

Inductive sensors with special mechanical and/or electrical properties.

- Use under extremely harsh conditions
- Resistant to coolants and lubricants
- Use in welding systems, magnetic field-immune
- Use in hydraulic systems, high pressure rated to 500 bar
- Use in the foods and chemicals industries, stainless steel housing
- Use in explosive atmospheres, NAMUR to DIN EN 50227
- Use in error monitoring, self-diagnostic
- Use at high ambient temperatures up to +120 °C

1.5

Multimetal/
Factor 1
PROXINOX®
PROXIMAX®
Diagnostics
Pressure
rated
Temperature
rated
Weld-immune
NAMUR
Extended
Switching
Distance
Ring Sensors

1.5.2 Multimetal/Factor 1 – Sensors with no reduction factor

1.5.4 PROXINOX®-stainless steel sensors for the foods industry

1.5.14 PROXIMAX®-sensors for especially harsh conditions

1.5.17 Desina diagnostic sensors for machine tools, dynamic function diagnostics

1.5.23 Pressure rated sensors up to max. 500 bar

1.5.38 Temperature rated sensors up to max. +120 °C

1.5.40 Weld- and magnetic field-immune sensors for welding environments

1.5.48 NAMUR sensors

1.5.54 Sensors with large housings and extended switching distance

1.5.62 Ring sensors

Multimetal/Factor 1

DESINA
diagnostics

pressure rated

high pressure rated

magnetic field-*immune*
weld-*immune*

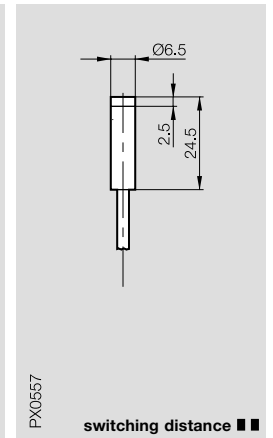
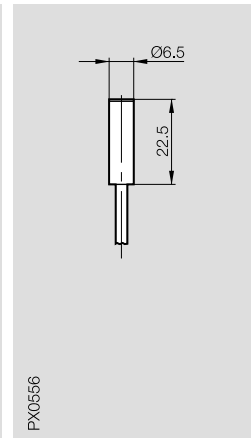
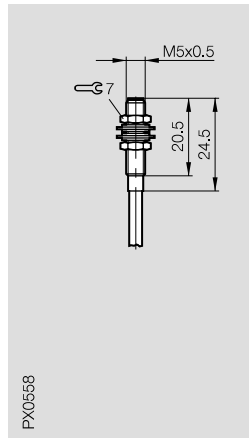
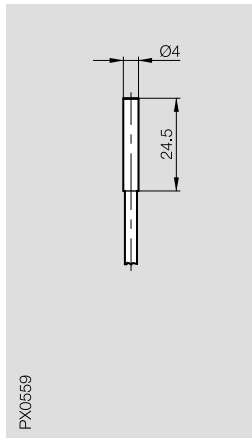
temperature rated

Extended Switching Distance

PROXINOX®

PROXIMAX®
NAMUR

| | | | | |
|----------------------------------|------------|------------|----------|-----------|
| Housing size | Ø 4 mm | M5x0.5 | Ø 6.5 mm | Ø 6.5 mm |
| Mounting | flush | flush | flush | non-flush |
| Rated operating distance s_n | 0.8 mm | 0.8 mm | 1.2 mm | 2.5 mm |
| Assured operating distance s_a | 0...0.6 mm | 0...0.6 mm | 0...1 mm | 0...2 mm |



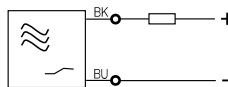
| | | | | |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| Ordering code | BES 516-3007-E2-N- | BES 516-3005-F0-N- | BES 516-371-E2-N- | BES 516-349-E2-N- |
| Supply voltage U_B^* | 7.7...9 V DC | 7.7...9 V DC | 7.7...9 V DC | 7.7...9 V DC |
| Frequency of operating cycles f | ≤ 2000 Hz | ≤ 2000 Hz | ≤ 2000 Hz | ≤ 1000 Hz |
| Housing material | stainless steel | stainless steel | CuZn nickel plated | CuZn nickel plated |
| Material of sensing face | PBT | PBT | PBT | PBT |
| Connection | cable | cable | cable | cable |
| No. of wires × conductor cross section | 2 × 0.14 mm ² | 2 × 0.14 mm ² | 2 × 0.14 mm ² | 2 × 0.14 mm ² |
| Approval | FMS | FMS | FMS | FMS |
| Recommended connector | | | | |

Switching distance ■■ see page 1.0.3

Please add the cable length to the ordering code for sensors with **cable!**
 03, 05 = PVC, length 3 m or 5 m
 PU-03, PU-05 = PUR, length 3 m or 5 m

*Output current changes if supply voltage is 5...24 V DC (= no NAMUR conditions). Choose the respective pre-resistor accordingly.

Wiring diagram



NAMUR electrical sensors consist essentially of an oscillator with an oscillator circuit that can be damped and a demodulator.

Electrical sensors convert the position change of a target body with respect to the sensor into electrical signals. The change in current draw and of the sensor's internal resistance serves as the output signal.

Electrical sensors to NAMUR (DIN EN 50227 and DIN VDE 0165) can be used in conjunction with switching amplifiers (e. g. BES 516-607 A/B, see page 1.5.53) in explosion hazard systems or in zone 1 or zone 2 areas. The switching amplifier itself must be located on the safe side.

Technical data

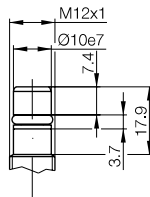
| | |
|--|--|
| Nominal voltage U_n | 8.2 V DC |
| Supply voltage U_B per DIN EN 50227* | 7.7...9 V DC |
| Ripple | ≤ 15 % |
| Output current per DIN EN 50227 | undamped ≥ 2.2 mA damped ≤ 1.0 mA |
| Effective resistance R_v in the control circuit (without sensor) | 550...1000 Ω |
| Nominal resistance | 1000 Ω |
| Load resistance between sensor and amplifier | 0...50 Ω |
| Output function | normally-closed |
| Output signal: | current change (no trigger): |
| "On"-signal | ≥ 1.8 mA (switching amplifier BES 516-607 A/B) |
| "Off"-signal | ≤ 1.5 mA (switching amplifier BES 516-607 A/B) |
| Total undamped | ≥ 4 mA |
| Total damped | ≤ 1 mA |
| Self capacitance of the sensor | ≤ 30 nF |
| Inductance of the oscillator coil | ≤ 1 mH |
| Switching hysteresis H | ≤ 20 % |
| Degree of protection per IEC 60529 | IP 67 |
| Ambient temperature range T_a | -25...+70 °C |

Protection against plus and minus reversal up to $U_B = 9$ V.

| M8x1 flush 1.2 mm 0...1 mm | M8x1 non-flush 2.5 mm 0...2 mm | M12x1 flush 1.5 mm 0...1.2 mm | M12x1 flush 2 mm 0...1.6 mm | M12x1 non-flush 4 mm 0...3.2 mm |
|---|--|---|--|---|
| | | | | |
| BES 516-324-E2-N- | BES 516-383-E2-N- | BES 516-300-S 266-S 4 | BES 516-325-E3-N- | BES 516-356-E3-N- |
| 7.7...9 V DC ≤ 2000 Hz stainless steel PBT cable 2 × 0.14 mm ² FMS | 7.7...9 V DC ≤ 1000 Hz stainless steel PVDF cable 2 × 0.14 mm ² FMS | 7.7...9 V DC ≤ 1000 Hz stainless steel EP connector | 7.7...9 V DC ≤ 1000 Hz CuZn nickel plated PA 12 cable 2 × 0.14 mm ² FMS | 7.7...9 V DC ≤ 500 Hz CuZn nickel plated PA 12 cable 2 × 0.14 mm ² FMS |

switching distance ■■

BKS-B 19/BKS-B 20
high pressure rated
up to 500 bar



1.5

Multimetal/
Factor 1
PROXINOX®
PROXIMAX®
Diagnostics
Pressure
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Ring Sensors

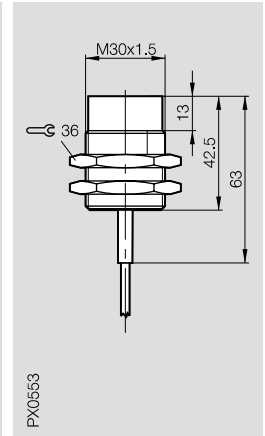
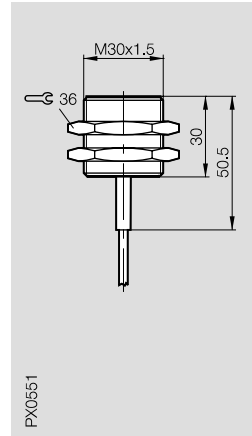
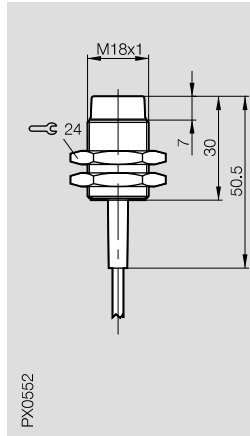
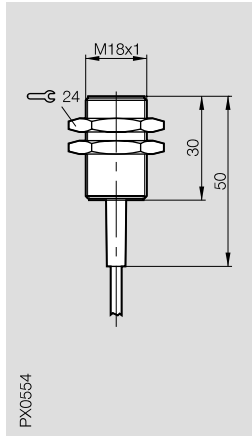
6

Connectors,
clamps ...
page 6.2 ...

Inductive Sensors

DC 2-Wire
7.7...9 V DC

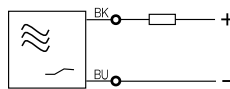
| | | | | |
|----------------------------------|--------------|--------------|----------------|----------------|
| Housing size | M18x1 | M18x1 | M30x1.5 | M30x1.5 |
| Mounting | flush | non-flush | flush | non-flush |
| Rated operating distance s_n | 5 mm | 8 mm | 10 mm | 15 mm |
| Assured operating distance s_a | 0...4.1 mm | 0...6.5 mm | 0...8.1 mm | 0...12.2 mm |



| | | | | |
|---|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Ordering code | BES 516-326-E3-N- | BES 516-360-E3-N- | BES 516-327-E3-N- | BES 516-362-E3-N- |
| Supply voltage U_B^* | 7.7...9 V DC | 7.7...9 V DC | 7.7...9 V DC | 7.7...9 V DC |
| Frequency of operating cycles f | ≤ 500 Hz | ≤ 300 Hz | ≤ 300 Hz | ≤ 100 Hz |
| Housing material | CuZn nickel plated | CuZn nickel plated | CuZn nickel plated | CuZn nickel plated |
| Material of sensing face | PBT | PBT | PA 12 | PA 12 |
| Connection | cable | cable | cable | cable |
| No. of wires \times conductor cross section | 2 \times 0.14 mm ² | 2 \times 0.14 mm ² | 2 \times 0.14 mm ² | 2 \times 0.14 mm ² |
| Max. cross section for connection | | | | |
| Approval | FMS | FMS | FMS | FMS |
| Mounting variations allowed | | | | |

Please add the cable length to the ordering code for sensors with **cable!**
03, 05 = PVC, length 3 m or 5 m
PU-03, PU-05 = PUR, length 3 m or 5 m

Wiring diagram



*Output current changes if supply voltage is 5...24 V DC (= no NAMUR conditions).
Choose the respective pre-resistor accordingly.



Technical data

| | |
|--|---|
| Nominal voltage U_n | 8.2 V DC |
| Supply voltage U_B per DIN EN 50227* | 7.7...9 V DC |
| Ripple | ≤ 15 % |
| Output current per DIN EN 50227 | undamped ≥ 2.2 mA damped ≤ 1.0 mA |
| Effective resistance R_V in the control circuit (without sensor) | 550...1000 Ω |
| Nominal resistance | 1000 Ω |
| Load resistance between sensor and amplifier | 0...50 Ω |
| Output function | normally-closed |
| Output signal: | current change (no trigger): |
| "On"-signal | ≥ 1.8 mA (switching amplifier BES 516-607 A/B) |
| "Off"-signal | ≤ 1.5 mA (switching amplifier BES 516-607 A/B) |
| Total undamped | ≥ 4 mA |
| Total damped | ≤ 1 mA |
| Self capacitance of the sensor | ≤ 30 nF |
| Inductance of the oscillator coil | ≤ 1 mH |
| Switching hysteresis H | ≤ 20 % |
| Degree of protection per IEC 60529 | IP 67 |
| Ambient temperature range T_a | -25...+70 $^{\circ}\text{C}$ |

Protection against plus and minus reversal up to $U_B = 9$ V.

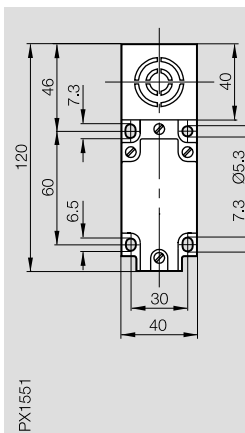
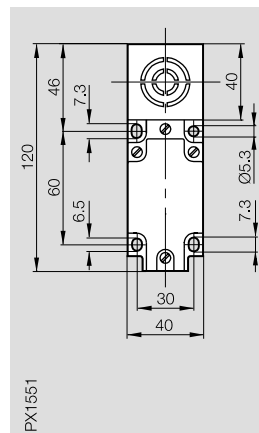
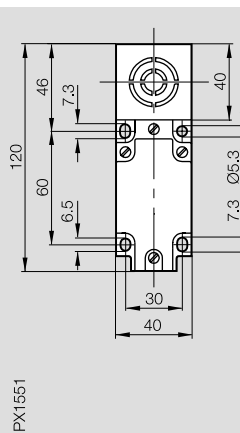
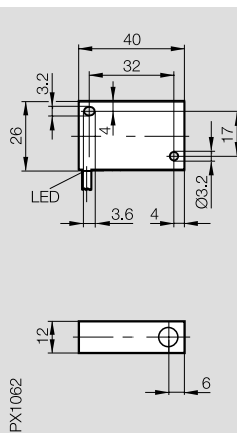
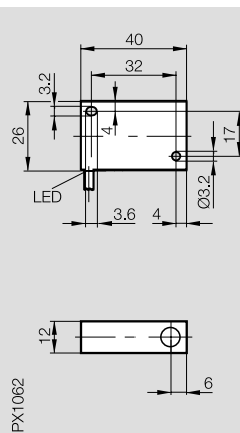
26x40x12 Midisensor
flush
2 mm
0...1.6 mm

26x40x12 Midisensor
non-flush
4 mm
0...3.2 mm

40x40x120 Unisensor
flush
15 mm
0...12.2 mm

40x40x120 Unisensor
non-flush
mount. dependent 20/25 mm
0...16.2 mm/0...20.3 mm

40x40x120 Unisensor
non-flush
30 mm
0...24.3 mm



BES 517-347-M1-N-

BES 517-3016-M1-N-

BES 517-132-M3-N

BES 517-132-M4-N

BES 517-132-M5-N

7.7...9 V DC

≤ 1000 Hz

PBT

PBT

cable

2 × 0.14 mm²

7.7...9 V DC

≤ 500 Hz

PBT

PBT

cable

2 × 0.14 mm²

7.7...9 V DC

≤ 100 Hz

PBT

PBT

screw terminals

up to 2.5 mm²

FMS

Figs. 1 to 6

7.7...9 V DC

≤ 100 Hz

PBT

PBT

screw terminals

up to 2.5 mm²

FMS

s_n 20 Figs. 4 and 6
s_n 25 Figs. 3 and 5

7.7...9 V DC

≤ 100 Hz

PBT

PBT

screw terminals

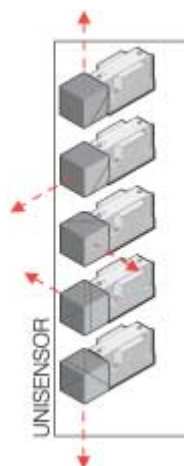
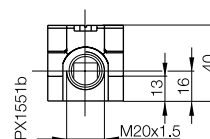
up to 2.5 mm²

FMS

Figs. 4 and 6

1.5

Multimetal/
Factor 1
PROXINOX®
PROXIMAX®
Diagnostics
Pressure
rated
Temperature
rated
Weld-immune
NAMUR
Extended
Switching
Distance
Ring Sensors



Row mounting

flush 80 mm, non-flush 120 mm



Mounting variations



Fig. 1

Fig. 2

Fig. 3



Fig. 4

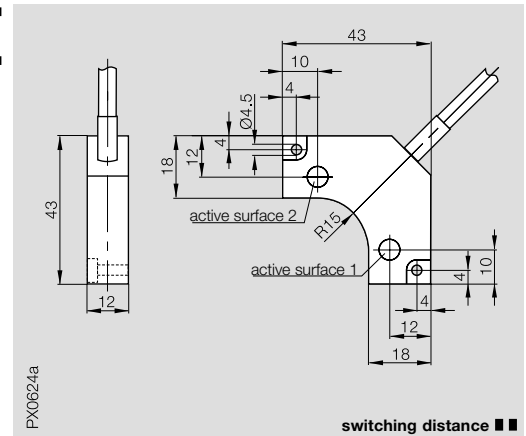
Fig. 5

Fig. 6

6

Clamps,
mounting
plate ...
page 6.2 ...

| | |
|----------------------------------|----------------------|
| Housing size | Double Sensor |
| Mounting | flush |
| Rated operating distance s_n | 4 mm |
| Assured operating distance s_a | 0...3.2 mm |

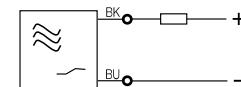


| | |
|---|---------------------------------|
| Ordering code | BES 517-300-S 287-N- |
| Supply voltage U_B^* | 7.7...9 V DC |
| Frequency of operating cycles f | ≤ 500 Hz |
| Housing material | PA 6 |
| Material of sensing face | PA 6 |
| Connection | cable |
| No. of wires \times conductor cross section | 4 \times 0.25 mm ² |

Switching distance ■■ see page 1.0.3

Please add the cable length to the ordering code for sensors with **cable!**
PU-03, PU-05 = PUR, length 3 m or 5 m

Wiring diagram



*Output current changes if supply voltage is 5...24 V DC (= no NAMUR conditions).
Choose the respective pre-resistor accordingly.

Technical data

| | |
|---|---|
| Nominal voltage U_n | 8.2 V DC |
| Supply voltage U_B per DIN EN 50227* | 7.7...9 V DC |
| Ripple | ≤ 15 % |
| Output current per DIN EN 50227 | undamped ≥ 2.2 mA damped ≤ 1.0 mA |
| Effective resistance R_v in the control circuit (without sensor) | 550...1000 Ω |
| Nominal resistance | 1000 Ω |
| Load resistance between sensor and amplifier | 0...50 Ω |
| Output function | normally-closed |
| Output signal: | current change (no trigger): |
| "On"-signal | ≥ 1.8 mA (switching amplifier BES 516-607 A/B) |
| "Off"-signal | ≥ 1.5 mA (switching amplifier BES 516-607 A/B) |
| Total undamped | ≥ 4 mA |
| Total damped | ≤ 1 mA |
| Self capacitance of the sensor | ≤ 30 nF |
| Inductance of the oscillator coil | ≤ 1 mH |
| Switching hysteresis H | ≤ 20 % |
| Degree of protection per IEC 60529 | IP 67 |
| Ambient temperature range T_a | -25...+70 °C |



Protection against plus and minus reversal up to $U_B = 9$ V.

The NAMUR switching amplifier processes signals from NAMUR sensors per DIN EN 50227. It may be installed only outside of a hazardous area. The sensor itself may be installed within the explosion area (zone 1 and 2). The output is a relay contact (change-over); an LED is used to display the output state. By changing a jumper on the printed circuit board the amplifier can be programmed for make or break terminations are made to screw terminals. The switching amplifier prevents a dangerous current or voltage levels from reaching the hazardous area.

Available switching amplifiers:

BES 516-607 A

supply voltage
220 V AC
input circuit
[EE x ia] II C
use for zone 0

BES 516-607 B

supply voltage
110 V AC
input circuit
[EE x ia] II C
use for zone 0

The NAMUR switching amplifier is enclosed in a plastic housing
 $w \times l \times h = 40 \times 70 \times 110$ mm.
Degree of protection is IP 20.

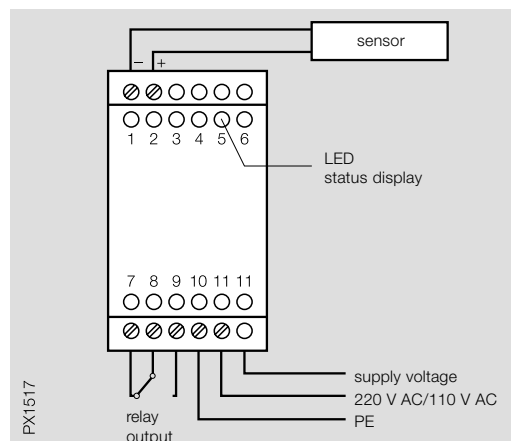
Mounting: snap-rail mount or with mounting screws.

Conformity approvals

- PTB No. Ex-88.B.2080
- SEV A. N. 82.14108
- FMS J.I. OR1HO.AX and J.I. 4V9A4.AX

Switching Amplifier

for connecting intrinsically safe sensors



| Ordering code | BES 516-607 A | BES 516-607 B |
|--|----------------------------------|-------------------------------|
| Supply voltage | 220 V AC $\pm 15\%$ type A | 110 V AC $\pm 15\%$ type B |
| Input voltage circuit | intrinsically safe | |
| Intrinsically safe category | [EE x ia] II C | |
| For connecting electrical sensors per DIN EN 50227 | nominal voltage 8.2 V DC | |
| Max. values in event of failure | nominal current ≥ 2.2 mA | |
| | nominal voltage ≤ 12.7 V DC | |
| | nominal current ≤ 43.5 mA | |
| Max. permissible external inductance | 1 mH for [EE x ia] II C | |
| Max. permissible external capacitance | 360 nF for [EE x ia] II C | |
| Output circuit | relay change-over contact | |
| (switching frequency ≤ 6 Hz) | U ≤ 250 V | |
| | I ≤ 4 A | |
| | cos $\phi = 0.7$ | |
| Approval | FMS | |

1.5

Multimetal/
Factor 1
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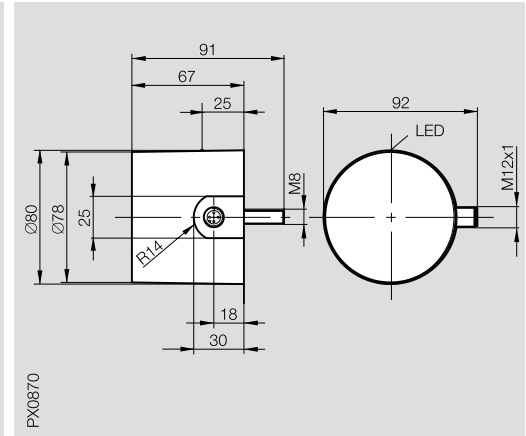
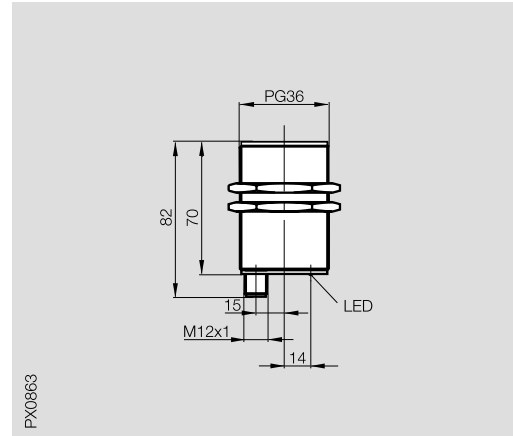


Inductive Sensors

DC 3-/4-Wire
PG 36, Ø 80
s_n 25 mm, 50 mm

| | |
|---|--------------|
| Housing size | PG 36 |
| Mounting | flush |
| Rated operating distance s _n | 25 mm |
| Assured operating distance s _a | 0...20.3 mm |

| | |
|---|----------------|
| Housing size | Ø 80x67 |
| Mounting | non-flush |
| Rated operating distance s _n | 50 mm |
| Assured operating distance s _a | 0...40.5 mm |



| | |
|-----|------------------------------------|
| PNP | Normally-open ① Complementary ③ |
|-----|------------------------------------|

| |
|---------------------|
| BES IKZ-475.38-G-S4 |
|---------------------|

| |
|---|
| BES IKJ-S-050-P-2-S-S4-C BES IKJ-050.38-G-S4 |
|---|

| | |
|---|----------------|
| Rated operational voltage U _e | 12...24 V DC |
| Supply voltage U _B | 10...55 V DC |
| Voltage drop U _d at I _e | ≤ 2 V |
| Rated insulation voltage U _i | 75 V DC |
| Rated operational current I _e | 200 mA |
| No-load supply current I ₀ max. | ≤ 10 mA |
| Output impedance R _a | open-collector |
| Protected against polarity reversal | yes |
| Short circuit protected | yes |
| Load capacity | ≤ 0.15 µF |

| |
|----------------|
| 12...24 V DC |
| 10...55 V DC |
| ≤ 2 V |
| 75 V DC |
| 200 mA |
| ≤ 10 mA |
| open-collector |
| yes |
| yes |
| ≤ 0.15 µF |

| |
|----------------|
| 12...24 V DC |
| 10...55 V DC |
| ≤ 2 V |
| 75 V DC |
| 200 mA |
| ≤ 10 mA |
| open-collector |
| yes |
| yes |
| ≤ 0.15 µF |

| | |
|--|--------------|
| Repeat accuracy R | ≤ 5 % |
| Ambient temperature range T _a | -25...+70 °C |
| Frequency of operating cycles f | 100 Hz |
| Utilization categories | DC 13 |
| Function indication | yes |

| |
|--------------|
| ≤ 5 % |
| -25...+70 °C |
| 100 Hz |
| DC 13 |
| yes |

| |
|--------------|
| ≤ 5 % |
| -25...+70 °C |
| 100 Hz |
| DC 13 |
| yes |

| | |
|------------------------------------|-------|
| Degree of protection per IEC 60529 | IP 67 |
|------------------------------------|-------|

| |
|-------|
| IP 67 |
|-------|

| |
|-------|
| IP 67 |
|-------|

| | |
|--------------------------|--------------------|
| Housing material | CuZn nickel plated |
| Material of sensing face | plastic |
| Connection | connector |

| |
|--------------------|
| CuZn nickel plated |
| plastic |
| connector |

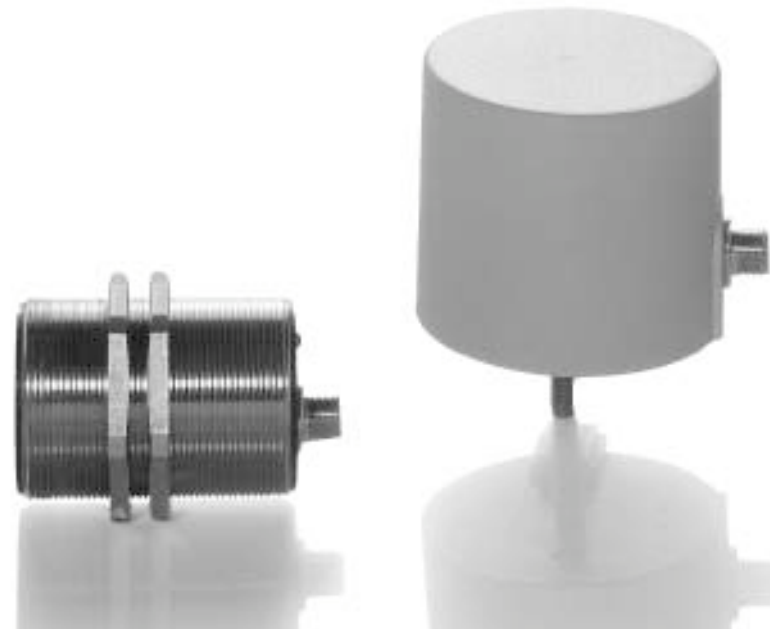
| |
|-----------|
| plastic |
| plastic |
| connector |

| | |
|-----------------------|-------------------|
| Recommended connector | BKS-B 19/BKS-B 20 |
|-----------------------|-------------------|

| |
|-------------------|
| BKS-B 19/BKS-B 20 |
|-------------------|

| |
|-------------------|
| BKS-B 19/BKS-B 20 |
|-------------------|

① Wiring diagrams see page 1.0.12



Large Housing Extended Switching Distance

Inductive Sensors

DC 3-/4-Wire
 \varnothing 80, \varnothing 95
 s_n 50 mm, 70 mm

\varnothing 80x67

non-flush

50 mm

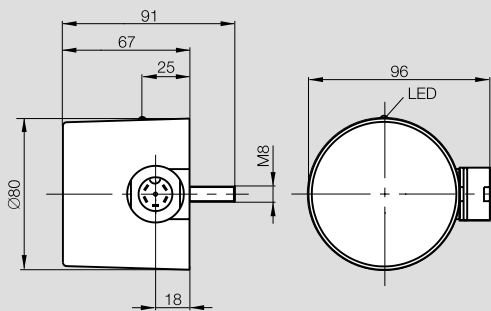
0...40.5 mm

\varnothing 95x40

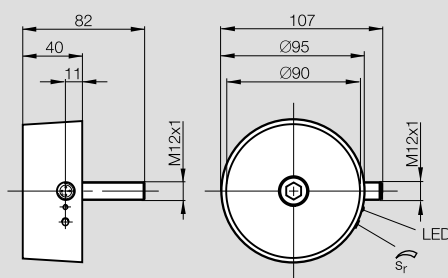
non-flush

70 mm (adjustable)

0...56.7 mm



PX0871



PX0864

BES IKJ-S-050-P-2-S-C

BES IKM-070.38-G-S4

12...24 V DC

10...55 V DC

≤ 2 V

75 V DC

200 mA

≤ 10 mA

open-collector

yes

yes

≤ 0.15 μ F

≤ 5 %

-25...+70 °C

100 Hz

DC13

yes

IP 67

plastic

plastic

connector

BKS-S 1

12...24 V DC

10...55 V DC

≤ 2 V

75 V DC

200 mA

≤ 10 mA

open-collector

yes

yes

≤ 0.15 μ F

≤ 5 %

-25...+70 °C

50 Hz

DC 13

yes

IP 65

plastic

plastic

connector

BKS-B 19/BKS-B 20



1.5

Multimetal/
 Factor 1
 PROXINOX®
 PROXIMAX®
 Diagnostics
 Pressure
 rated
 Temperature
 rated
 Weld-immune
 NAMUR
**Extended
 Switching
 Distance**
 Ring Sensors

6

Connectors ...
 page 6.2 ...

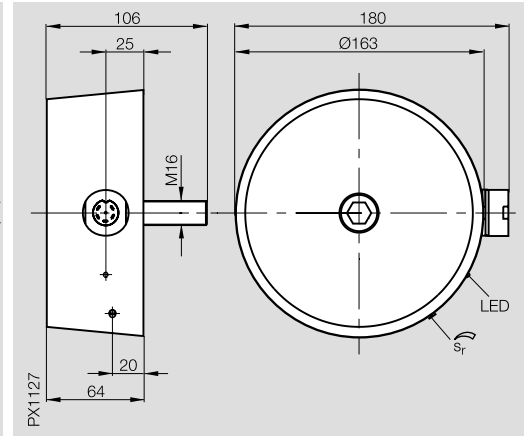
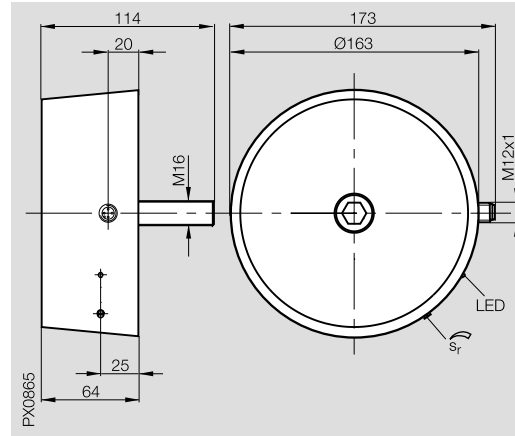
Inductive Sensors

DC 3-/4-Wire
 Ø 163
 s_n 100 mm

| | |
|---|----------------------------|
| Housing size | Ø 163x64 |
| Mounting | non-flush |
| Rated operating distance s _n | 100 mm (adjustable) |
| Assured operating distance s _a | 0...81 mm |

| | |
|---|----------------------------|
| Housing size | Ø 163x64 |
| Mounting | non-flush |
| Rated operating distance s _n | 100 mm (adjustable) |
| Assured operating distance s _a | 0...81 mm |

| | |
|---|----------------------------|
| Housing size | Ø 163x64 |
| Mounting | non-flush |
| Rated operating distance s _n | 100 mm (adjustable) |
| Assured operating distance s _a | 0...81 mm |



| | |
|-----|------------------------------------|
| PNP | Normally-open ① Complementary ③ |
|-----|------------------------------------|

| |
|---------------------|
| BES IKO-100.38-G-S4 |
|---------------------|

| |
|---------------------|
| BES IKO-S-100-P-1-S |
|---------------------|

| | |
|---|----------------|
| Rated operational voltage U _e | 12...24 V DC |
| Supply voltage U _B | 10...55 V DC |
| Voltage drop U _d at I _e | ≤ 2 V |
| Rated insulation voltage U _i | 75 V DC |
| Rated operational current I _e | 200 mA |
| No-load supply current I ₀ max. | ≤ 10 mA |
| Output impedance R _a | open-collector |
| Protected against polarity reversal | yes |
| Short circuit protected | yes |
| Load capacity | ≤ 0.15 µF |

| |
|----------------|
| 12...24 V DC |
| 10...55 V DC |
| ≤ 2 V |
| 75 V DC |
| 200 mA |
| ≤ 10 mA |
| open-collector |
| yes |
| yes |
| ≤ 0.15 µF |

| |
|----------------|
| 12...24 V DC |
| 10...55 V DC |
| ≤ 2 V |
| 75 V DC |
| 200 mA |
| ≤ 10 mA |
| open-collector |
| yes |
| yes |
| ≤ 0.15 µF |

| | |
|--|--------------|
| Repeat accuracy R | ≤ 5 % |
| Ambient temperature range T _a | -25...+70 °C |
| Frequency of operating cycles f | 50 Hz |
| Utilization categories | DC 13 |
| Function indication | yes |

| |
|--------------|
| ≤ 5 % |
| -25...+70 °C |
| 50 Hz |
| DC 13 |
| yes |

| |
|--------------|
| ≤ 5 % |
| -25...+70 °C |
| 50 Hz |
| DC 13 |
| yes |

| | |
|------------------------------------|-------|
| Degree of protection per IEC 60529 | IP 65 |
|------------------------------------|-------|

| |
|-------|
| IP 65 |
|-------|

| |
|-------|
| IP 65 |
|-------|

| | |
|--------------------------|-----------|
| Housing material | plastic |
| Material of sensing face | plastic |
| Connection | connector |

| |
|-----------|
| plastic |
| plastic |
| connector |

| |
|-----------|
| plastic |
| plastic |
| connector |

| | |
|-----------------------|-------------------|
| Recommended connector | BKS-B 19/BKS-B 20 |
|-----------------------|-------------------|

| |
|-------------------|
| BKS-B 19/BKS-B 20 |
|-------------------|

| |
|---------|
| BKS-S 1 |
|---------|

① Wiring diagrams see page 1.0.12



Large Housing Extended Switching Distance

Inductive Sensors

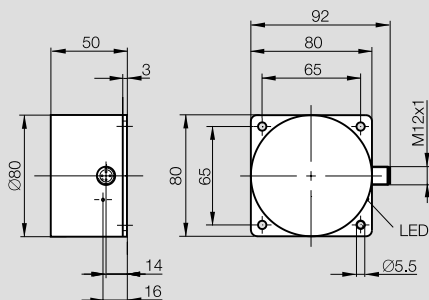
DC 4-Wire
Quadraform Housings
S_n 40 mm, 50 mm

80×80×50

flush

40 mm

0...32.4 mm



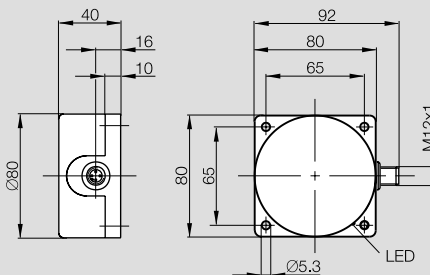
PX0867

80×80×40

non-flush

50 mm

0...40.5 mm



PX0866a

BES IKG-040.38-G-S4

12...24 V DC

10...55 V DC

≤ 2 V

75 V DC

200 mA

≤ 10 mA

open-collector

yes

yes

≤ 0.15 μF

≤ 5 %

-25...+70 °C

100 Hz

DC 13

yes

IP 67

Al

plastic

connector

BKS-B 19/BKS-B 20

BES IKK-050.38-G-S4

12...24 V DC

10...55 V DC

≤ 2 V

75 V DC

200 mA

≤ 10 mA

open-collector

yes

yes

≤ 0.15 μF

≤ 5 %

-25...+70 °C

100 Hz

DC 13

yes

IP 67

plastic

plastic

connector

BKS-B 19/BKS-B 20



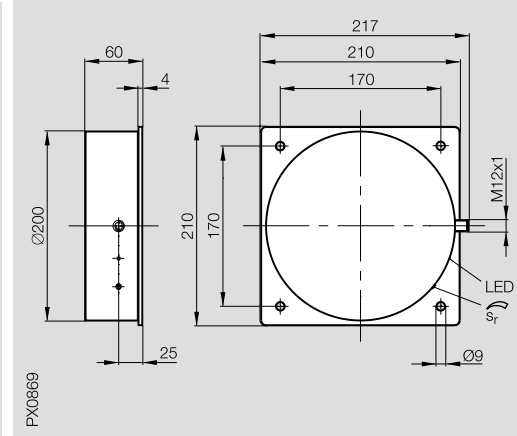
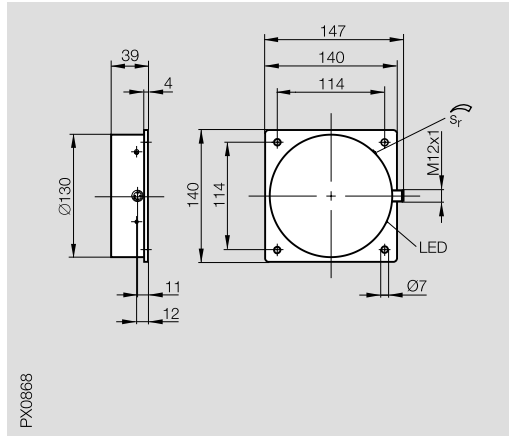
1.5

Multimetal/
Factor 1
PROXINOX®
PROXIMAX®
Diagnostics
Pressure
rated
Temperature
rated
Weld-immune
NAMUR
**Extended
Switching
Distance**
Ring Sensors

6

Connectors ...
page 6.2 ...

| | | |
|---|---------------------------|----------------------------|
| Housing size | 140×140×39 | 210×210×60 |
| Mounting | non-flush | non-flush |
| Rated operating distance s _n | 80 mm (adjustable) | 120 mm (adjustable) |
| Assured operating distance s _a | 0...64.8 mm | 0...97.2 mm |



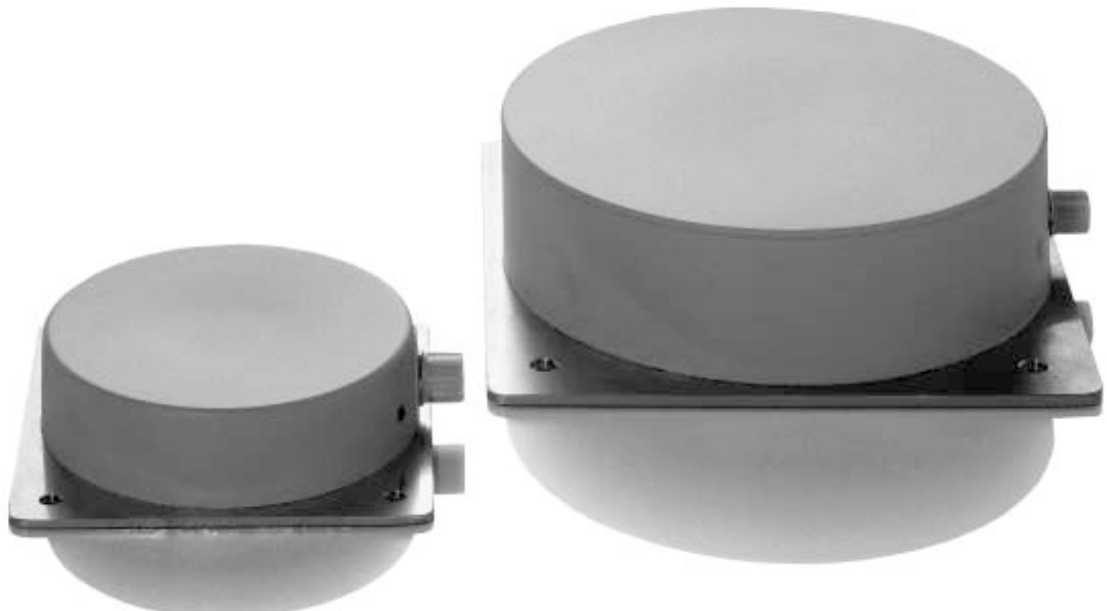
PNP Complementary ③

BES IKNB-080.38-G-S4

BES IKOA-120.38-G-S4

| | | |
|---|-------------------|-------------------|
| Rated operational voltage U _e | 12...24 V DC | 12...24 V DC |
| Supply voltage U _B | 10...55 V DC | 10...55 V DC |
| Voltage drop U _d at I _e | ≤ 2 V | ≤ 2 V |
| Rated insulation voltage U _i | 75 V DC | 75 V DC |
| Rated operational current I _e | 200 mA | 200 mA |
| No-load supply current I ₀ max. | ≤ 10 mA | ≤ 10 mA |
| Output impedance R _a | open-collector | open-collector |
| Protected against polarity reversal | yes | yes |
| Short circuit protected | yes | yes |
| Load capacity | ≤ 0.15 µF | ≤ 0.15 µF |
| Repeat accuracy R | ≤ 5 % | ≤ 5 % |
| Ambient temperature range T _a | -25...+70 °C | -25...+70 °C |
| Frequency of operating cycles f | 100 Hz | 50 Hz |
| Utilization categories | DC 13 | DC 13 |
| 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 | connector | connector |
| Recommended connector | BKS-B 19/BKS-B 20 | BKS-B 19/BKS-B 20 |

③ Wiring diagrams see page 1.0.12



Large Housing Extended Switching Distance

Inductive Sensors

DC 4-Wire
Quadraform Housings
S_n 50 mm, 120 mm

80×120×30

non-flush

50 mm (adjustable)

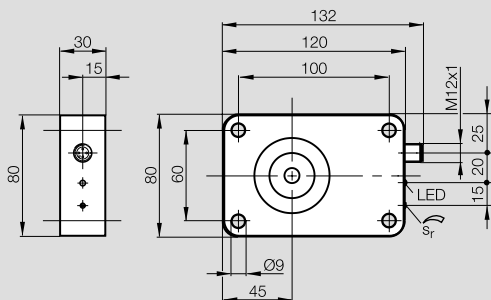
0...40.5 mm

150×280×68

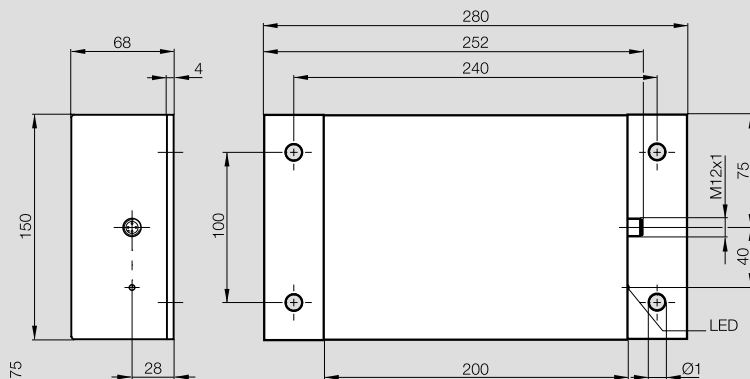
non-flush

120 mm

0...97.2 mm



PX0873



PX0875

BES IKRD-050.38-G-S4

12...24 V DC

10...55 V DC

≤ 2 V

75 V DC

200 mA

≤ 10 mA

open-collector

yes

yes

≤ 0.15 μF

≤ 5 %

-25...+70 °C

100 Hz

DC 13

yes

IP 65

plastic

plastic

connector

BKS-B 19/BKS-B 20

BES IKU-215.38-G-S4

12...24 V DC

10...55 V DC

≤ 2 V

75 V DC

200 mA

≤ 10 mA

open-collector

yes

yes

≤ 0.15 μF

≤ 5 %

-25...+70 °C

25 Hz

DC 13

yes

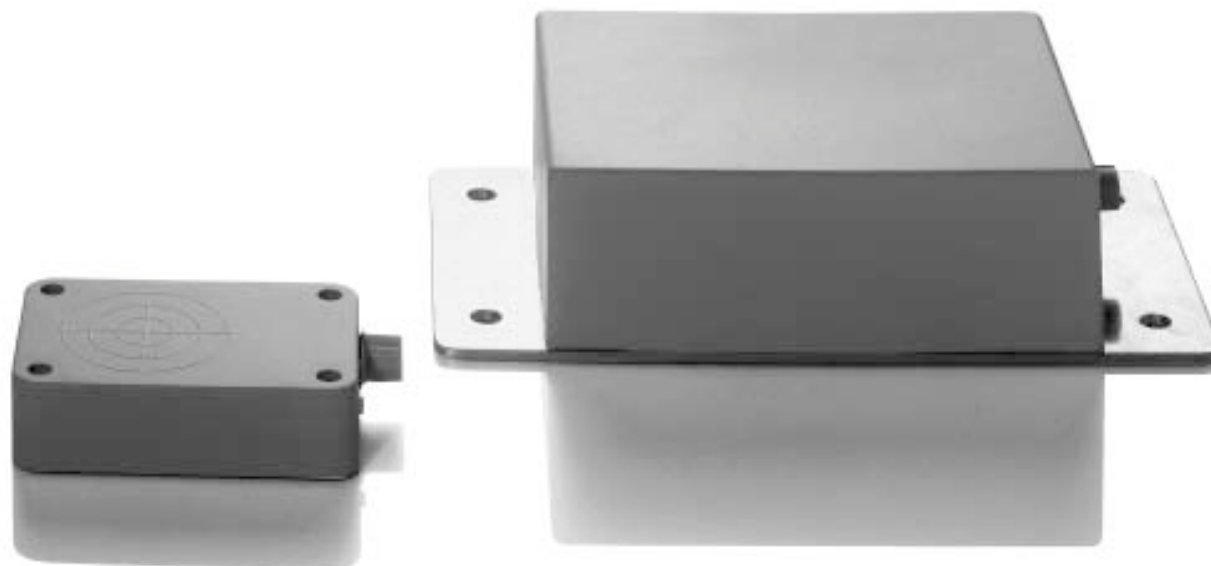
IP 67

plastic

plastic

connector

BKS-B 19/BKS-B 20



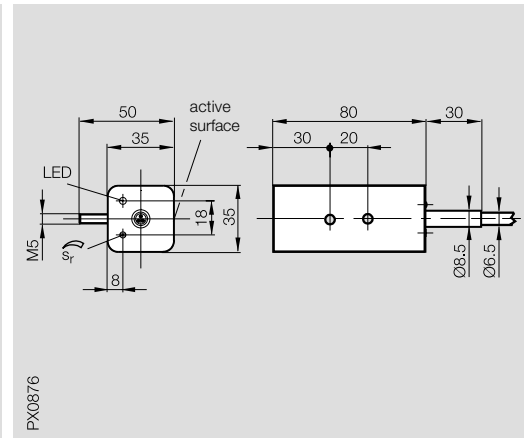
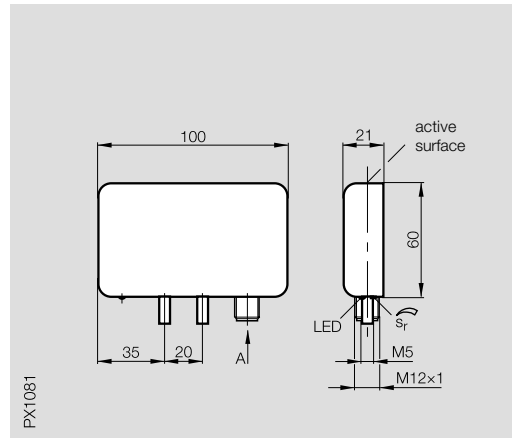
1.5

Multimetal/
Factor 1
PROXINOX®
PROXIMAX®
Diagnostics
Pressure
rated
Temperature
rated
Weld-immune
NAMUR
**Extended
Switching
Distance**
Ring Sensors

6

Connectors ...
page 6.2 ...

| | | |
|---|---------------------------|---------------------------|
| Housing size | 21×60×100 | 35×35×80 |
| Mounting | non-flush | non-flush |
| Rated operating distance s _n | 20 mm (adjustable) | 30 mm (adjustable) |
| Assured operating distance s _a | 0...16.2 mm | 0...24.3 mm |



| | |
|-----|------------------------------------|
| PNP | Normally-open ① Complementary ③ |
|-----|------------------------------------|

| |
|---------------------|
| BES IKU-010.23-G-S4 |
|---------------------|

| |
|----------------|
| BES IKU-008.23 |
|----------------|

| | |
|---|----------------|
| Rated operational voltage U _e | 12...24 V DC |
| Supply voltage U _B | 10...30 V DC |
| Voltage drop U _d at I _e | ≤ 2 V |
| Rated insulation voltage U _i | 75 V DC |
| Rated operational current I _e | 200 mA |
| No-load supply current I ₀ max. | ≤ 10 mA |
| Output impedance R _a | open-collector |
| Protected against polarity reversal | yes |
| Short circuit protected | yes |
| Load capacity | ≤ 0.15 μF |

| |
|----------------|
| 12...24 V DC |
| 10...30 V DC |
| ≤ 2 V |
| 75 V DC |
| 200 mA |
| ≤ 10 mA |
| open-collector |
| yes |
| yes |
| ≤ 0.15 μF |

| |
|--------------|
| 12...24 V DC |
| 10...30 V DC |
| ≤ 2 V |
| 75 V DC |
| 200 mA |
| ≤ 10 mA |
| 4.7 kOhm |
| yes |
| no |
| ≤ 0.15 μF |

| | |
|--|--------------|
| Repeat accuracy R | ≤ 5 % |
| Ambient temperature range T _a | -25...+70 °C |
| Frequency of operating cycles f | 50 Hz |
| Utilization categories | DC 13 |
| Function indication | yes |

| |
|--------------|
| ≤ 5 % |
| -25...+70 °C |
| 50 Hz |
| DC 13 |
| yes |

| |
|--------------|
| ≤ 5 % |
| -25...+70 °C |
| 50 Hz |
| DC 13 |
| yes |

| | |
|------------------------------------|-------|
| Degree of protection per IEC 60529 | IP 65 |
|------------------------------------|-------|

| |
|-------|
| IP 65 |
|-------|

| |
|-------|
| IP 65 |
|-------|

| | |
|--|-----------|
| Housing material | plastic |
| Material of sensing face | plastic |
| Connection | connector |
| No. of wires x conductor cross section | |

| |
|-----------|
| plastic |
| plastic |
| connector |
| |

| |
|--------------------------|
| plastic |
| plastic |
| cable |
| 3 × 0.75 mm ² |

| | |
|-----------------------|-------------------|
| Recommended connector | BKS-B 19/BKS-B 20 |
|-----------------------|-------------------|

| |
|-------------------|
| BKS-B 19/BKS-B 20 |
|-------------------|

| |
|------------------------------|
| Other dimensions on request! |
|------------------------------|

① Wiring diagrams see page 1.0.12

Application

Style IKU proximity switches are used primarily for non-contact sensing of conveyor belts and tracks, such as in monitoring the width on running narrow material or in monitoring of dosimetry lines.



Large Housing Extended Switching Distance

Inductive Sensors

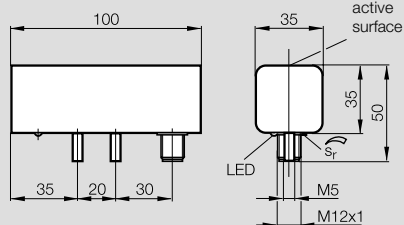
DC 3-/4-Wire
Quadraform Housings
S_n 30 mm

35x35x100

non-flush

30 mm (adjustable)

0...24.3 mm



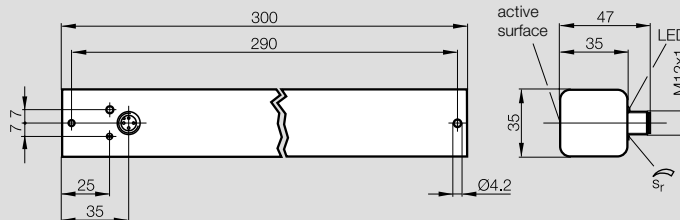
PX1128

35x35x300

non-flush

30 mm (adjustable)

0...24.3 mm



PX0872

BES IKU-011-P-1-S-S4-SA1

12...24 V DC

10...30 V DC

≤ 2 V

75 V DC

200 mA

≤ 10 mA

open-collector

yes

yes

≤ 0.15 µF

≤ 5 %

-25...+70 °C

50 Hz

DC 13

yes

IP 65

plastic

plastic

connector

BKS-B 19/BKS-B 20

Other dimensions on request!

BES IKU-031.28-S4

12...24 V DC

10...30 V DC

≤ 2 V

75 V DC

200 mA

≤ 10 mA

open-collector

yes

no

≤ 0.15 µF

≤ 5 %

-25...+70 °C

50 Hz

DC 13

yes

IP 65

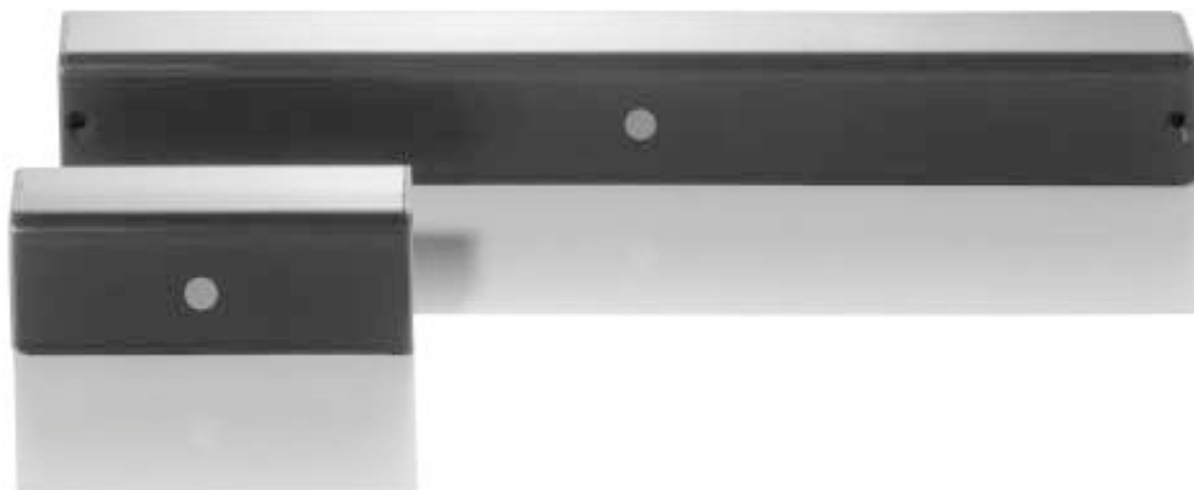
plastic

plastic

connector

BKS-B 19/BKS-B 20

Other dimensions on request!



1.5

Multimetal/
Factor 1
PROXINOX®
PROXIMAX®
Diagnostics
Pressure
rated
Temperature
rated
Weld-immune
NAMUR
**Extended
Switching
Distance**
Ring Sensors

6

Connectors ...
page 6.2 ...

Ring sensors are used as feed monitors for screws, nails, etc.

The output is static, meaning it remains active as long as a metal part is in the response zone.



| | |
|----------------------------------|--|
| Housing size | |
| Inside diameter d_w | |
| Minimum object size steel sphere | |



| | |
|-------------------------------------|-----------------|
| PNP | Normally-open ① |
| Rated operational voltage U_e | |
| Supply voltage U_B | |
| Voltage drop U_d at I_e | |
| Rated insulation voltage U_i | |
| Rated operational current I_e | |
| No-load supply current I_0 max. | |
| Output impedance R_a | |
| Protected against polarity reversal | |
| Short circuit protected | |
| Load capacity | |
| Ambient temperature range T_a | |
| Utilization categories | |
| Function indication | |
| Degree of protection per IEC 60529 | |
| Housing material | |
| Material of sensing face | |
| Connection | |
| Recommended connector | |

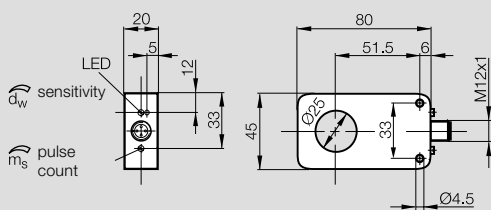
① Wiring diagrams see page 1.0.12

Ring Sensors Inductive Sensors

DC 3-Wire
 Quadraform Housings
 $d_w \varnothing 25 \text{ mm}, \varnothing 45 \text{ mm}$

80x45x20

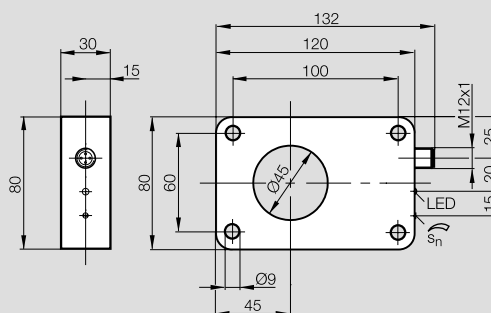
$\varnothing 25 \text{ mm}$
 $\varnothing 4 \text{ mm}$



PX1126

80x120x30

$\varnothing 45 \text{ mm}$
 $\varnothing 9 \text{ mm}$



PX0874

BES IKV-025.23-G-Z-S4

12...24 V DC
 10...30 V DC
 $\leq 2 \text{ V}$
 75 V DC
 200 mA
 $\leq 10 \text{ mA}$
 open-collector
 yes
 yes
 $\leq 0.15 \mu\text{F}$

-25...+70 °C
 DC 13
 yes

IP 65

plastic
 plastic
 connector

BKS-B 19/BKS-B 20

incl. pulse widening 2.5...250 ms adjustable

BES IKV-045.23-G-S4

12...24 V DC
 10...30 V DC
 $\leq 2 \text{ V}$
 75 V DC
 200 mA
 $\leq 10 \text{ mA}$
 open-collector
 yes
 yes
 $\leq 0.15 \mu\text{F}$

-25...+70 °C
 DC 13
 yes

IP 65

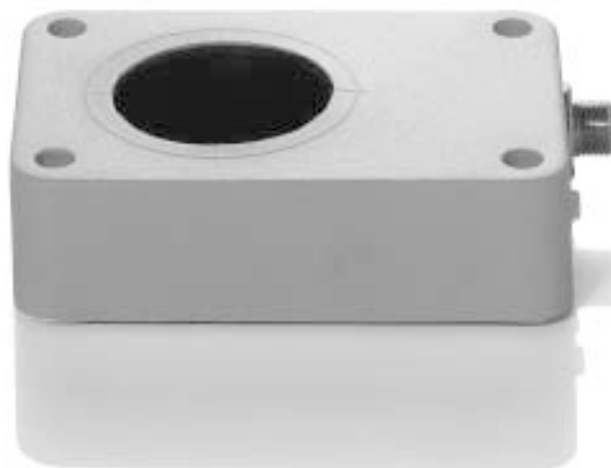
plastic
 plastic
 connector

BKS-B 19/BKS-B 20

pulse widening optional

1.5

Multimetal/
 Factor 1
 PROXINOX®
 PROXIMAX®
 Diagnostics
 Pressure
 rated
 Temperature
 rated
 Weld-immune
 NAMUR
 Extended
 Switching
 Distance
**Ring
 Sensors**



6

Connectors ...
 page 6.2 ...

