

Magnetostrictive Sensors
BTL5 -A/B- Series - CANopen

BALLUFF



BTL5-abcd-Mnnnn-fg-lm

BTL5

Magnetostrictive linear position sensor Generation 5

a interface

H = CANopen

b Operating voltage

1 = 20 ... 28 V

c Interface characteristic 1

1 = 1 magnet
2 = 2 magnets
3 = 4 magnets

d Interface characteristic 2

Data transmission rate:

0 = 1 MBaud
1 = 800 MBaud
2 = 500 kBaud
3 = 250 kBaud
4 = 125 kBaud
5 = 100 kBaud
6 = 50 kBaud
7 = 25 kBaud
8 = 10 kBaud

Mnnnn Nominal length (4-position)

M0500 = metric in mm
(M0050...M4000)

f Style

A = Mounting threads M18x1.5, for flat seal
B = Mounting threads M18x1.5, for O-Ring

g Form factor characteristic

8 = Rod diameter 8 mm
- = Rod diameter 10.2 mm

l Connection type

S = Connector

m Connection type characteristic

92 = 1 x M12x1 connector with 5 pins
94 = 1 x M12x1 connector with 5 pins + 1 x M12x1 female with 5 pins

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Electrical connection

Polarity reversal protected	Ub up to 28 V
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Electrical data

Current consumption max. at 24 V DC	100 mA
Inrush current	≤ 3 A/0.5 ms
Operating voltage Ub	20...28 VDC
Output signal adjustable	with software tool
Overvoltage protection	Ub up to 28 V
Voltage-proof up to (GND to housing)	500 V DC

Environmental conditions

Ambient temperature	-40...85 °C
EN 55016-2-3, Radiation	Industrial areas
EN 60068-2-27, Continuous shock	100 g, 2 ms
EN 60068-2-27, Shock	100 g, 6 ms
EN 60068-2-6, Vibration	12 g, 10...2000 Hz
EN 61000-4-2, ESD	Severity Level 3
EN 61000-4-3, RFI	Severity Level 3
EN 61000-4-4, Burst	Severity Level 3
EN 61000-4-5, Surge	Severity Level 2
EN 61000-4-6, High-frequency fields	Severity Level 3
EN 61000-4-8 Magnetic fields	Severity Level 4
IP rating	IP67 with connector
Relative humidity	≤ 90 %, non-condensing
Storage temperature	-40...100 °C
Temperature coefficient typ.	≤ 35 ppm/K at 50% of nominal stroke 500mm

Functional safety

MTTF (40 °C)	84 a
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General data

Approval/Conformity	CE cULus EAC WEEE
Magnets, number (factory setting)	c = 1: 1 c = 2: 2 c = 3: 4
Magnets, number max.	4 minimum separation between magnets 65 mm.

Material

Cover material	Aluminum, Anodized
Housing material	Aluminum
Housing material, surface protection	Anodized
Material flange	Stainless steel (1.3952)
Protection tube material	Stainless steel (1.4571)

Mechanical data

Installation length from contact surface	nnnn + 90 mm
Pressure rating max.	g ≠ 8: 600 bar g = 8: 250 bar
Pressure rating, note	when installed in hydraulic cylinder
Speed detectable max.	10 m/s
Tightening torque max.	100 Nm

Output/Interface

Interface	CANopen
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Range/Distance

Linearity deviation	±30 µm
Measuring length	25...4000 mm
Repeat accuracy	± 1 LSB
Sampling frequency max.	1 kHz, standard

Technical drawing of the M18x1,5 connector assembly. The drawing shows a side view of the assembly with dimensions: ~71, 20, 104, 30-1, 3, 60, 15, 2, 2, 5, ~52, A (1:1), 25, M18x1,5, Ø10,2, and 46. A detail view shows a cross-section of the cable with dimensions 0,5 / Ø25. A top view shows the hexagonal base with four mounting holes and a central hole.

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Pin	
1	CAN_GND
2	+24 V DC
3	GND
4	CAN_HIGH
5	CAN_LOW

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