

Magnetostrictive Sensors  
BTL7 -TB- Series - Analog current

# BALLUFF



## BTL7-abcd-Mnnnn-fh-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

04 = 1 output rising, configurable

05 = 1 output falling, configurable

#### Mnnnn Nominal length (4-position)

M0500 = metric in mm

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

#### f Form factor

TB = Mounting threads M18x1.5, for O-Ring

#### h Redundant

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

135 = M16x0.75 connector with 6 pins

for cable (length in meters):

02, 05, 10, 15, 20

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### Basic features

<b>Approval/Conformity</b>	nnnn ≤ 500: I = S, KA: CE + cULus + EAC + GL + WEEE I = FA: CE + EAC + GL + WEEE nnnn > 500: I = S, KA: CE + cULus + EAC + WEEE I = FA: CE + EAC + WEEE
<b>Magnets, number (factory setting)</b>	1
<b>Magnets, number max.</b>	1

### Electrical connection

<b>Polarity reversal protected</b>	Ub up to 36 V
<b>Short-circuit protection</b>	to GND and to 36 V DC

### Electrical data

<b>Current consumption max. at 24 V DC</b>	150 mA per unit
<b>Inrush current</b>	≤ 500 mA/10 ms per unit
<b>Load resistance RL max.</b>	500 Ohm
<b>Operating voltage Ub</b>	10...30 VDC
<b>Output signal adjustable</b>	with software tool
<b>Overvoltage protection</b>	Ub up to 36 V
<b>Switch-on delay max.</b>	600 ms
<b>Voltage-proof up to (GND to housing)</b>	500 V AC

### Environmental conditions

<b>Ambient temperature</b>	-40...85 °C
<b>Cable temperature, fixed routing</b>	I = KA: -40 °C ... 90 °C I = FA: -40 °C ... 200 °C
<b>Cable temperature, flexible routing</b>	I = KA: -5 °C ... 90 °C
<b>EN 55016-2-3, Radiation</b>	For industrial and residential use
<b>EN 60068-2-27, Continuous shock</b>	100 g, 2 ms
<b>EN 60068-2-27, Shock</b>	100 g, 6 ms
<b>EN 60068-2-6, Vibration</b>	12 g, 10...2000 Hz
<b>EN 61000-4-2, ESD</b>	Severity Level 3
<b>EN 61000-4-3, RFI</b>	Severity Level 3
<b>EN 61000-4-4, Burst</b>	Severity Level 3
<b>EN 61000-4-5, Surge</b>	Severity Level 2
<b>EN 61000-4-6, High-frequency fields</b>	Severity Level 3
<b>EN 61000-4-8 Magnetic fields</b>	Severity Level 4
<b>Protection degree</b>	IP67
<b>Relative humidity</b>	≤ 90 %, non-condensing
<b>Storage temperature</b>	-40...100 °C
<b>Temperature coefficient typ.</b>	≤ 20 ppm/K at 50% of nominal stroke 500mm

### Functional safety

<b>MTTF</b>	h = 2: 33 a h = 3: 17 a
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### Material

<b>Cable flame-resistant</b>	I = KA, FA: IEC 60332-1
<b>Cable jacket, material</b>	I = KA: PUR I = FA: PTFE
<b>Cover material</b>	Aluminum, Anodized
<b>Housing material</b>	Aluminum, Anodized
<b>Housing material, surface protection</b>	Anodized
<b>Material flange</b>	Stainless steel (1.4404)
<b>Protection tube material</b>	Stainless steel (1.4571)

### Mechanical data

<b>Installation length from contact surface</b>	nnnn + 90 mm
<b>Pressure rating max.</b>	nnnn = 25...2000: 600 bar nnnn > 2000: 300 bar
<b>Pressure rating, note</b>	when installed in hydraulic cylinder
<b>Speed detectable max.</b>	10 m/s
<b>Tightening torque max.</b>	100 Nm

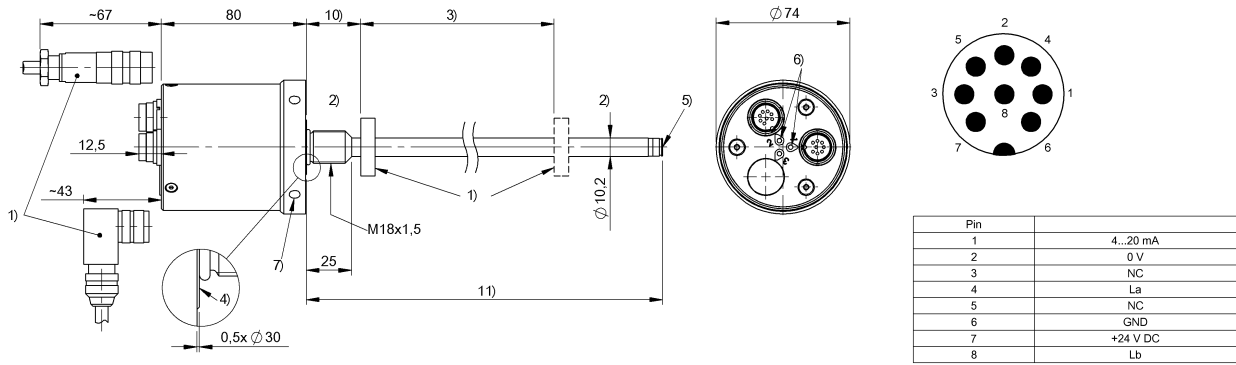
### Output/Interface

<b>Interface</b>	Analog, current
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### Range/Distance

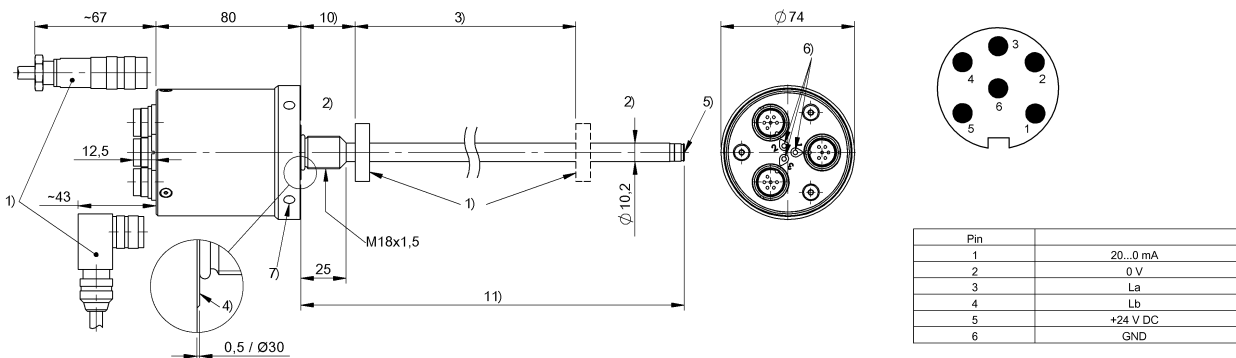
<b>Linearity deviation</b>	nnnn = 0050...0500: ± 200 µm nnnn > 0500: ± 0.04% FS
<b>Measuring length</b>	25...7620 mm
<b>Repeat accuracy</b>	± 5 µm
<b>Sampling frequency max.</b>	nnnn = 0050...1200: 500 Hz nnnn = 1201...5000: 250 Hz nnnn = 0601...1300: 1000 Hz

**BTL7-E504-Mxxxx-TB2-S32**



- 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
- 7) Ø6.1 for hook wrench Ø74
- 10) Null point
- 11) Installation length

**BTL7-C505-Mxxxx-TB3-S135**

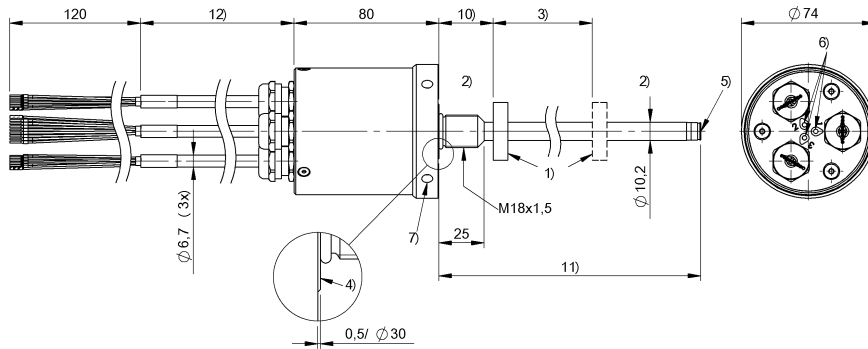


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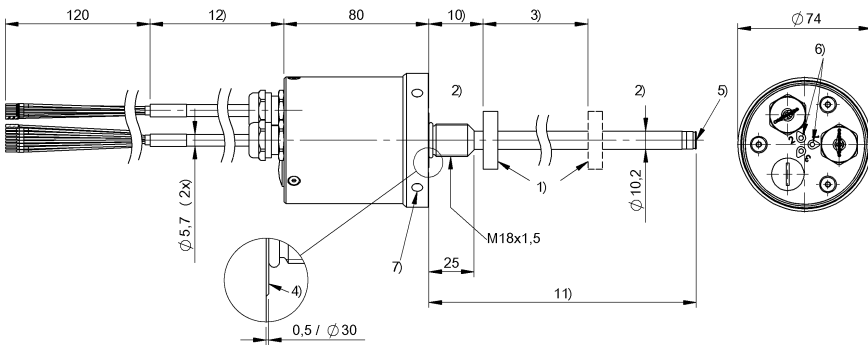
**BTL7-E505-Mxxxx-TB3-KAxx**



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
- 5) Internal threads M4x4/6 deep
- 6) LED function indicator
- 7)  $\varnothing 6.1$  for hook wrench  $\varnothing 74$
- 10) Null point
- 11) Installation length
- 12) Cable length

**BTL7-C504-Mxxxx-TB2-FAxx**



colour	
YE	0...20 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
- 5) Internal threads M4x4/6 deep
- 6) LED function indicator
- 7)  $\varnothing 6.1$  for hook wrench  $\varnothing 74$
- 10) Null point
- 11) Installation length
- 12) Cable length