

# DC 3-/4-wire Inductive Sensors

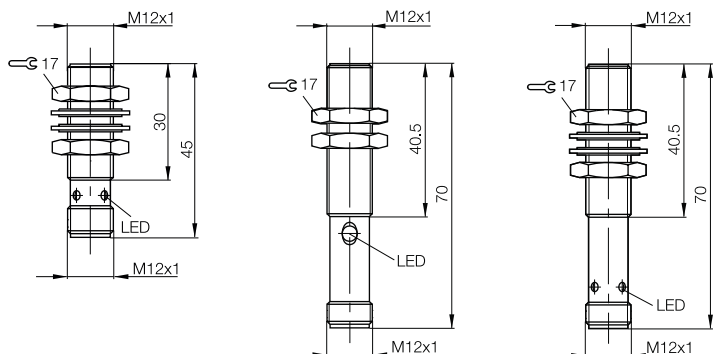
## Cylinder designs, M12x1



Model		<b>M12x1</b>	<b>M12x1</b>	<b>M12x1</b>	
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush	Flush	
Rated switching distance $s_n$		<b>2 mm</b>	<b>2 mm</b>	<b>2 mm</b>	
Assured switching distance $s_a$		0...1.6 mm	0...1.6 mm	0...1.6 mm	
Switching distance marking		■	■	■	
PNP, NO	<b>Ordering code</b>	<b>BES00PK</b>	<b>BES02EL</b>	<b>BES01C8</b>	
	Part number	BES 516-325-E5-C-S4	BES 515-325-S4-C	BES 516-325-S4-C	
PNP, NC	<b>Ordering code</b>	<b>BES00YT</b>	<b>BES01K6</b>		
	Part number	BES 516-370-E5-C-S4	BES 516-370-S4-C		
PNP, complementary	<b>Ordering code</b>			<b>BES0161</b>	
	Part number			BES 516-113-S4-C	
NPN, NO	<b>Ordering code</b>	<b>BES00T5</b>	<b>BES01EN</b>		
	Part number	BES 516-329-E5-C-S4	BES 516-329-S4-C		
NPN, NC	<b>Ordering code</b>	<b>BES010A</b>	<b>BES01LA</b>		
	Part number	BES 516-375-E5-C-S4	BES 516-375-S4-C		
NPN, complementary	<b>Ordering code</b>			<b>BES016E</b>	
	Part number			BES 516-118-S4-C	
Supply voltage $U_S$		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	Stainless steel	Stainless steel	
	Sensing surface	PBT	PA 12	PA 12	
Connection		M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	

Wiring diagrams, see page 958.  
The meaning of switching distance markings can be found on page 962.

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



# DC 3-/4-wire Inductive Sensors Cylinder designs, M12x1



Inductive Sensors

Global DC 3-wire

DC 3-/4-wire

Cylinder Designs

Block Designs

DC 2-wire

AC/DC 2-wire

AC 2-wire

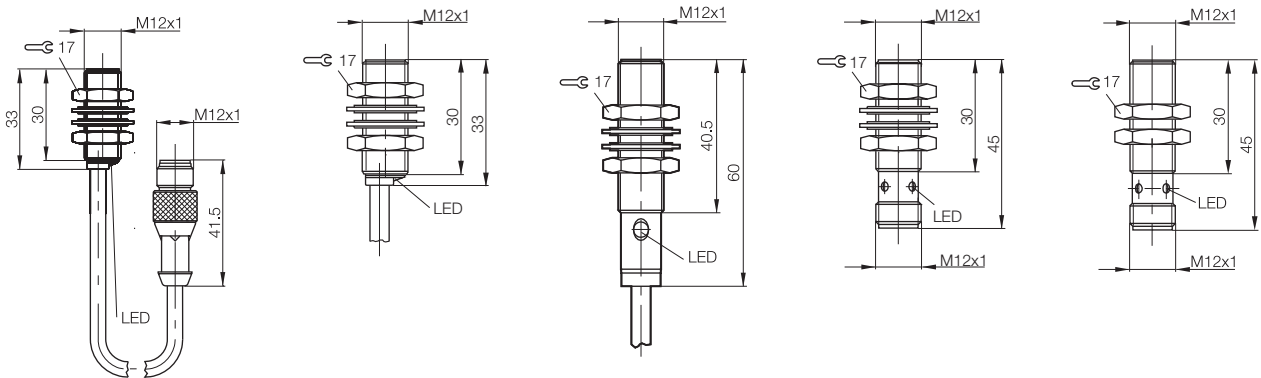
Special Properties

Analog Distance measurement

Accessories



M12x1	M12x1	M12x1	M12x1	M12x1
Flush	Flush	Flush	Flush	Flush
<b>2 mm</b>	<b>2 mm</b>	<b>2 mm</b>	<b>4 mm</b>	<b>4 mm</b>
0...1.6 mm	0...1.6 mm	0...1.6 mm	0...3.2 mm	0...3.2 mm
■	■	■	■ ■	■ ■
<b>BES00PH</b>	<b>BES00P8</b>	<b>BES01AZ</b>	<b>BES00PY</b>	<b>BES014W</b>
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
	<b>BES00YL</b>	<b>BES01K2</b>	<b>BES00Z0</b>	<b>BES014U</b>
	BES 516-370-E4-C-02	BES 516-370-BO-C-02	BES 516-370-G-E5-C-S4	BES M12EE-POC40B-S04G
	<b>BES00T0</b>	<b>BES01EF</b>	<b>BES00TC</b>	
	BES 516-329-E4-C-02	BES 516-329-BO-C-02	BES 516-329-G-E5-C-S4	
	<b>BES0108</b>	<b>BES01L7</b>	<b>BES010H</b>	
	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, 3x0.34 mm <sup>2</sup>	2 m PVC cable, 3x0.34 mm <sup>2</sup>	M12 connector, 4-pin	M12 connector, 4-pin



# DC 3-/4-wire Inductive Sensors

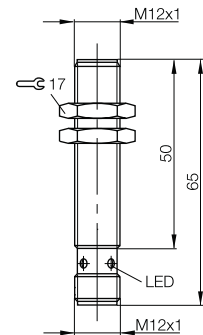
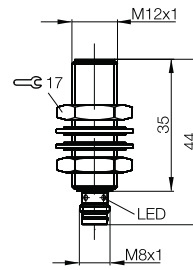
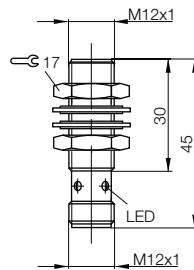
## Cylinder designs, M12x1



Model		<b>M12x1</b>	<b>M12x1</b>	<b>M12x1</b>
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush	Flush
Rated switching distance $s_n$		<b>4 mm</b>	<b>4 mm</b>	<b>4 mm</b>
Assured switching distance $s_a$		0...3 mm	0...3.2 mm	0...3.2 mm
Switching distance marking		■ ■	■ ■	■ ■
PNP, NO	<b>Ordering code</b>		<b>BES00PZ</b>	<b>BES02FU</b>
	Part number		BES 516-325-G-E5-C-S49	BES M12EI-PSC40B-S04G
PNP, NC	<b>Ordering code</b>		<b>BES00Z1</b>	<b>BES02FT</b>
	Part number		BES 516-370-G-E5-C-S49	BES M12EI-POC40B-S04G
NPN, NO	<b>Ordering code</b>	<b>BES03UP</b>	<b>BES00TE</b>	<b>BES02FR</b>
	Part number	BES 516-329-SA96-G-E5-C-S4	BES 516-329-G-E5-C-S49	BES M12EI-NSC40B-S04G
NPN, NC	<b>Ordering code</b>		<b>BES010J</b>	
	Part number		BES 516-375-G-E5-C-S49	
Supply voltage $U_s$		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 (□)	75 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...+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

Wiring diagrams, see page 958.  
The meaning of switching distance markings can be found on page 962.

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



# DC 3-/4-wire Inductive Sensors Cylinder designs, M12x1



**SUPERSHORTIES**

M12x1	M12x1	M12x1	M12x1	M12x1
Flush	Flush	Flush	Flush	Flush
<b>4 mm</b>	<b>4 mm</b>	<b>4 mm</b>	<b>4 mm</b>	<b>4 mm</b>
0...3.2 mm	0...3.2 mm	0...3 mm	0...3.2 mm	0...3.2 mm
■ ■	■ ■	■ ■	■ ■	■ ■
<b>BES038C</b>	<b>BES01C7</b>	<b>BES035R</b>	<b>BES0464</b>	<b>BES00PW</b>
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
			<b>BES0465</b>	
			BES M12EA-POC40B-EP00,3-GS04	
			<b>BES0467</b>	<b>BES03EK</b>
			BES M12EA-NSC40B-EP00,3-GS04	BES 516-329-G-E4-C-S4-PU-00,5
			<b>BES0466</b>	
			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
			<b>Short design</b>	
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



Inductive Sensors

Global DC 3-wire

DC 3-/4-wire

Cylinder Designs

Block Designs

DC 2-wire

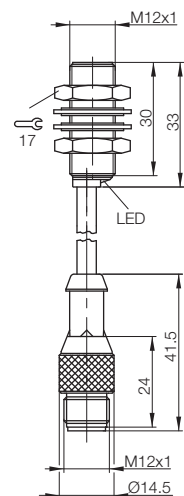
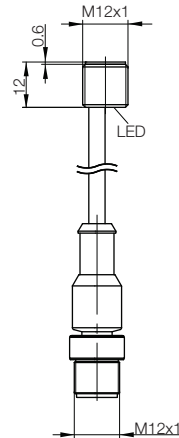
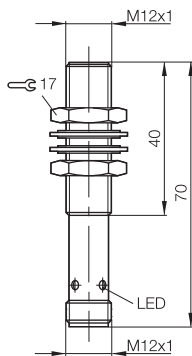
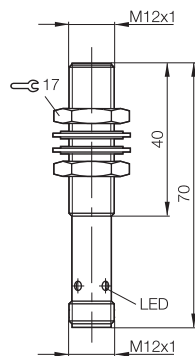
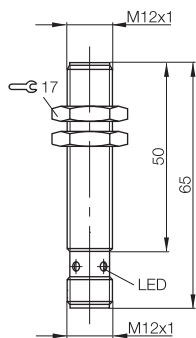
AC/DC 2-wire

AC 2-wire

Special Properties

Analog Distance Measurement

Accessories



# DC 3-/4-wire Inductive Sensors

## Cylinder designs, M12x1

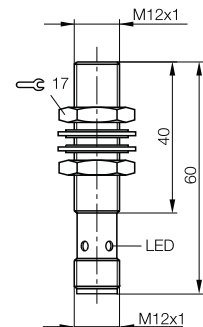
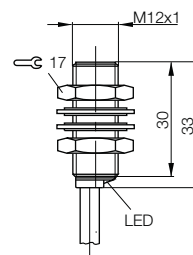
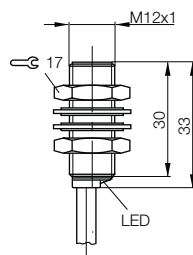


TRIPLEPROX

Model		<b>M12x1</b>	<b>M12x1</b>	<b>M12x1</b>	
Installation type (observe instructions in the Basic Information chapter)		Flush	Flush	Quasi-flush	
Rated switching distance $s_n$		<b>4 mm</b>	<b>4 mm</b>	<b>6 mm</b>	
Assured switching distance $s_a$		0...3.2 mm	0...3.2 mm	0...4.8 mm	
Switching distance marking		■ ■	■ ■	■ ■ ■	
PNP, NO	<b>Ordering code</b>	<b>BES00PL</b>	<b>BES00PP</b>	<b>BES02WZ</b>	
	Part number	BES 516-325-G-E4-C-02	BES 516-325-G-E4-C-PU-02	BES M12MG1-PSC60B-S04G	
PNP, NC	<b>Ordering code</b>	<b>BES00YU</b>	<b>BES00YW</b>	<b>BES02WY</b>	
	Part number	BES 516-370-G-E4-C-02	BES 516-370-G-E4-C-PU-02	BES M12MG1-POC60B-S04G	
PNP, complementary	<b>Ordering code</b>				
	Part number				
NPN, NO	<b>Ordering code</b>	<b>BES00T6</b>	<b>BES00T9</b>	<b>BES02WW</b>	
	Part number	BES 516-329-G-E4-C-02	BES 516-329-G-E4-C-PU-02	BES M12MG1-NSC60B-S04G	
NPN, NC	<b>Ordering code</b>	<b>BES010C</b>	<b>BES010E</b>	<b>BES02WU</b>	
	Part number	BES 516-375-G-E4-C-02	BES 516-375-G-E4-C-PU-02	BES M12MG1-NOC60B-S04G	
Supply voltage $U_s$		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 (□)	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.		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				<b>Large switching distance</b>	
Material	Housing	Brass-coated	Brass-coated	Brass-coated	
	Sensing surface	LCP	LCP	PBT	
Connection		2 m PVC cable, 3x0.34 mm <sup>2</sup>	2 m PUR cable, 3x0.34 mm <sup>2</sup>	M12 connector, 4-pin	

Wiring diagrams, see page 958.  
The meaning of switching distance markings can be found on page 962.

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



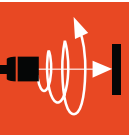
# DC 3-/4-wire Inductive Sensors Cylinder designs, M12x1



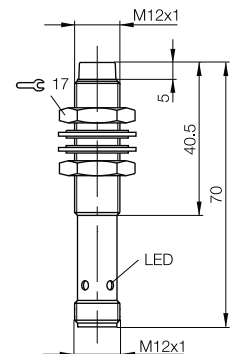
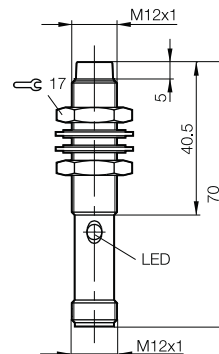
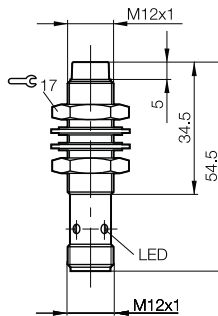
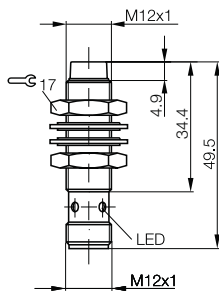
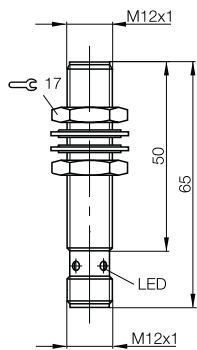
**HYPERPROX**



M12x1	M12x1	M12x1	M12x1	M12x1
Quasi-flush	Not flush	Not flush	Not flush	Not flush
<b>8 mm</b>	<b>4 mm</b>	<b>4 mm</b>	<b>4 mm</b>	<b>4 mm</b>
0...5.8 mm	0...3.2 mm	0...3.2 mm	0...3.2 mm	0...3.2 mm
■■■■	■	■	■	■
<b>BES01ZN</b>	<b>BES00UY</b>		<b>BES02FC</b>	<b>BES01H6</b>
BES M12MI-PSH80B-S04G	BES 516-356-E5-C-S4		BES 515-356-S4-C	BES 516-356-S4-C
	<b>BES00KM</b>		<b>BES018Y</b>	
	BES 516-3019-E5-C-S4		BES 516-3019-S4-C	
				<b>BES0178</b>
				BES 516-131-S4-C
<b>BES01ZY</b>		<b>BES030Z</b>	<b>BES01HE</b>	
BES M12MI-NSH80B-S04G		BES 516-357-E5-Y-S4	BES 516-357-S4-C	
			<b>BES019E</b>	
			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
<b>Large switching distance</b>				
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



Inductive Sensors  
Global DC 3-wire  
DC 3-/4-wire  
Cylinder Designs  
Block Designs  
DC 2-wire  
AC/DC 2-wire  
AC 2-wire  
Special Properties  
Analog Distance Measurement  
Accessories



# DC 3-/4-wire Inductive Sensors

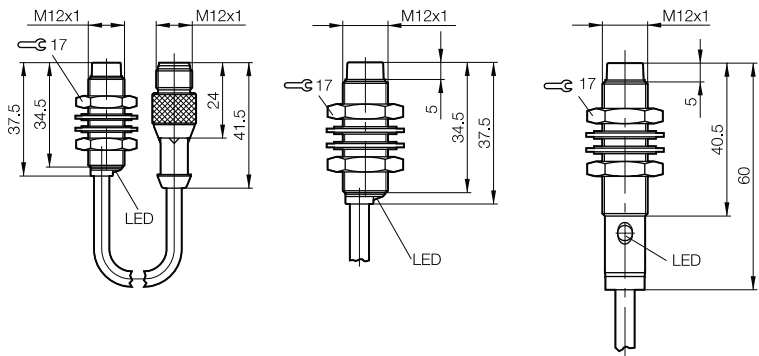
## Cylinder designs, M12x1



Model		<b>M12x1</b>	<b>M12x1</b>	<b>M12x1</b>
Installation type (observe instructions in the Basic Information chapter)		Not flush	Not flush	Not flush
Rated switching distance $s_n$		<b>4 mm</b>	<b>4 mm</b>	<b>4 mm</b>
Assured switching distance $s_a$		0...3.2 mm	0...3.2 mm	0...3.2 mm
Switching distance marking		■	■	■
PNP, NO	<b>Ordering code</b>	<b>BES00UT</b>	<b>BES00UL</b>	<b>BES01H1</b>
	Part number	BES 516-356-E4-C-S4-00,3	BES 516-356-E4-C-02	BES 516-356-BO-C-02
PNP, NC	<b>Ordering code</b>			<b>BES018P</b>
	Part number			BES 516-3019-BO-C-02
NPN, NO	<b>Ordering code</b>		<b>BES00W0</b>	<b>BES01H7</b>
	Part number		BES 516-357-E4-C-02	BES 516-357-BO-C-02
NPN, NC	<b>Ordering code</b>		<b>BES00M0</b>	<b>BES019A</b>
	Part number		BES 516-3030-E4-C-02	BES 516-3030-BO-C-02
Supply voltage $U_s$		10...30 V DC	10...30 V DC	10...30 V DC
Voltage drop $U_d$ at $I_e$ max.		2 V	2 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.		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	Brass-coated	Stainless steel
	Sensing surface	PBT	PBT	PA 12
Connection		0.3 m PUR cable with M12 connector, 4-pin	2 m PVC cable, 3x0.34 mm <sup>2</sup>	2 m PVC cable, 3x0.34 mm <sup>2</sup>

Wiring diagrams, see page 958.  
The meaning of switching distance markings can be found on page 962.

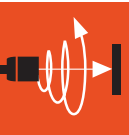
**Additional cable lengths and PUR cable jacket material available on request**



# DC 3-/4-wire Inductive Sensors Cylinder designs, M12x1



SUPERSHORTIES		TRIPLEPROX		TRIPLEPROX	
<b>M12x1</b>	<b>M12x1</b>	<b>M12x1</b>	<b>M12x1</b>		
Not flush	Not flush	Not flush	Not flush		
<b>6 mm</b>	<b>8 mm</b>	<b>10 mm</b>	<b>10 mm</b>		
0...4.8 mm	0...6.4 mm	0...8 mm	0...8 mm		
■ ■	■ ■	■ ■ ■	■ ■ ■		
<b>BES047L</b>	<b>BES01PN</b>	<b>BES02WK</b>	<b>BES02WR</b>		
BES M12EA-PSC60F-EP00,3-GS04	BES M12EG-PSC80F-S04G	BES M12MC1-PSC10F-S04G	BES M12MF1-PSC10F-S04G		
<b>BES047M</b>			<b>BES02WP</b>		
BES M12EA-POC60F-EP00,3-GS04			BES M12MF1-POC10F-S04G		
<b>BES047P</b>		<b>BES02WJ</b>	<b>BES02WN</b>		
BES M12EA-NSC60F-EP00,3-GS04		BES M12MC1-NSC10F-S04G	BES M12MF1-NSC10F-S04G		
<b>BES047N</b>					
BES M12EA-NOC60F-EP00,3-GS04					
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		
75 V DC	250 V AC (□)	75 V DC	75 V DC		
100 mA	200 mA	200 mA	200 mA		
Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes		
-40...+85 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C		
1 kHz	1.5 kHz	400 Hz	400 Hz		
Yellow LED	Yellow LED	Yellow LED	Yellow LED		
IP 67	IP 68 per BWN Pr. 20	IP 67	IP 67		
CE, cULus	CE, cULus	CE	CE		
<b>Short design</b>		<b>Large switching distance</b>	<b>Large switching distance</b>		
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		



Inductive Sensors  
Global DC 3-wire  
DC 3-/4-wire  
Cylinder Designs  
Block Designs  
DC 2-wire  
AC/DC 2-wire  
AC 2-wire  
Special Properties  
Analog Distance Measurement  
Accessories

