Magnetostrictive Sensors

BTL7 -A/B- Series - Analog current

BTL7-abcd-Mnnnn-fg-lm

BTL7
Magnetostrictive linear position sensor Generation 7

a interface
C = Current output 0 ... 20 mA
E = Current output 4 ... 20 mA

b Operating voltage
5 = 10 … 30 V

c + d Interface characteristic 1 + 2
01 = 2 outputs, each 1 x rising/falling settable/ programmable
00 = 1 output, rising
70 = 1 output, falling

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 = M16x1 connector with 6 pins
140 = MS, 10-pin

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

Basic features

Approval/Conformity	nnnn ≤ 500: l = S, KA: CE + cULus + EAC + GL + WEEE l = FA: CE + EAC + GL + WEEE nnnn 500: l = S, KA: CE + cULus + EAC + WEEE l = FA: CE + EAC + WEEE
Magnets, number (factory setting)	1
Magnets, number max.	cd ≠ 10: 1 cd = 10: 2

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	xyz ≠ E501: ≤ 150 mA xyz = E501: ≤ 180 mA
Inrush current	nnnn 1525: ≤ 500 mA/10 ms nnnn ≥ 1525: ≤ 500 mA/25 ms
Load resistance RL max.	500 Ohm
Operating voltage Ub	10...30 VDC
Output signal adjustable	cd ≠ 01: Setting aid and programming inputs cd = 01: Setting aid and software tool m = 135: Setting aid
Overvoltage protection	Ub up to 36 V
Switch-on delay max.	nnnn 1525: 600 ms nnnn ≥ 1525: 800 ms
Voltage-proof up to (GND to housing)	500 V AC

Environmental conditions

Ambient temperature	-40...85 °C
Cable temperature, fixed routing	l = KA: -40 °C ... 90 °C l = FA: -40 °C ... 200 °C
Cable temperature, flexible routing	l = 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	l = S AND m ≠ 140: IP67 with connector l = S AND m = 140: IP65 with connector l = KA, FA: IP68
Relative humidity	≤ 90 %, non-condensing
Storage temperature	-40...100 °C
Temperature coefficient typ.	≤ 30 ppm/K at 50% of nominal stroke 500mm

Functional safety

MTTF (40 °C)	58 a

Material

Cable flame-resistant	l = KA, FA: IEC 60332-1
Cable jacket, material	l = KA: PUR l = 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

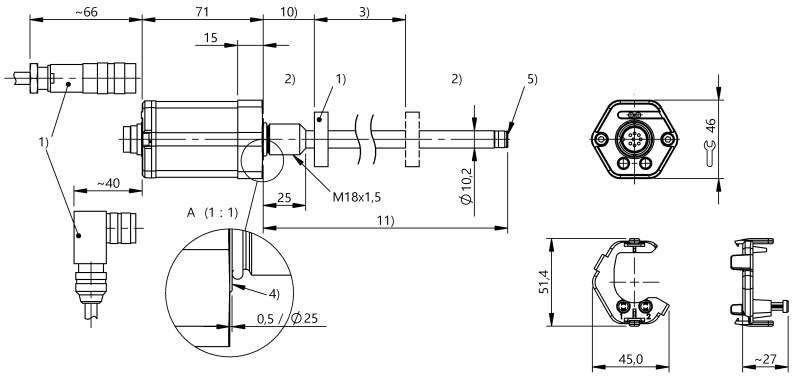
Output/Interface

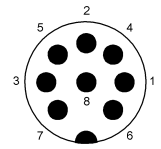
Interface	Analog, current

Range/Distance

Linearity deviation	nnnn = 0050…0500: ± 50 µm nnnn = 0501…5500: ± 0.01% FS nnnn 5500: ± 0.02% FS
Measuring length	25...7620 mm
Repeat accuracy	± 5 µm
Sampling frequency max.	nnnn = 0050…0250: 4000 Hz nnnn = 0251…0600: 2000 Hz nnnn = 0601…1300: 1000 Hz nnnn = 1301…2700: 500 Hz nnnn = 2701…5500: 250 Hz nnnn 5500: 180 Hz

BTL7-E501-Mxxxx-B-S32

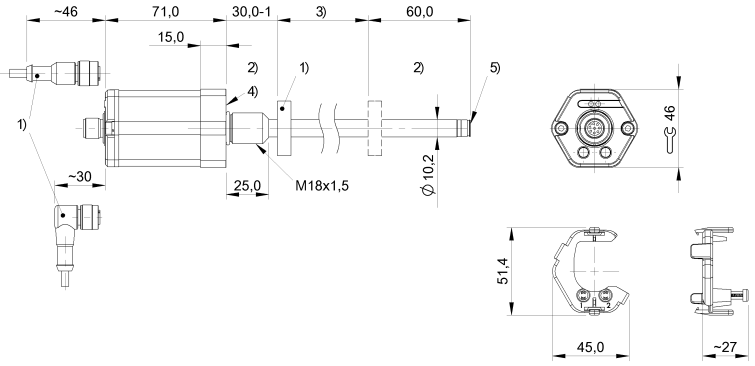


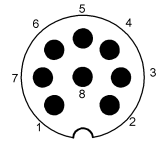


Pin	
1	4...20 mA
2	0V
3	20...4 mA
4	La
5	NC
6	GND
7	+24 V DC
8	Lb

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-C500-Mxxxx-A-S115

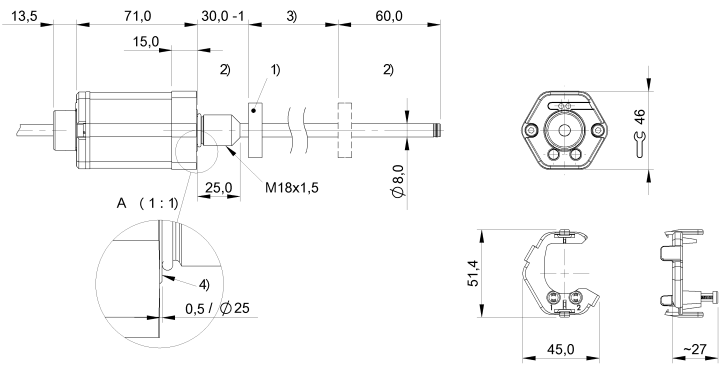




Pin	
1	0V (Pin 3)
2	0V (Pin 5)
3	NC
4	La
5	0...20 mA
6	GND
7	+24 V DC
8	Lb

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

BTL7-E570-Mxxxx-B8-KAxx



colour	
YE	20...4 mA
GY	0 V
PK	NC
RD	La
GN	NC
BU	GND
BN	+24 V DC
WH	Lb

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