

Magneto-inductive

Magneto-inductive Position Sensors BIL

... are compact displacement sensors for position sensing over distances of up to 160 mm. Magneto-inductive displacement sensors measure without contact and absolute, with a passive position marker.

- 1.7.2 BIL ADO
- 1.7.3 BIL EDO
- 1.7.4 Accessories
- 1.7.5 Output curves, installation notes

SmartSens



BIL – precision in a compact housing

Features

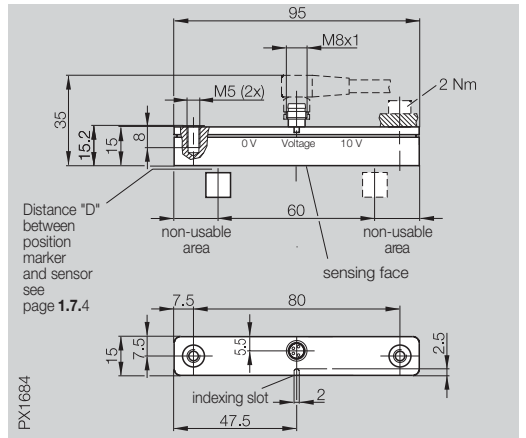
- Non-contact
- Wear-free
- Potted sensor and electronics for harsh environments
- Integrated processing electronics, no separate box needed
- Housing cross-section 15×15 mm

Applications

- Robotics/handling
- Clamping cylinders
- Packaging
- Process industry
- Position sensing on grippers

Output signal U_a	Voltage 0...10 V
Output signal I_a	
Working range s_a	
Linear range s_l	

0...60 mm
5...55 mm



Ordering code	BIL AD0-P060A-01-S75
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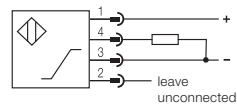
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Rated operational voltage U_e	24 V DC
Supply voltage U_B	15...30 V DC
Ripple	$\leq 10\%$ of U_e
Rated insulation voltage U_i	75 V DC
Effective travel distance s_e	30 mm
Load resistance R_L	$\geq 2\text{ k}\Omega$
No-load supply current I_0 at U_e	$\leq 30\text{ mA}$
Polarity reversal protected	yes
Short circuit protected	yes

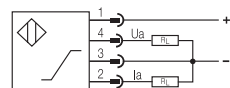
Ambient temperature range T_a	$-10...+75\text{ }^\circ\text{C}$
Repeat accuracy R_{BWN}	$\leq \pm 60\text{ }\mu\text{m}$
Non-linearity	$\leq \pm 0.6\text{ mm}$
Cutoff frequency (-3dB)	1500 Hz
Measuring speed	$\leq 5\text{ m/s}$
Response time	1 ms
Temperature coefficient TK	typical $-5\text{ }\mu\text{m/K}$
in the optimal range	min. $+15\text{ }\mu\text{m/K}$
from $+10...+50\text{ }^\circ\text{C}$	max. $-25\text{ }\mu\text{m/K}$

Degree of protection per IEC 60529	IP 67
Housing material	Fiberglass reinforced PA
Connection	Connector
Recommended connector	BKS-S 74/BKS-S 75

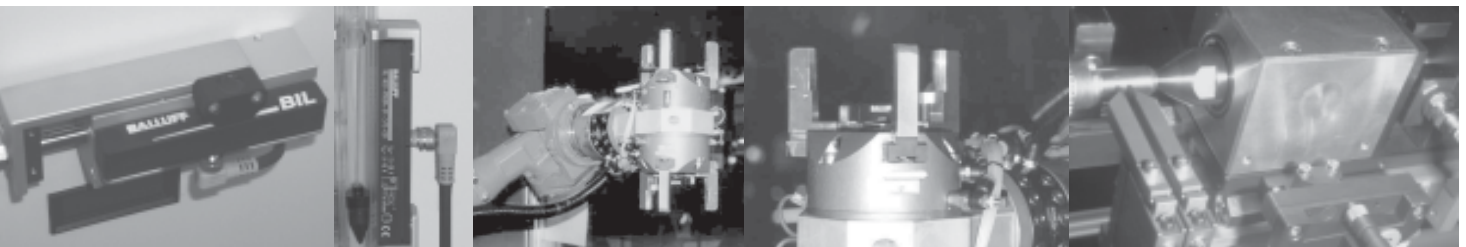
BIL AD0...



BIL ED0...

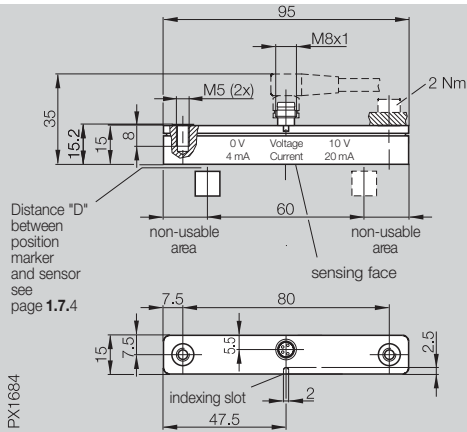


Connect either voltage or current output



**Voltage 0...10 V or
Current 4...20 mA**

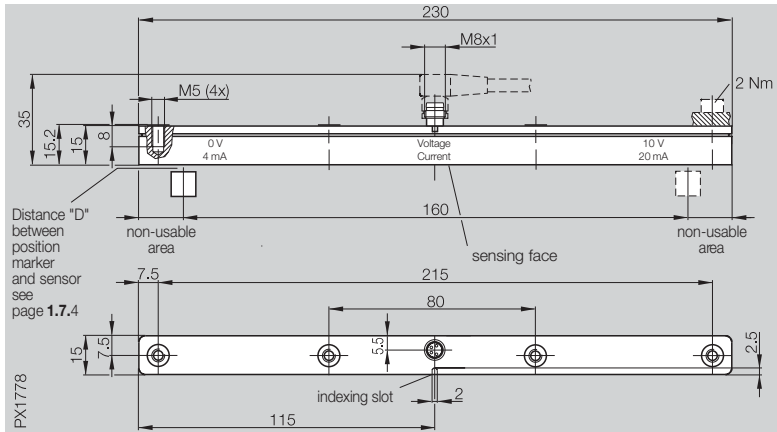
0...60 mm
5...55 mm



PXI1684

**Voltage 0...10 V or
Current 4...20 mA**

0...160 mm
0...160 mm



PXI1778

BIL ED0-P060A-01-S75

24 V DC
at U_a 15...30 V DC, at I_a 10...30 V DC
 $\leq 10\%$ of U_e
75 V DC
30 mm
at $U_a \geq 2\text{ k}\Omega$, at $I_a \leq 500\ \Omega$
 $\leq 30\text{ mA}$
yes
yes

-10...+75 °C
 $\leq \pm 60\ \mu\text{m}$
 $\leq \pm 0.6\text{ mm}$
1500 Hz
 $\leq 5\text{ m/s}$
1 ms
-5 $\mu\text{m/K}$
+15 $\mu\text{m/K}$
-25 $\mu\text{m/K}$

IP 67
Fiberglass reinforced PA
Connector
BKS-S 74/BKS-S 75

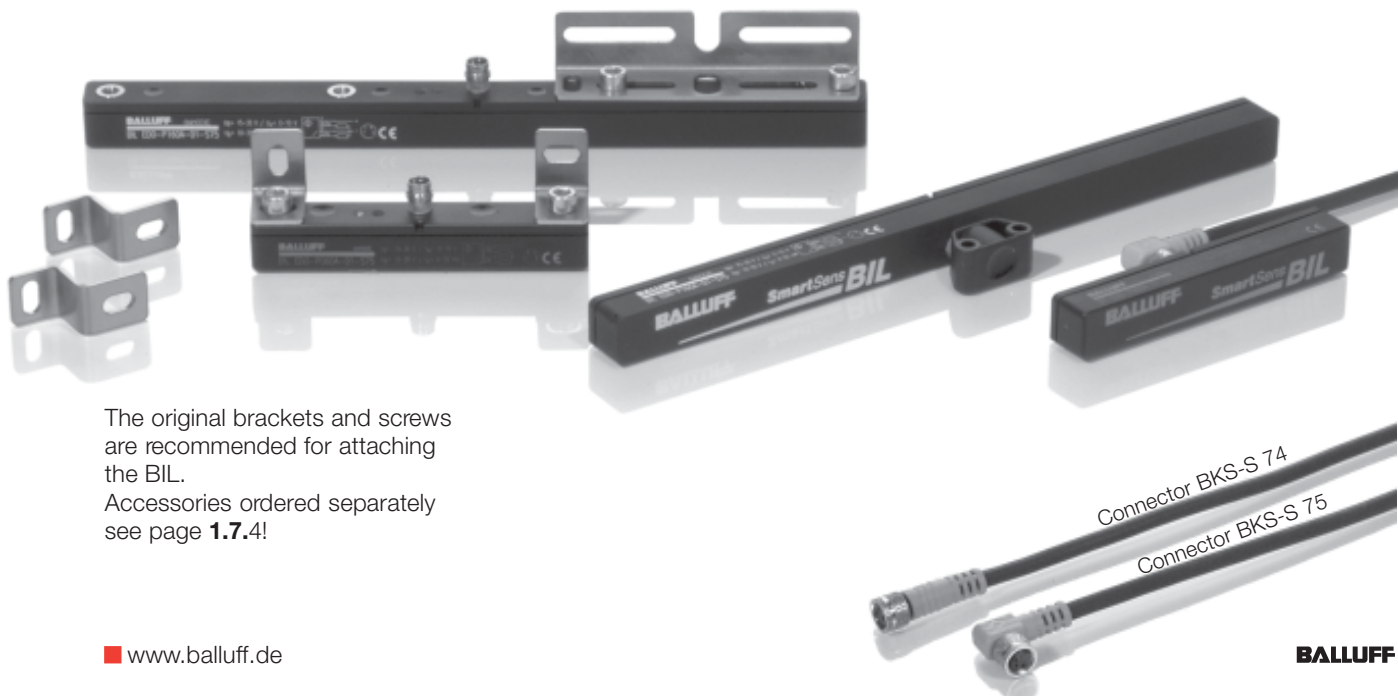
BIL ED0-P160A-01-S75

24 V DC
at U_a 15...30 V DC, at I_a 10...30 V DC
 $\leq 10\%$ of U_e
75 V DC
80 mm
at $U_a \geq 2\text{ k}\Omega$, at $I_a \leq 500\ \Omega$
 $\leq 25\text{ mA}$
yes
yes

-10...+75 °C
 $\leq \pm 500\ \mu\text{m}$
 $\leq \pm 2.4\text{ mm}$
300 Hz
 $\leq 5\text{ m/s}$
1 ms
-40 $\mu\text{m/K}$
+120 $\mu\text{m/K}$
-200 $\mu\text{m/K}$

IP 67
Fiberglass reinforced PA
Connector
BKS-S 74/BKS-S 75

1.7



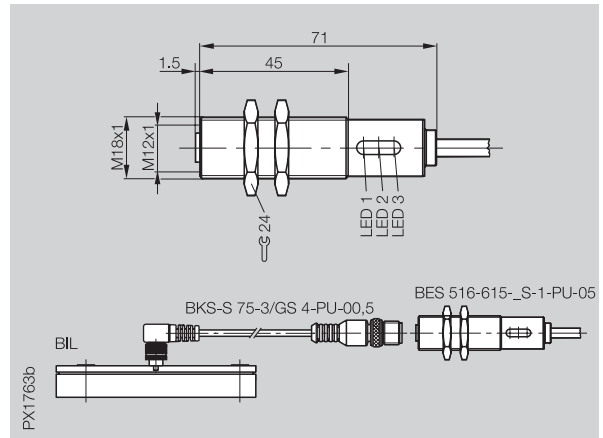
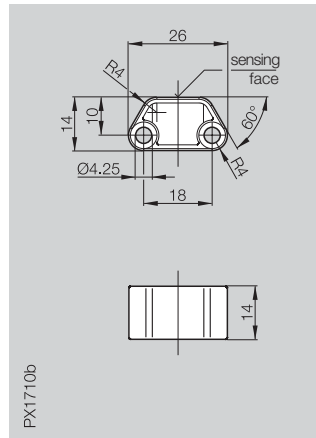
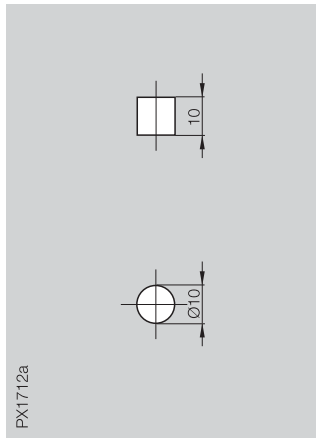
The original brackets and screws are recommended for attaching the BIL. Accessories ordered separately see page 1.7.4!

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Connectors ...
page 6.2 ...

Magneto-inductive Position Sensors Accessories

Description	Position marker	Position marker	Analog set point controller
Housing size	Ø 10×10 mm	26×14×14 mm	M18×1
Material	Hard ferrite	Fiberglass reinforced PA	Nickel plated brass
Distance "D"	2 mm	1 mm	-



Ordering code	BIL 000-MH-A	BIL 001-MH-A	BES 516-615-S-1-PU-05
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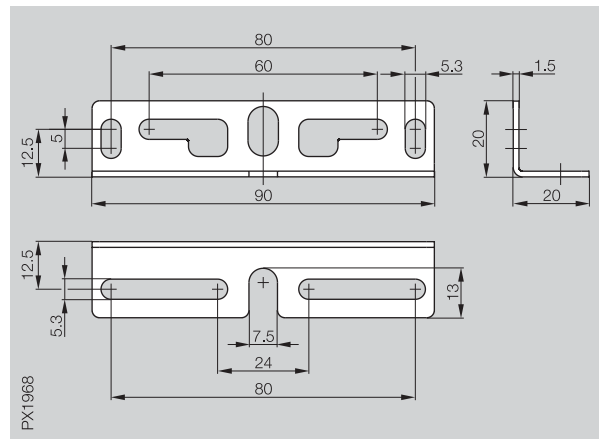
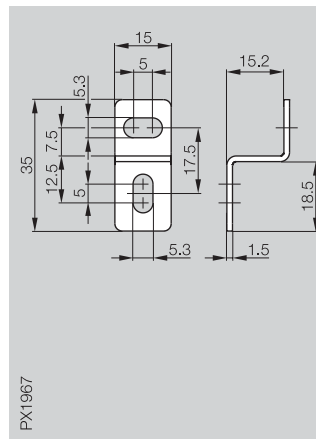
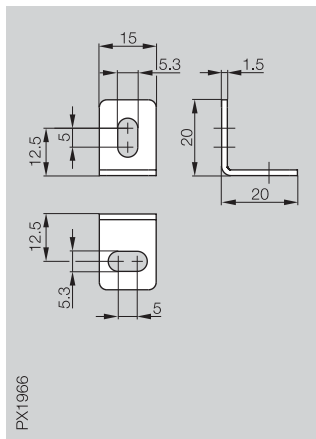


- Analog output
- PNP- or NPN normally open
- Input signal 0...10 V
- Resolution 8 bits
- 3 binary switching points
- Teach-in

For technical data see page 6.16

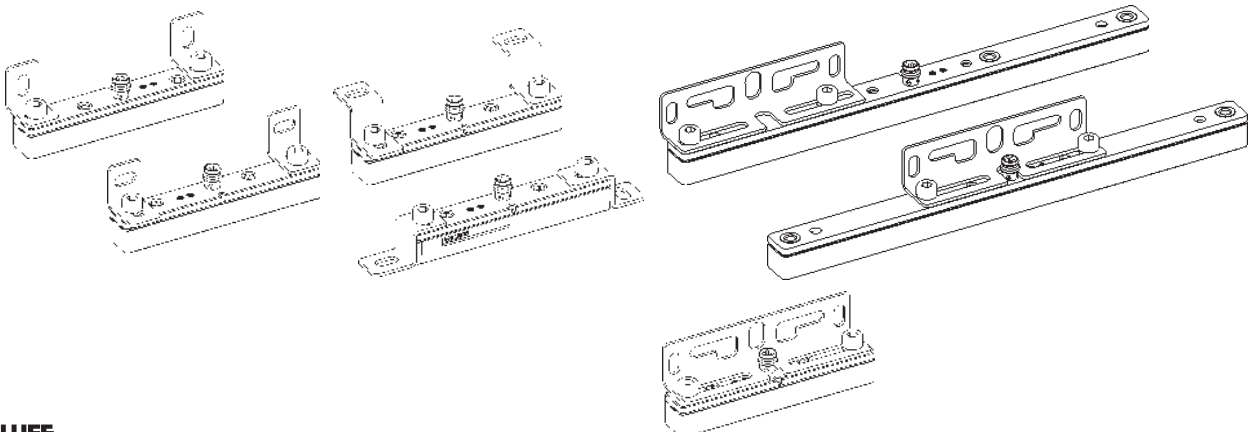


Description	Mounting bracket	Mounting bracket	Mounting bracket
Material	Stainless steel	Stainless steel	Stainless steel

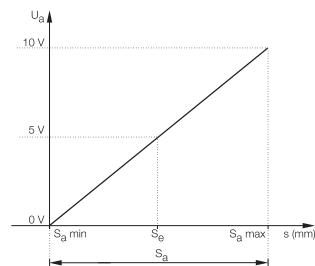


Ordering code	BIL 01-HW-1	BIL 01-HW-2	BIL 01-HW-3
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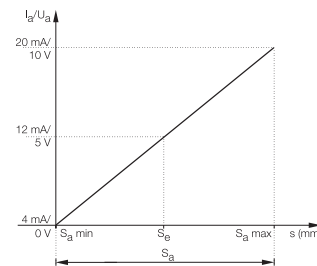
Installation examples



Output curve
BIL AD0...



Output curve
BIL ED0...



Installation notes

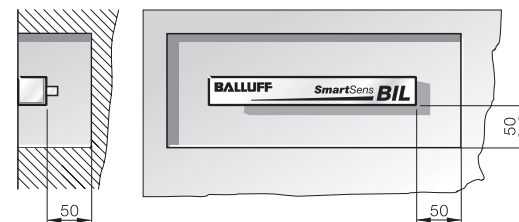
Non-magnetizable materials such as alloys, austenitic steels, plastics, etc. are recommended for attaching the position marker. This applies as well to mounting the sensor.

Magnetizable materials may affect the geometry and strength of the effective magnetic field of the position marker.

Magnetic fields near the BIL may, depending on the location and strength, affect the output signal. This applies also to position markers of adjacent BILs.

Row mounting of two or more BIL:
Depending on the arrangement mutual interference between the output signals is possible.

**Recommended minimum distances
from magnetizable materials or other BIL**
(for optimum technical performance)



Dimensions in mm

