Magnetostrictive Sensors

BTL7 -TT- Series - Digital

BTL7-abcd-Mnnnn-fh-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…M3250)

f Form factor
TT = Mounting threads M30x1.5, for O-ring, rod diameter 21 mm

h Redundancy
2 = 2 times redundant
3 = 3 times redundant

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

for cable (length in meters):
02, 05, 10

Basic features

Approval/Conformity	I = S, KA: CE + UKCA + cULus + WEEE I = FA: CE + UKCA + 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	150 mA per unit
Inrush current	≤ 500 mA/10 ms per unit
Operating voltage Ub	10...30 VDC
Output signal adjustable	no
Overvoltage protection	Ub up to 36 V
Switch-on delay max.	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 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	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
Relative humidity	≤ 90 %, non-condensing
Storage temperature	-40...107 °C
Temperature coefficient typ.	≤ 30 ppm/K

Functional safety

MTTF	h = 2: 69 a h = 3: 39 a

Interface

Interface	Digital pulse

Material

Cable flame-resistant	I = KA, FA: IEC 60332-1
Cable jacket, material	I = KA: PUR I = FA: PTFE
Cover material	Aluminium, Anodized
Housing material	Aluminium, Anodized
Housing material, surface protection	Anodized
Material flange	1.4404 stainless steel
Protection tube material	1.4571 stainless steel

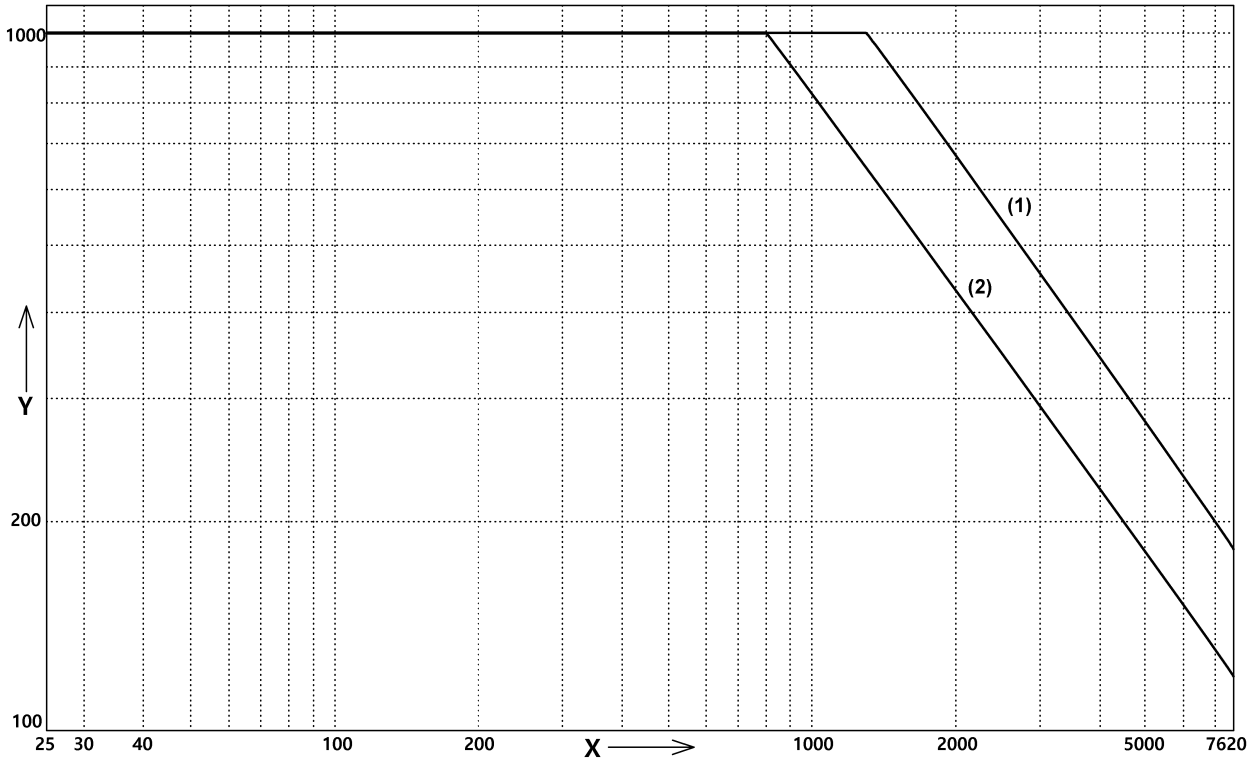
Mechanical data

Installation length from contact surface	nnnn + 90 mm
Pressure rating max.	250 bar
Pressure rating, note	when installed in hydraulic cylinder
Speed detectable max.	10 m/s
Tightening torque max.	150 Nm

Range/Distance

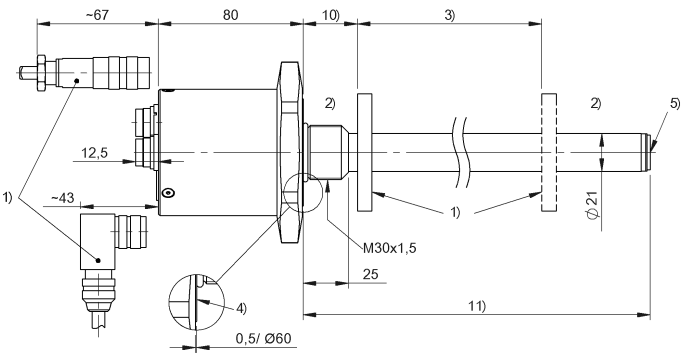
Linearity deviation	nnnn = 0025...2000: ± 60 µm nnnn = 2001...3250: ± 200 µm
Measuring length	25...7620 mm
Null point	30 mm
Repeat accuracy	≤ ± 5 µm
Sampling frequency max.	See illustration for measuring frequency

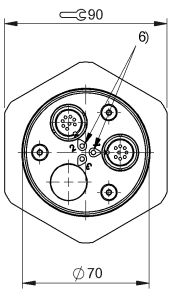
Characteristic Diagram

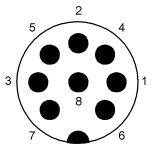


fA,min: 62,5 Hz
1) 1 magnet
2) 2...16 magnets
x: Nominal length [mm]
y: fA,max Hz

BTL7-P511-Mxxxx-TT2-S32



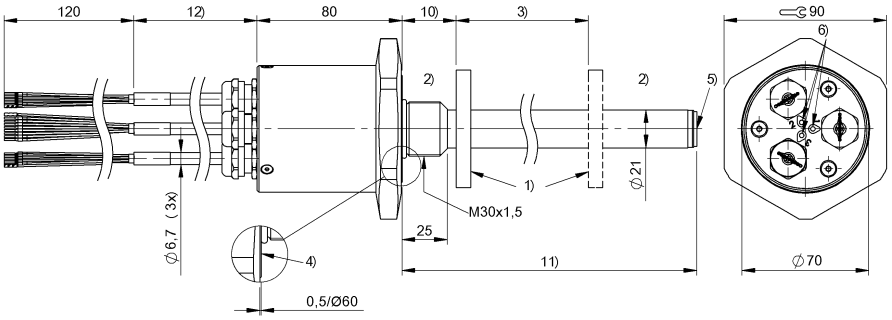




Pin	
1	+INIT
2	+START/STOP
3	-INIT
4	NC
5	-START/STOP
6	GND
7	10...30 V DC
8	NC

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

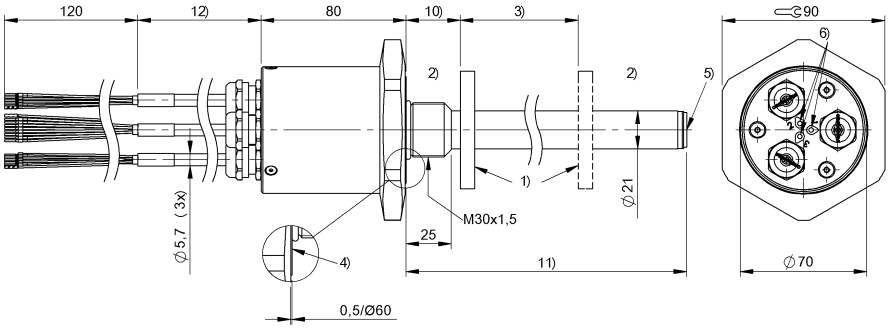
BTL7-P511-Mxxxx-TT3-KAxx



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
5) Internal threads M4x4/6 deep
6) LED function indicator
10) Null point
11) Installation length
12) Cable length

BTL7-P511-Mxxxx-TT3-FAxx



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
5) Internal threads M4x4/6 deep
6) LED function indicator
10) Null point
11) Installation length
12) Cable length