



BTL7-abcd-Mnnnn-f-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
(M0050...M7620)

f Form factor

P = Profile

l Connection type

S = Connector
KA = Cable (PUR)

m Connection type characteristic 1

for connector:
32 = M16x0.75 connector with 8 pins
115 = M12x1 connector with 8 pins

for cable (length in meters):
02, 05, 10, 15, 20, 30, 50, 100

Basic features

Approval/Conformity	CE UKCA cULus 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	100 mA
Inrush current	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: 200 ms nnnn ≥ 1525: 600 ms
Voltage-proof up to (GND to housing)	500 V AC

Environmental conditions

Ambient temperature	-40...85 °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...100 °C
Temperature coefficient typ.	≤ 15 ppm/K at 50% of nominal stroke 500mm

Functional safety

MTTF (40 °C)	242 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

Mechanical data

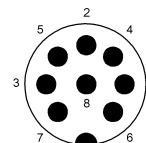
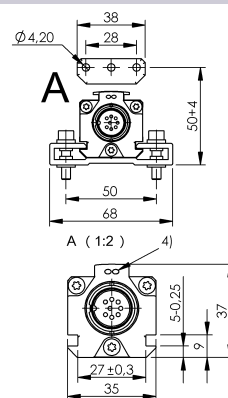
Overall Length	nnnn + 145 mm
Speed detectable max.	10 m/s

Range/Distance

Linearity deviation	nnnn = 0050...5500: ± 50 µm nnnn > 5500: ± 0.02% FS
Measuring length	50...7620 mm
Repeat accuracy	≤ ± 5 µm
Sampling frequency max.	See illustration for measuring frequency

Figure 1 is a log-log plot showing the dependence of the number of iterations N on the number of nodes n . The x-axis represents n and ranges from 50 to 7620. The y-axis represents N and ranges from 100 to 5000. Two curves are plotted: (1) for the 'naive' algorithm and (2) for the 'improved' algorithm. Both curves show a decreasing trend, with curve (2) consistently below curve (1).

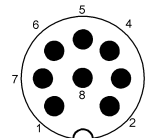
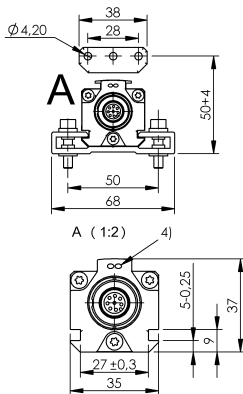
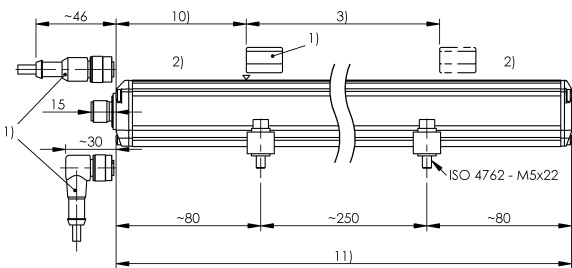
n	N (naive) (1)	N (improved) (2)
50	4500	3000
100	4000	2500
200	3500	2000
400	2500	1500
800	1500	1000
1600	1000	700
3200	600	450
6400	400	300

 $y: f_{A,\max} \text{ Hz}$ 

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

- 3 / 4

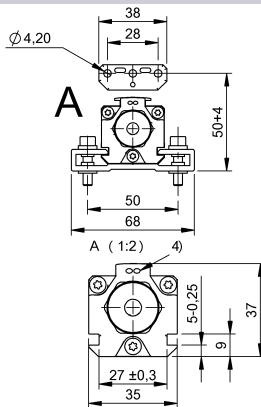
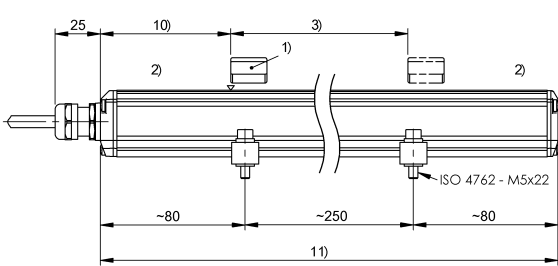
BTL7-P511-Mxxxx-P-S115



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) LED function indicator
10) Null point
11) Installation length

BTL7-P511-Mxxxx-P-KAxx



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

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