

### Inductive Steelface sensors with selective response ignore ferrous or non-ferrous metals, depending on the version.

The property of being able to ignore ferrous or non-ferrous metals and the particular robustness of the Steelface sensors open up new possibilities in automation technology. Because the sensors are right where the action is.

Steelface sensors are used in especially harsh environments and applications too extreme for standard sensors. Here is where they show their strengths:

- they increase the availability of your systems,
- reduce your maintenance and storage costs,
- are resistant to abrasive media and aggressive cleaning agents and
- provide a robust sensing surface.

### Correction factors

Model	Steel FE 360	Stainless steel	Aluminum	Copper	Brass
DC					
M8 Ferrous	1	0.1... 0.7	0	0	0.1
M12 ferrous	1	0.1... 0.7	0	0	0
M12 non ferrous	0	0	1	1.1	0.9
M18 ferrous	1	0.1... 0.7	0	0	0
M18 non ferrous	0	0	1	1.1	0.9
M30 ferrous	1	0.1... 0.7	0	0	0
M30 non ferrous	0	0	1	1.1	0.9

Effective switching distance = Rated switching distance × correction factor

**Ferrous:** Detection of ferromagnetic steel and iron.

**Non-Ferrous:** Detection of non-magnetizing metals such as aluminum, copper, brass and many stainless steels.



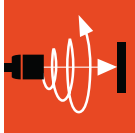
# Inductive Sensors with Special Properties

## Steelface sensors

### M8x1



Size	M8x1	M8x1	M8x1
Installation type (pay attention to the note in the Basic Information chapter)	Flush	Flush	Flush
Rated switching distance $s_n$	<b>1.5 mm</b>	<b>2 mm</b>	<b>2 mm</b>
Assured switching distance $s_a$	0...1.2 mm	0...1.6 mm	0...1.6 mm
Switching distance marking	■	■■	■■■
PNP, NO	<b>Ordering code</b> Part number	<b>BES02YZ</b> BES M08EG1-PSC15S-S04G-S	<b>BES02N5</b> BES M08EH1-PSC20B-S04G-S
NPN, NO	<b>Ordering code</b> Part number	<b>BES02YY</b> BES M08EG1-NSC15S-S04G-S	<b>BES02N3</b> BES M08EH1-NSC20B-S04G-S
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	2.5 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	<b>Selective ferrous</b>	<b>Pressure rated to 80 bar</b>	<b>Pressure rated to 80 bar, weld spatter-resistant</b>
Material	Housing	Stainless steel	Stainless steel, PTFE coated
	Sensing surface	Stainless steel	Stainless steel, PTFE coated
Connection	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin



Inductive Sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special Properties

High-pressure Resistant Sensors

Ex Sensors

**Steelface Sensors**

High-temperature Rated Sensors

Full PTFE Sensor

Sensors for the Food Industry

Factor 1 Sensors

Weld and Magnetic Field Immune Sensors

Diagnostics Sensors

Large Designs

Ring Sensors

Hose Sensors

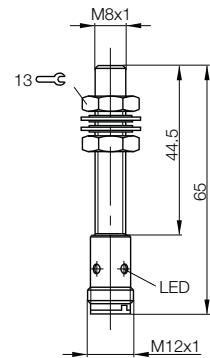
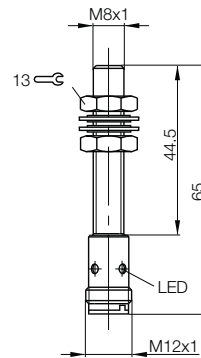
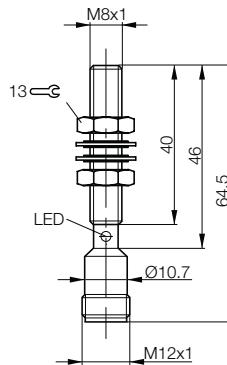
Analog Distance Measurement

Accessories

Wiring diagrams, see page 958.

The meaning of switching distance markings can be found on page 962.

**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.**



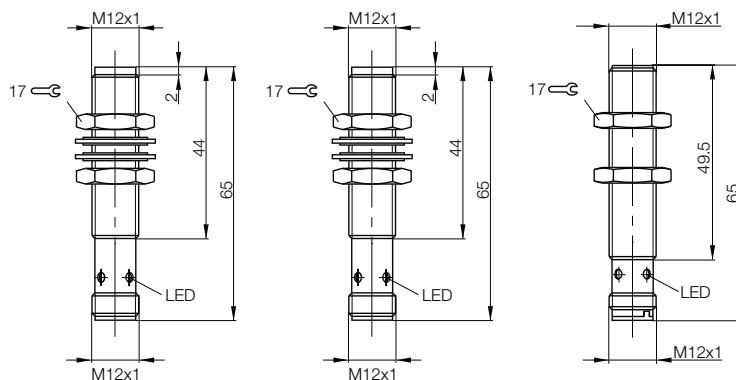


Size		<b>M12x1</b>	<b>M12x1</b>	<b>M12x1</b>	
Installation type (pay attention to the note in the Basic Information chapter)		Flush	Flush	Flush	
Rated switching distance $s_n$		<b>2 mm</b>	<b>2 mm</b>	<b>4 mm</b>	
Assured switching distance $s_a$		0...1.6 mm	0...1.6 mm	0...3.2 mm	
Switching distance marking		■	■	■■	
PNP, NO	<b>Ordering code</b>	<b>BES02Z2</b>	<b>BES02Z3</b>	<b>BES02NA</b>	
	Part number	BES M12EG1-PSC20N-S04G-S	BES M12EG1-PSC20S-S04G-S	BES M12EI-PSC40B-S04G-S	
PNP, NC	<b>Ordering code</b>		<b>BES02Z1</b>		
	Part number		BES M12EG1-POC20S-S04G-S		
NPN, NO	<b>Ordering code</b>		<b>BES02Z0</b>	<b>BES02N8</b>	
	Part number		BES M12EG1-NSC20S-S04G-S	BES M12EI-NSC40B-S04G-S	
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	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	IP 67	IP 67	
Approvals		CE	CE	CE	
Special properties		<b>Selective non-ferrous</b>	<b>Selective ferrous</b>	<b>Pressure rated to 60 bar</b>	
Material	Housing	Stainless steel	Stainless steel	Stainless steel	
	Sensing surface	Stainless steel	Stainless steel	Stainless steel	
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.

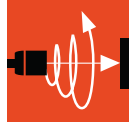
**When using metal mounts, a reduction in the switching distance is to be expected. You should check whether the clamping holder can be used in the application.**



# Inductive Sensors with Special Properties

## Steelface sensors

### M12x1, M18x1



Inductive Sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special Properties

High-pressure Resistant Sensors

Ex Sensors

Steelface Sensors

High Temperature Rated Sensors

Full PTFE Sensor

Sensors for the Food Industry

Factor 1 Sensors

Weld and Magnetic Field Immune Sensors

Diagnostics Sensors

Large Designs

Ring Sensors

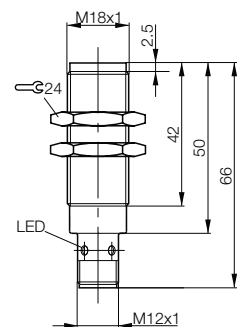
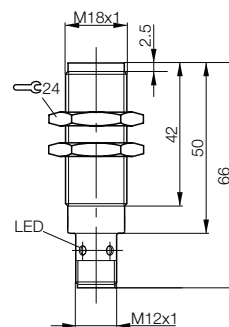
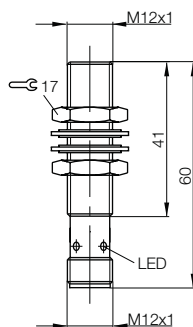
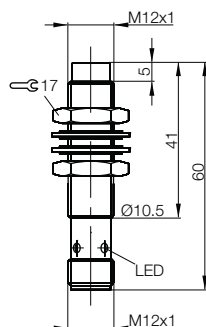
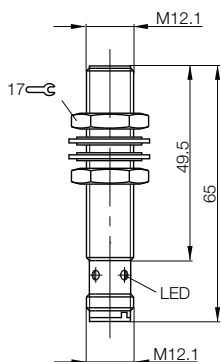
Hose Sensors

Analog Distance Measurement

Accessories



M12x1	M12x1	M12x1	M18x1	M18x1
Flush	Not flush	Quasi-flush	Flush	Flush
<b>4 mm</b>	<b>10 mm</b>	<b>6 mm</b>	<b>5 mm</b>	<b>5 mm</b>
0...3.2 mm	0...8.1 mm	0...4.9 mm	0...4.1 mm	0...4.1 mm
■	■■■	■■■	■	■
<b>BES02NC</b>	<b>BES02WE</b>	<b>BES02WH</b>	<b>BES02Z8</b>	<b>BES02Z9</b>
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
				<b>BES02Z7</b>
				BES M18EG1-POC50S-S04G-S
<b>BES02N9</b>	<b>BES02WC</b>	<b>BES02WF</b>		<b>BES02Z6</b>
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	IP 67
CE	CE	CE	CE	CE
<b>Pressure rated to 60 bar, weld spatter-resistant</b>	<b>Pressure rated to 80 bar</b>	<b>Pressure rated to 80 bar</b>	<b>Selective non-ferrous</b>	<b>Selective ferrous</b>
Stainless steel, PTFE coated	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Stainless steel, PTFE coated	Stainless steel	Stainless steel	Stainless steel	Stainless steel
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin



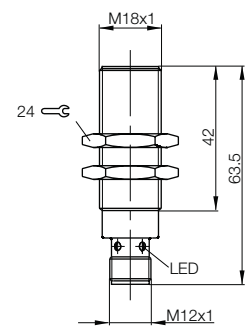
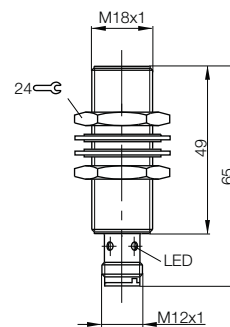
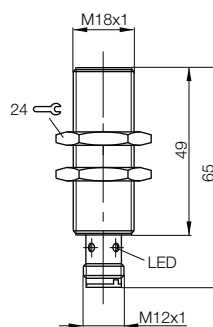


Size		M18x1	M18x1	M18x1
Installation type (pay attention to the note in the Basic Information chapter)		Flush	Flush	Flush
Rated switching distance $s_n$		<b>7.2 mm</b>	<b>7.2 mm</b>	<b>10 mm</b>
Assured switching distance $s_a$		0...5.2 mm	0...5.2 mm	0...8.1 mm
Switching distance marking		■ ■	■ ■	■ ■
PNP, NO	<b>Ordering code</b>	<b>BES02NJ</b>	<b>BES02NK</b>	<b>BES02Y3</b>
	Part number	BES M18EI-PSC72B-S04G-S	BES M18EI-PSC72B-S04G-S01	BES M18EG1-PSC10Z-S04G-S11
NPN, NO	<b>Ordering code</b>	<b>BES02NF</b>	<b>BES02NH</b>	<b>BES02Y2</b>
	Part number	BES M18EI-NSC72B-S04G-S	BES M18EI-NSC72B-S04G-S01	BES M18EG1-NSC10Z-S04G-S11
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 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		<b>Pressure rated to 40 bar</b>	<b>Pressure rated to 40 bar, weld spatter-resistant</b>	<b>Pressure rated to 60 bar</b>
Material	Housing	Stainless steel	Stainless steel, PTFE coated	Stainless steel
	Sensing surface	Stainless steel	Stainless steel, PTFE coated	Stainless steel
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.

**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, 20x32x8 mm



M18x1	M30x1.5	M30x1.5	20x32x8 mm	20x32x8 mm
Not flush	Flush	Flush	Flush	Flush
<b>20 mm</b>	<b>8 mm</b>	<b>8 mm</b>	<b>5 mm</b>	<b>5 mm</b>
0...16.2 mm	0...6.5 mm	0...6.5 mm	0..4 mm	0...4 mm
■ ■	■	■	■	■
<b>BES02Y1</b>	<b>BES02ZH</b>	<b>BES02ZJ</b>	<b>BES04AH</b>	<b>BES049Y</b>
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
		<b>BES02ZF</b>		
		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	1.5 V	1.5 V
75 V DC	75 V DC	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	Yellow LED/green LED in the connector	Yellow LED/green LED in the connector
IP 67	IP 67	IP 67	IP 60	IP 60
CE	CE	CE	CE, cULus	CE, cULus
<b>Pressure rated to 60 bar</b>	<b>Selective non-ferrous</b>	<b>Selective ferrous</b>	<b>Factor 1</b>	<b>Factor 1</b>
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
M12 connector, 4-pin	M12 connector, 4-pin	M12 connector, 4-pin	0.3 m PUR cable with silicone sheath and M12 connector, 3-pin with LED	0.3 m PUR cable with silicone sheath and M12 connector, 3-pin with LED



Inductive Sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special Properties

High-pressure Resistant Sensors

Ex Sensors

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Accessories

