

Note for aluminum clamps with positive stop:

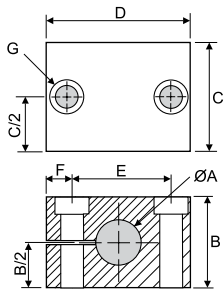
The switching distance of the proximity sensor may be reduced by use of these clamps. Note this when using this clamping system.



Slotted clamp mount without positive stop

	A	B	C	D	E	F	G
BES 08.0-KB-6	8	16.0	19.2	25.4	18.4	3.5	4-40 SHCS
BES 12.0-KB-6	12	25.4	19.2	38.1	25.0	6.6	10-32 SHCS
BES 18.0-KB-6	18	31.8	25.4	38.1	30.7	3.7	8-32 SHCS
BES 30.0-KB-6	30	50.8	33.1	63.5	51.6	6.0	1/4 SHCS

Material: Aluminum



Bunker Block®II without positive stop

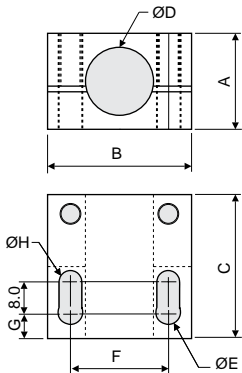
	A	B	C	ØD	ØE	F	G	ØH
BES 08.0-KB-10*	12.7	28.58	35	8	5.5	17	6.45	4.5
BES 12.0-KB-10*	19.05	34.92	38.1	12	5.5	22	7	4.5
BES 18.0-KB-10*	25.4	38.1	38.1	18	6.5	26	7	5.5
BES 30.0-KB-10*	38.1	60	44.45	30	8.5	42	6.45	6.5

Material: Steel, black zinc chromate coated

* Also available for welding environments (copper plated steel). Add /W to end of ordering code.

Ordering example: BES 12.0-KB-10/W.

Note: No Prox Mount is required. Sensor mounts directly in Bunker Block®II.



Bunker Block® for R01Z block sensors

BES R01-SH-4-A

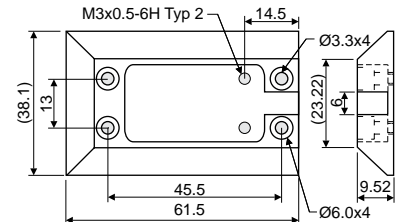
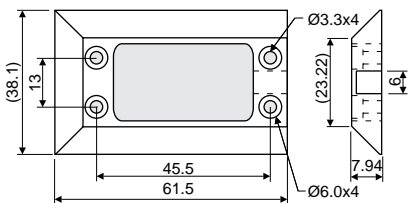
Material: Aluminum

Overtop for retro-fit installations

BES R01-SH-4-B

Material: Aluminum

Socket-style for new installations



Accessories for Inductive Sensors

Weld Repel™



Weld Repel™

Weld cells are a hot and abusive environment where sensor cable failure can be a daily occurrence. Extend the life of your sensor cables and other equipment by using Balluff's Weld Repel™ line of accessories. Weld Repel™ Jacket, Wrap and Sheets will provide comprehensive protection for your vulnerable weld cell components.



Weld Repel™ Sheets

Part Number	BKS-PS-914/16-SI	BKS-PS-914/16-SI-00,91
Length Info.	3 ft x custom length in ft	3 ft x ft sheet
Thickness	1.58 mm	1.58 mm
Max. Length	165 ft per roll	165 ft per roll
Elongation	600%	600%
Tear Strength	150 PSI	150 PSI
Temperature	-65°C to 233°C (-80°F to 450°F)	-65°C to 233°C (-80°F to 450°F)



WELD Jacket

WELD-JACKET-1/2"	Silicone & fiberglass 1/2" diameter (by the foot)
WELD-JACKET-3/4"	Silicone & fiberglass 3/4" diameter (by the foot)



Bunker Block®

Machined AL	Prox Mount Required	Description
BES 12.0-KB-9L	BES 08,0-KH-2L/W	M8 sensors (40 mm+)
BES 16.0-KB-9L	BES 12,0-KH-2L/W	M12 sensors (40 mm+)
BES 24.0-KB-9L	BES 18,0-KH-2L/W	M18 sensors (40 mm+)
BES 36.0-KB-9L	BES 30,0-KH-2L/W	M30 sensors (40 mm+)
BES 12.0-KB-9S	BES 08,0-KH-2S/W	M8 sensors (short)
BES 16.0-KB-9S	BES 12,0-KH-2S/W	M12 sensors (short)
BES 24.0-KB-9S	BES 18,0-KH-2S/W	M18 sensors (short)
BES 36.0-KB-9S	BES 30,0-KH-2S/W	M30 sensors (short)

Weld Repel™ Wrap

BKS PW-26/20-SI-TR-03,5	1" wide x 12 ft clear silicone wrap
BKS PW-51/30-SI-TR-11	2" wide x 36 ft clear silicone wrap



Weld Repel™ Jacket (order by the meter)

	ID	ID	Rollsize
BKS-PT-7/16-SI	1/4" dia.	7 mm	15 m
BKS-PT-10/16-SI	3/8" dia.†	10 mm†	15 m†
BKS-PT-13/16-SI	1/2" dia.††	13 mm††	15 m††
BKS-PT-16/16-SI	5/8" dia.**	16 mm**	15 m**
BKS-PT-19/16-SI	3/4" dia.	19 mm	15 m
BKS-PT-38/16-SI	1.5" dia.	38 mm	7.5 m
BKS-PT-50/16-SI	2" dia.	50 mm	7.5 m

* Recommended for use with M12 (micro) single ended cables
 ** Recommended for use with M12 (micro) double ended cables
 † Recommended for use with M8 (nano) single ended cables
 †† Recommended for use with M8 (nano) double ended cables

Specifications

Temperature Rating	-85°F to 500°F
Electrical Insulation Rating	400 Volts/mil thickness (wrap only)
Tensile Strength	700 PSI (wrap only)
Elongation	300% (wrap only)
Material	Clear Silicone



Bunker Block® II without positive stop

Copper Plated Steel	Description
BES 08.0-KB-10/W	M8 sensors
BES 12.0-KB-10/W	M12 sensors
BES 18.0-KB-10/W	M18 sensors
BES 30.0-KB-10/W	M30 sensors



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse Extension

Sensor tester, testing and setting device

Analog switching device

Assembly aids for Uni and Unicomact sensors

Protective covering for Unicomact sensors

Protective nuts

Positive stop

Tube switch

Banking screw

Cushioned mounts

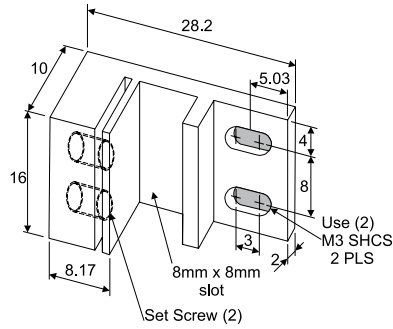
Clamping holder overview

Accessories for Inductive Sensors

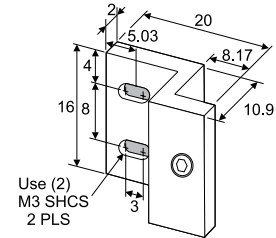
Mounting brackets for 8x8 block sensors & seal nuts

Description

Compression Block Mount for 8mm x 8mm Sensors



Set Screw Block Mount for 8mm x 8mm Sensors



Ordering Code

BES Q08-KH-1

BES Q08-HW-4

Material

Anodized Aluminum

Anodized Aluminum

Description

Pressure Seal Nut

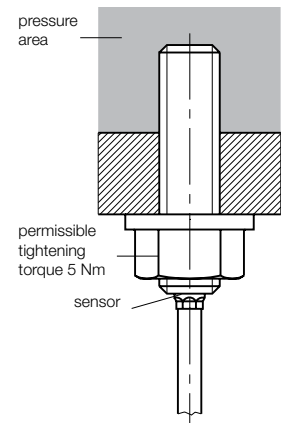
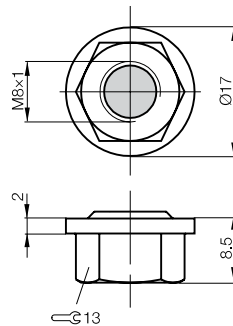


Fig. 1

Ordering Code

BES 08-DM-1

Material

This is used to seal pressure rated proximity switches. It seals against both liquids and gases, and can be removed and tightened again up to five times. For use with BES 516-300-S289-B0-D-PU-

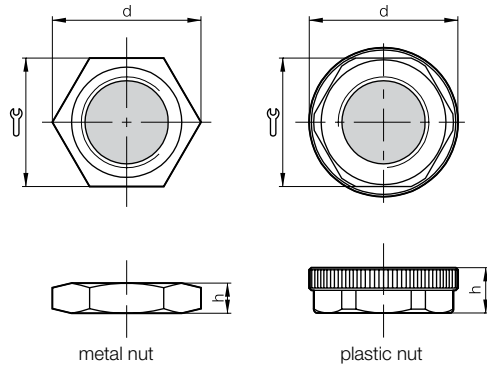
See Fig. 1 for mounting guidelines.

Accessories for Inductive Sensors

Nuts

Mounting Nuts

Description



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse Extension

Sensor tester, testing and setting device

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Protective nuts

Positive stop

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Banking screw

Cushioned mounts

Clamping holder overview

Ordering Code _____ Ordering code = Part no. _____

Material	Metal nuts	Part no.	Material	d	wrench	h
	M8×1	500557	steel galvanized	15	13	4
	M12×1	500462	Ms nickel plated	20	17	4
	M18×1	500152	Ms nickel plated	28	24	4
	M30×1.5	500252	Ms nickel plated	42	36	5
	Stainless steel nuts					
	M5×0.5	605313	1.4305 (303)	8.9	8	2.7
	M12×1	636981	1.4305 (303)	20	17	4
	M18×1	636982	1.4301 (304)	28	24	4
	M30×1.5	636983	1.4401 (304)	42	36	5
	Plastic nuts					
	M12×1	507936	PA 6.6	19.7	17	6
	M18×1	606841	PA 6.6	28	24	8
	M30×1.5	610292	PA 6.6	40	36	8

Spring type lockwasher for M5 sensors: part no. 710256

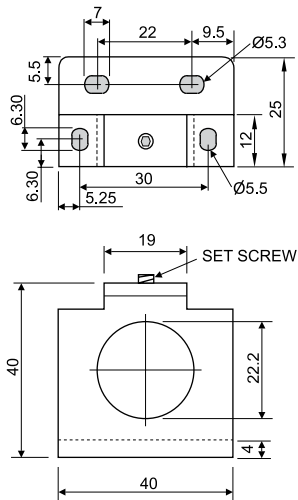
Toothed lockwasher for M8 sensors: part no. 500558

Toothed lockwasher for M12 sensors: part no. 500552

Accessories for Inductive Sensors

Mounting brackets for block sensors

Description	Q40 Optional Metal Mounting Bracket
Ordering Code	BES Q40-HW-2



Slotted Mounting Bracket
BES Q40-HW-1*
Material: Aluminum



Protection Cap
BES Q40-SH-2*
Material: PA 6



Protective Cover
BES Q40-SH-1*
For use with
BES Q40KFU-...A-...
Material: Coated brass

*Consult factory for dimensions

Accessories for Inductive Sensors

Sensor protection devices

Ceramic Faces



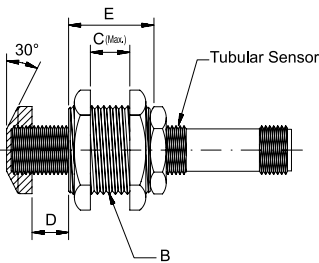
		Diameter (mm)	Thickness (mm)
604094	M8x1	5.8	0.3
619341	M12x1	10.4	0.3
505933	M18x1	15.2	0.5
634036	M30x1.5	27.9	0.5

* An epoxy similar to Loctite 480-40 is recommended.

Protects sensor face from weld spatter and abrasives.

- Minimal sensing distance affect (0.3-0.5 mm)
- Held in place with epoxy*
- Extends life of sensor
- Provides physical and thermal protection to sensor face

Cushioned Prox Mount



		Nut Flats	B	C	D	E
BESA 08-CM*	M8x1	22	M16x1.5	11	10	19
BESA 12-CM*	M12x1	29	M22x1.5	15	10	19
BESA 18-CM*	M18x1	35	M30x1.5	15	10	25
BESA 30-CM*	M30x1.5	51	M47x1.5	25	15	25

* Above part numbers are for shielded sensors. For unshielded sensors, alter part number in the following manner: BESA ...-N-CM.

For applications where impact to the sensor by the target is inevitable, cushioned Prox Mounts extend the life of the sensor by allowing up to 15mm of target overtravel. D = travel distance. Sensor returns to original location after intrusion is removed.



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

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Pulse

Extension

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Cushioned mounts

Clamping holder overview

Clamping holder overview