



## BTL7-abcd-Mnnnn-fg-lm

### BTL7

Magnetostrictive linear position sensor Generation 7

#### a Interface

A = Voltage output 0 ... 10 V

G = voltage output -10 ... 10 V

#### b Operating voltage

5 = 10 ... 30 V

#### c + d Interface characteristic 1 + 2

10 = 2 outputs, each 1 x rising/falling

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

M0500 = metric in mm

(M0025...M1016: with 8 mm rod diameter)

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

#### f Form factor

K = Compact rod, plug-in flange 18h6, for O-Ring

#### g Form factor characteristic

8 = Rod diameter 8 mm

- = Rod diameter 10.2 mm

#### l Connection type

SR = Connector

K = Cable out radial (PUR)

F = Cable out radial (PTFE)

#### 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

# Magnetostrictive Sensors

## BTL7 -K- Series - Analog Voltage

# BALLUFF

### Basic features

|                                   |                                                            |
|-----------------------------------|------------------------------------------------------------|
| Approval/Conformity               | I = K: CE + UKCA + cULus + WEEE<br>I = F: CE + UKCA + WEEE |
| Magnets, number (factory setting) | 1                                                          |
| Magnets, number max.              | 1                                                          |

### 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 current max.                  | 5 mA                                        |
| Output current max.                  | 5 mA                                        |
| Output signal adjustable             | using programming inputs                    |
| Overvoltage protection               | Ub up to 36 V                               |
| Switch-on delay max.                 | nnnn < 1525: 600 ms<br>nnnn ≥ 1525: 1000 ms |
| Voltage-proof up to (GND to housing) | 500 V AC                                    |

### Environmental conditions

|                                     |                                                     |
|-------------------------------------|-----------------------------------------------------|
| Ambient temperature                 | -40...85 °C                                         |
| Cable temperature, fixed routing    | I = K: -40 °C ... 90 °C<br>I = F: -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     | 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<br>I = K: 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) | 72 a |
|--------------|------|

### Interface

|           |                 |
|-----------|-----------------|
| Interface | Analog, voltage |
|-----------|-----------------|

### Material

|                          |                                                                                                      |
|--------------------------|------------------------------------------------------------------------------------------------------|
| Cable flame-resistant    | I = K, F: IEC 60332-1                                                                                |
| Cable jacket, material   | I = K: PUR<br>I = F: PTFE                                                                            |
| Housing material         | 1.4305 stainless steel                                                                               |
| Material flange          | 1.4404 stainless steel<br>1.4429 stainless steel<br>1.4435 stainless steel<br>1.4571 stainless steel |
| Protection tube material | 1.4571 stainless steel                                                                               |

### Mechanical data

|                                          |                                      |
|------------------------------------------|--------------------------------------|
| Installation length from contact surface | nnnn + 100 mm                        |
| Pressure rating max.                     | g ≠ 8: 600 bar<br>g = 8: 250 bar     |
| Pressure rating, note                    | when installed in hydraulic cylinder |
| Speed detectable max.                    | 10 m/s                               |
| Tightening torque max.                   | 3.5 Nm                               |

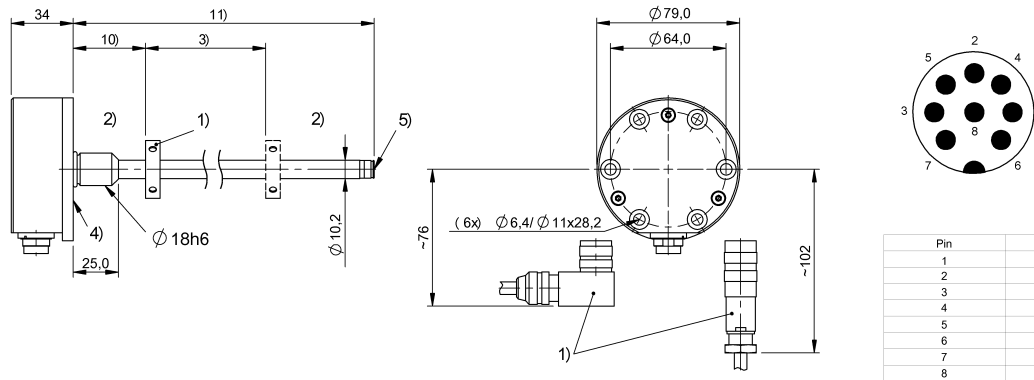
### Range/Distance

|                         |                                                                                                                                                                              |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Linearity deviation     | nnnn = 0025...0500: ± 50 µm<br>nnnn = 0501...5500: ± 0.01% FS<br>nnnn > 5500: ± 0.02% FS                                                                                     |
| Measuring length        | 25...7620 mm                                                                                                                                                                 |
| Repeat accuracy         | ± 10 µm                                                                                                                                                                      |
| Sampling frequency max. | nnnn = 0050...0250: 4000 Hz<br>nnnn = 0251...0600: 2000 Hz<br>nnnn = 0601...1300: 1000 Hz<br>nnnn = 1301...2700: 500 Hz<br>nnnn = 2701...5500: 250 Hz<br>nnnn > 5500: 180 Hz |

Magnetostrictive Sensors  
BTL7 -K- Series - Analog Voltage

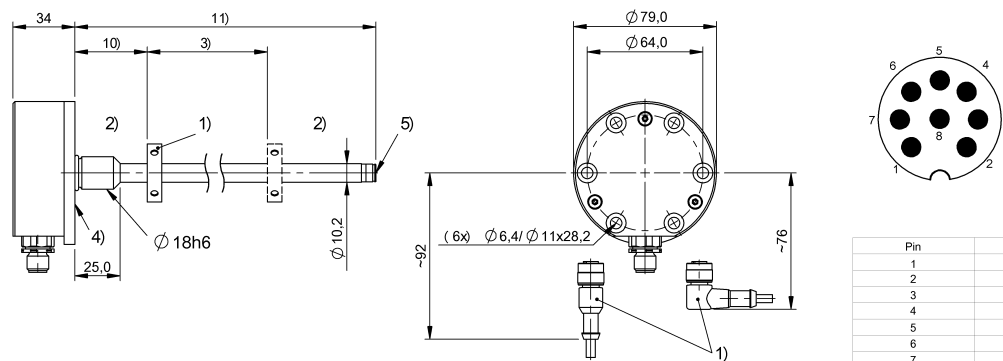
**BALLUFF**

BTL7-A510-Mxxxx-K-SR32



- 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-G510-Mxxxx-K-SR115

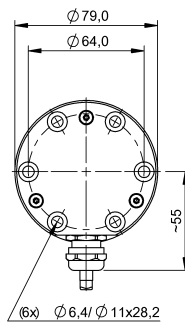
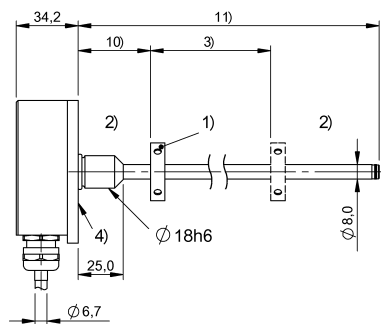


- 1) not included in scope of delivery
- 2) Non-usable area
- 3) Nominal length = Measuring length
- 4) Mounting surface
- 5) Internal threads M4x4/6 deep
- 10) Null point
- 11) Installation length

Magnetostrictive Sensors  
 BTL7 -K- Series - Analog Voltage

**BALLUFF**

BTL7-A510-Mxxxx-K8-Kxx



| colour |          |
|--------|----------|
| YE     | NC       |
| GY     | 0 V      |
| PK     | 10...0 V |
| RD     | La       |
| GN     | 0...10 V |
| 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
- 10) Null point
- 11) Installation length