

BALLUFF

Magneto-inductive Position Sensors BIL
Position sensing has a new name

SmartSens



Magneto-inductive Position Sensors

s_a 0...60 mm
0...10 V

Precision in a compact housing

BIL is the compact displacement sensor for position sensing up to 160 mm.

The magneto-inductive analog position sensor measures **non-contact** with an **absolute output** and **passive position marker**.

Features

- Non-contact
- Wear-free
- Suitable for harsh environments with potted sensor and electronics
- Processing electronics integrated, no external components
- Housing cross-section 15x15 mm

Applications

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

Installation notes

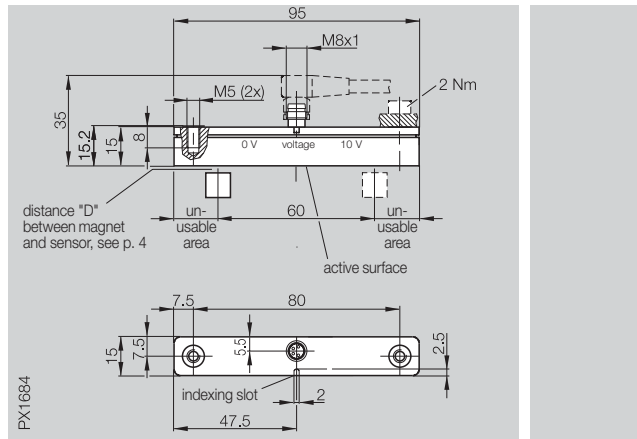
When installing and attaching the BIL and magnet, non-magnetizable materials such as alloys, austenitic steels, plastics, etc. are recommended. This applies both to the sensor as well as the magnet.

Magnetizable materials can affect the geometry and strength of the field coming from the permanent magnet.

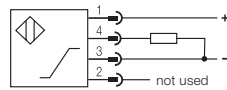
Magnetic fields in the area of the BIL can, depending on their orientation and strength, affect the output signal.

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

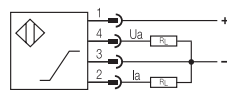
Output signal U_a	Voltage 0...10 V
Output signal I_a	
Working range s_a	
Linear range s_l	



BIL AD0...



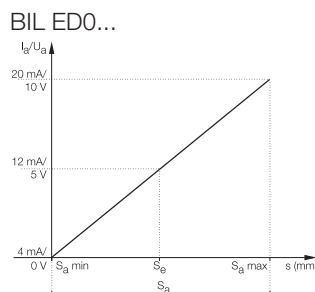
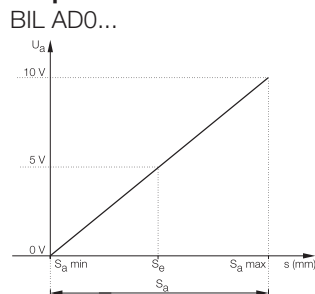
BIL EDO...



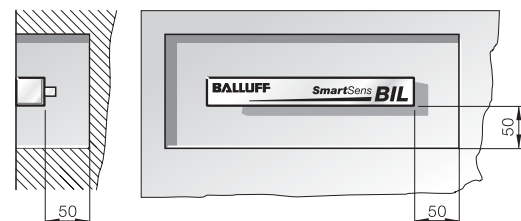
Connect to either voltage or current output.

Ordering code	BIL AD0-P060A-01-S75
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
Rated sensing distance s_e	30 mm
Load resistance R_L	$\geq 2\text{ k}\Omega$
No-load supply current I_0 at U_e	$\leq 30\text{ mA}$
Protected against polarity reversal	yes
Short circuit protected	yes
Ambient temperature range T_a	$-10...+75\text{ }^\circ\text{C}$
Repeat accuracy R_{BWN}	$\leq \pm 60\text{ }\mu\text{m}$
Linearity	$\leq \pm 0.6\text{ mm}$
Limit frequency (-3dB)	1500 Hz
Measuring speed	$\leq 5\text{ m/s}$
Temperature coefficient TK	typ. $-5\text{ }\mu\text{m/K}$ min. $+15\text{ }\mu\text{m/K}$ max. $-25\text{ }\mu\text{m/K}$
Degree of protection per IEC 60529	IP 67
Housing material	PA fiberglass reinforced
Connection	connector
Recommended connector	BKS-S 74/BKS-S 75

Output curve



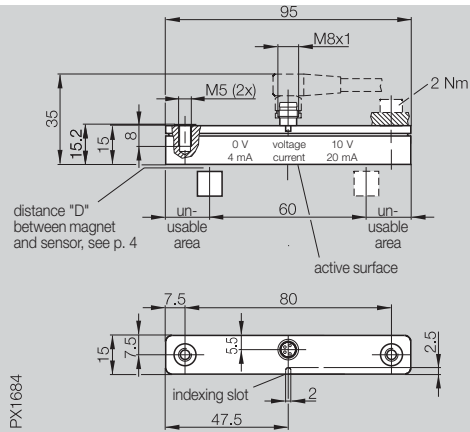
Recommended distances from magnetizable materials (for optimum function)



all data in mm

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

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



PX1684

BIL ED0-P060A-01-S75

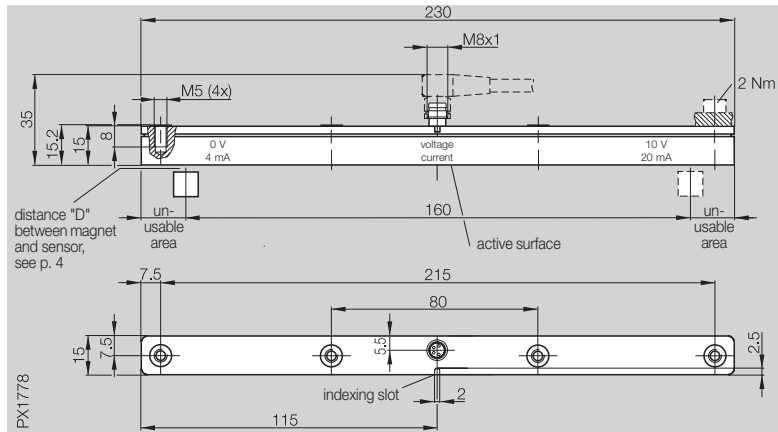
24 V DC
at U_a 15...30 V DC, at I_a 10...30 V DC
 $\leq 10\%$ of U_a
75 V DC
30 mm
at $U_a \geq 2\text{ k}\Omega$, at $I_a \leq 500\ \Omega$
 $\leq 30\text{ mA}$
yes
yes

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

IP 67
PA fiberglass reinforced
connector
BKS-S 74/BKS-S 75

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

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



PX1778

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_a
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
 $\leq \pm 80\ \mu\text{m}$
 $\leq \pm 2.4\text{ mm}$
300 Hz
 $\leq 5\text{ m/s}$
-40 $\mu\text{m/K}$
+120 $\mu\text{m/K}$
-200 $\mu\text{m/K}$

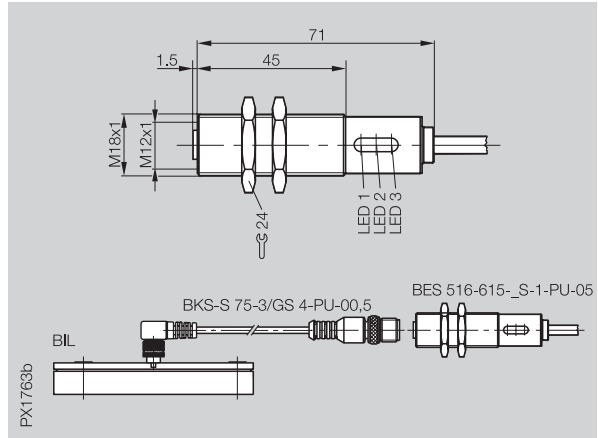
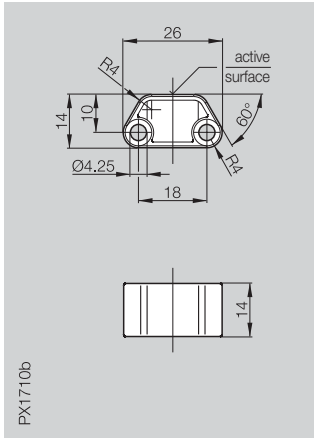
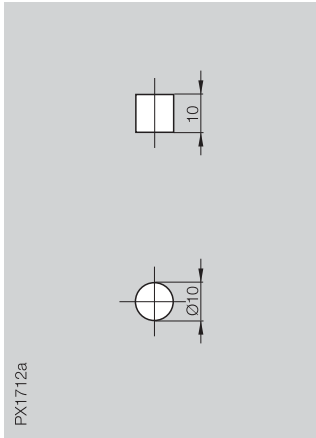
IP 67
PA fiberglass reinforced
connector
BKS-S 74/BKS-S 75



The original bracket and screws are recommended for mounting the BIL. Please order accessories separately!

Magneto-inductive Position Sensors Accessories

Description	Magnet	Magnet	Analog Set Point Controller
Dimensions	Ø 10x10	26x14x14	M18x1
Material	Hard ferrite	PA fiberglass reinforced	CuZn nickel plated
Distance "D"	2 mm	1 mm	-



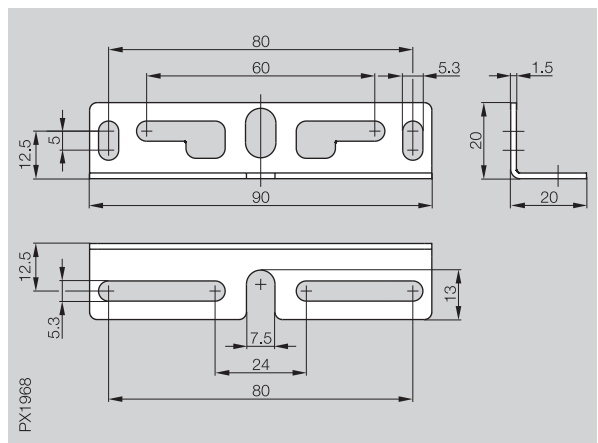
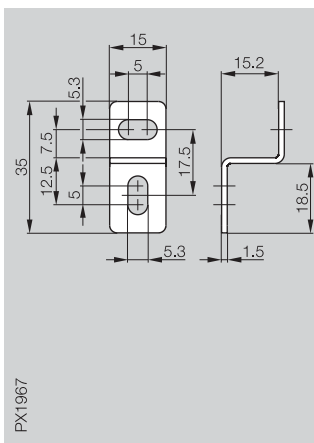
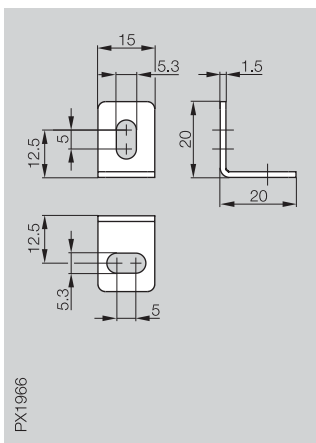
Ordering code	BIL 000-MH-A	BIL 001-MH-A	BES 516-615-_S-1-PU-05
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- Analog output
- PNP- or NPN normally-open
- Input signal 0...10 V
- Resolution 8 bits
- 3 binary switch points
- Teach-in programming

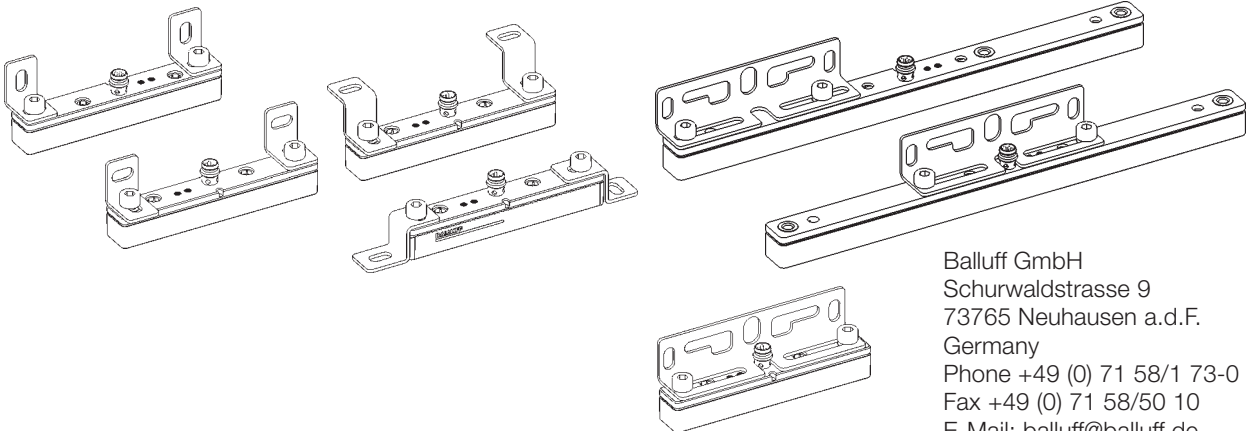


Description	Mounting Bracket	Mounting Bracket	Mounting Bracket
Material	stainless steel	stainless steel	stainless steel



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



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