



BTL7-abcd-Mnnnn-fg-i-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: with 8 mm rod diameter)

(M0025...M5500: with 10.2 mm rod diameter)

f Form factor

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

i Variant

NEX = Ignition class "nA" and "tb"

l Connection type

S = Connector

KA = Cable (PUR)

m Connection type characteristic 1

for connector:

32 = M16x0.75 connector with 8 pins

for cable (length in meters):

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

Basic features

Approval/Conformity	CE UKCA CSA IECEX WEEE
Ex marking	ATEX: II 3 G Ex nA IIC T4 Gc II 2 D Ex tb IIIC T135°C Db IP6x -40°C ≤ Ta ≤ +60°C IECEX: Ex nA IIC T4 Gc Ex tb IIIC T135°C Db IP6x -40°C ≤ Ta ≤ +60°C NEC: NI: Class I, Division 2, Groups ABCD Class II, Division 2, Groups EFG T4 CAN: Class I, Zone 2, Ex nA IIC T4 Ex tb IIIC T135°C USA: Class I, Zone 2, AEx nA IIC Gc T4 AEx tb IIIC Db T135°C -40°C ≤ Ta ≤ +60°C CCC: Ex nA IIC T4 Gc, Ex tD A21 IP64 T135°C
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...3000: ≤ 500 mA/25 ms nnnn 3001...5500: ≤ 500 mA/10 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...3000: 500 ms nnnn 3001...5500: 100 ms
Voltage-proof up to (GND to housing)	500 V DC

Environmental conditions

Ambient temperature	-40...60 °C
Cable temperature, fixed routing	I = KA: -40 °C ... 90 °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
IP rating	I = S: IP67 with connector I = KA: IP68
Relative humidity	≤ 90 %, non-condensing
Storage temperature	-40...70 °C
Surface temperature max.	135 °C
Temperature coefficient typ.	≤ 15 ppm/K at 50% of nominal stroke 500mm

Functional safety

MTTF (40 °C)	102 a
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Interface

Interface	Digital pulse
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Material

Cable flame-resistant	I = KA: IEC 60332-1
Cable jacket, material	I = KA: PUR
Cover material	Aluminium, Die-cast, nickel plated
Housing material	Aluminium, Anodized
Housing material, surface protection	Anodized
Material flange	1.3960 stainless steel
Protection tube material	1.4571 stainless steel

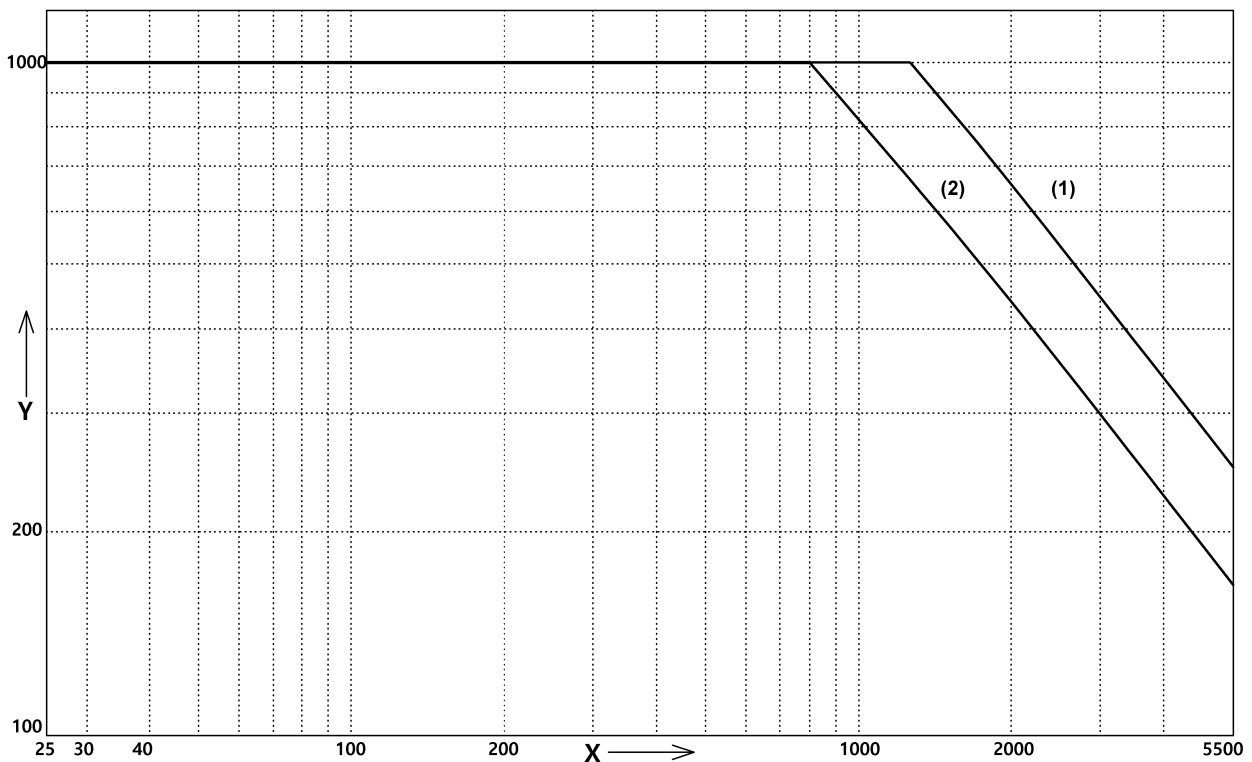
Mechanical data

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

Range/Distance

Linearity deviation	± 50 µm
Measuring length	25...5500 mm
Repeat accuracy	± 5 µm
Sampling frequency max.	See illustration for measuring frequency

Characteristic Diagram



$f_{A,min}$: 62,5 Hz

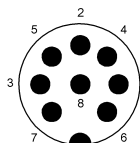
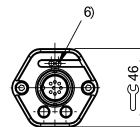
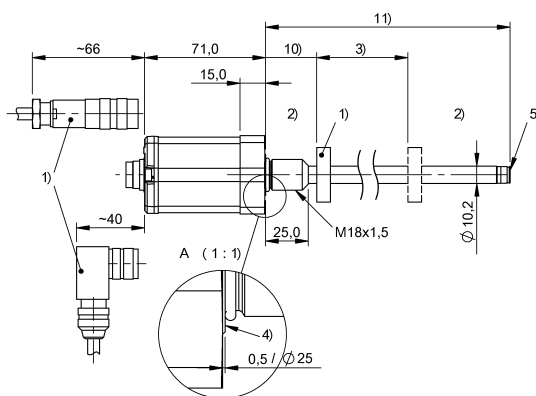
1) 1 magnet

2) 2...16 magnets

x: Nominal length [mm]

y: $f_{A,max}$ Hz

BTL7-P511-Mxxx-B-NEX-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

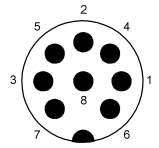
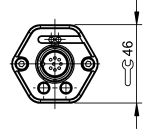
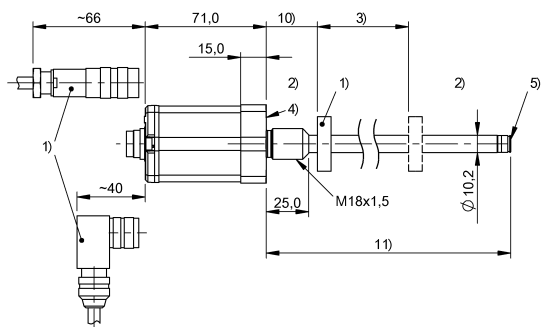
5) Internal threads M4x4/6 deep

6) LED function indicator

10) Null point

11) Installation length

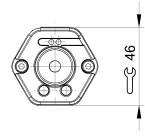
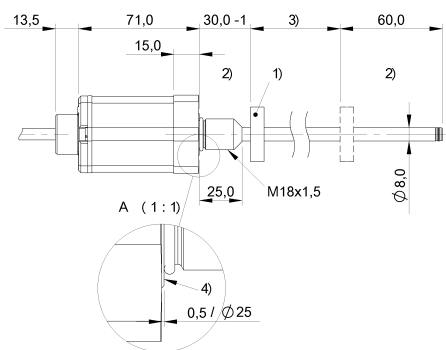
BTL7-P511-Mxxxx-A-NEX-S32



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
- 10) Null point
- 11) Installation length

BTL7-P511-Mxxxx-B8-NEX-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