

Magnetostrictive Sensors
BTL7 -A/B- Series - Digital

BALLUFF



BTL7-abcd-Mnnnn-fg-lm

BTL7

Magnetostrictive linear position sensor Generation 7

a interface

P = Digital pulse interface

b Operating voltage

5 = 10 ... 30 V

c Interface characteristic 1

1 = Digital start/stop interface

d Interface characteristic 2

1 = DPI/IP communication interface

Mnnnn Nominal length (4-position)

M0500 = metric in mm

(M0025...M1016: for rod diameter 8 mm)

(M0025...M7620: for rod diameter 10.2 mm)

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

KA = Cable (PUR)

FA = Cable (PTFE)

m Connection type characteristic 1

for connector:

32 = M16x0.75 connector with 8 pins

115 = M12x1 connector with 8 pins

135 = M16x0.75 connector with 6 pins

for cable (length in meters):

02, 05, 10, 15, 20, 30, 50, 100

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Basic features

Approval/Conformity	I = S, KA: CE + cULus + EAC + WEEE I = FA: CE + EAC + WEEE
Magnets, number max.	16 minimum separation between magnets 65 mm.

Electrical connection

Polarity reversal protected	Ub up to 36 V
Short-circuit protection	to GND and to 36 V DC

Electrical data

Current consumption max. at 24 V DC	120 mA
Inrush current	nnnn < 1525: ≤ 500 mA/10 ms nnnn ≥ 1525: ≤ 500 mA/25 ms
Operating voltage Ub	10...30 VDC
Output signal adjustable	no
Overvoltage protection	Ub up to 36 V
Switch-on delay max.	nnnn < 1525: 100 ms nnnn ≥ 1525: 500 ms
Voltage-proof up to (GND to housing)	500 V DC

Environmental conditions

Ambient temperature	-40...85 °C
Cable temperature, fixed routing	I = KA: -40 °C ... 90 °C I = FA: -40 °C ... 200 °C
Cable temperature, flexible routing	I = KA: -5 °C ... 90 °C
EN 55016-2-3, Radiation	For industrial and residential use
EN 60068-2-27, Continuous shock	150 g, 2 ms
EN 60068-2-27, Shock	150 g, 6 ms
EN 60068-2-6, Vibration	20 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
Protection degree	I = S: IP67 with connector I = KA, FA: IP68
Relative humidity	≤ 90 %, non-condensing
Storage temperature	-40...100 °C
Temperature coefficient typ.	≤ 15 ppm/K at 50% of nominal stroke 500mm

Functional safety

MTTF (40 °C)	102 a
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Material

Cable flame-resistant	I = KA, FA: IEC 60332-1
Cable jacket, material	I = KA: PUR I = FA: PTFE
Cover material	Aluminum, Die-cast, nickel plated
Housing material	Aluminum, Anodized
Housing material, surface protection	Anodized
Material flange	Stainless steel (1.3960)
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

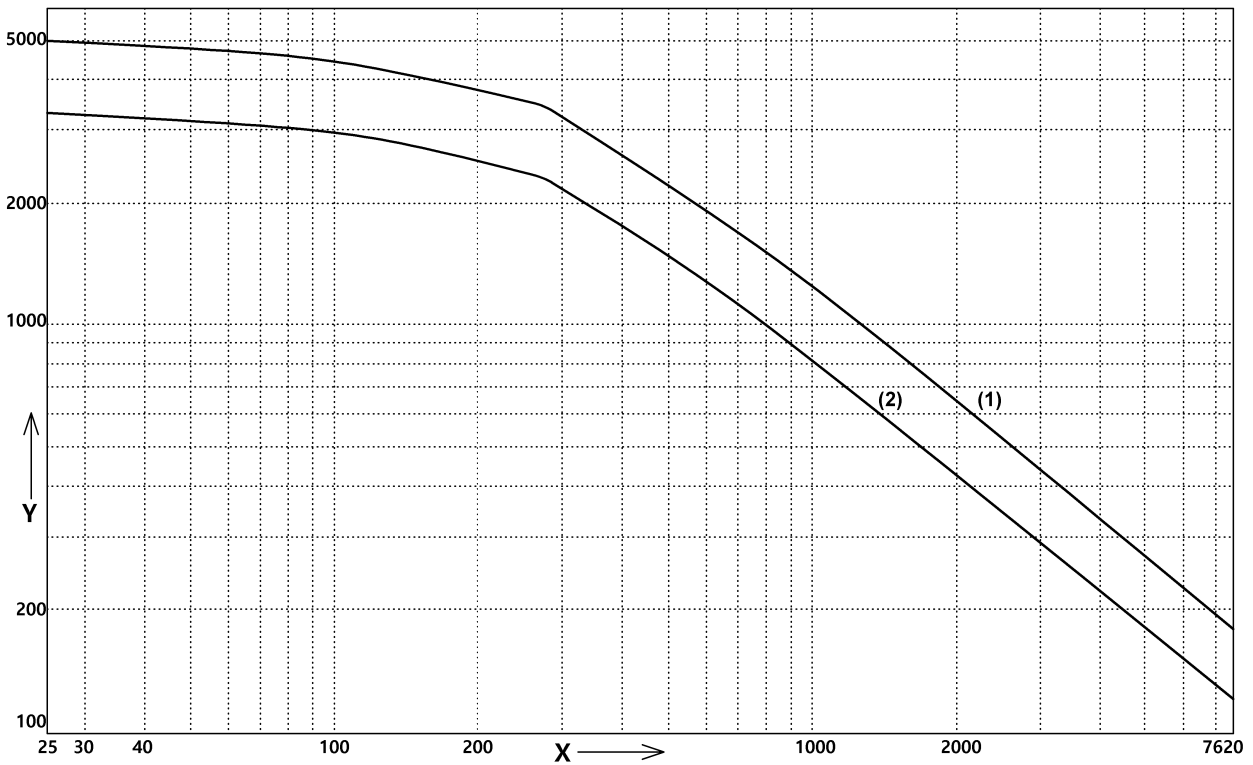
Output/Interface

Interface	Digital pulse
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Range/Distance

Linearity deviation	nnnn = 0025...5500: ± 50 μm nnnn > 5500: ± 0.02% FS
Measuring length	25...7620 mm
Repeat accuracy	≤ ± 5 μm
Sampling frequency max.	See illustration for measuring frequency

Characteristic Diagram



fA,min: 62,5 Hz

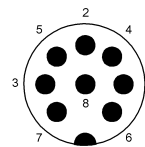
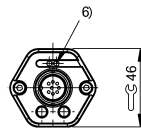
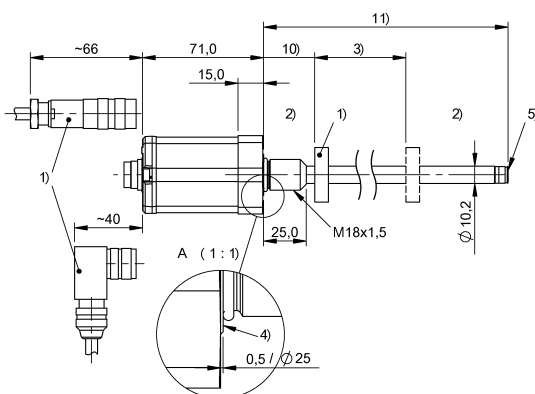
1) 1 magnet

2) 2...16 magnets

x: Nominal length [mm]

y: fA,max Hz

BTL7-P511-Mxxxx-B-S32



Pin	
1	+INIT
2	+START/STOP
3	-INIT
4	NC
5	-START/STOP
6	GND
7	10...30 V DC
8	NC

1) not included in scope of delivery

2) Non-usable area

3) Nominal length = Measuring length

4) Mounting surface

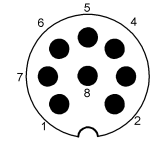
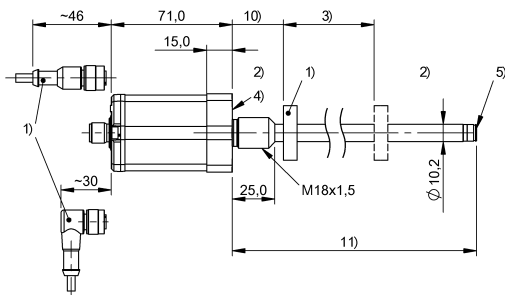
5) Internal threads M4x4/6 deep

6) LED function indicator

10) Null point

11) Installation length

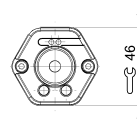
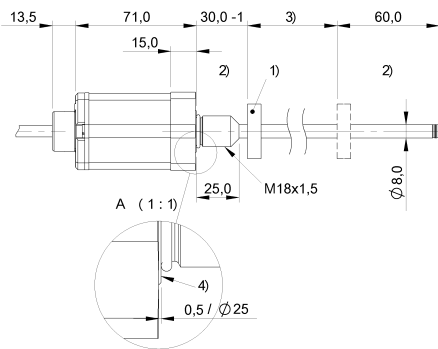
BTL7-P511-Mxxxx-A-S115



Pin	
1	+INIT
2	+START/STOP
3	-INIT
4	NC
5	-START/STOP
6	GND
7	10...30 V DC
8	NC

- 1) not included in scope of delivery
- 2) Non-usable area
- 3) Nominal length = Measuring length
- 4) Mounting surface
- 5) Internal threads M4x4/6 deep
- 10) Null point
- 11) Installation length

BTL7-P511-Mxxxx-B8-KAxx



colour	
YE	+INIT
GY	+START/STOP
PK	-INIT
RD	NC
GN	-START/STOP
BU	GND
BN	10...30 V DC
WH	NC

- 1) not included in scope of delivery
- 2) Non-usable area
- 3) Nominal length = Measuring length
- 4) Mounting surface