



BTL7-abcd-Mnnnn-f-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**

01 = 2 outputs, each 1 x rising/falling settable/  
programmable

**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

# Magnetostrictive Sensors

## BTL7 -P- Series - Analog Voltage

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### Basic features

|                                   |                             |
|-----------------------------------|-----------------------------|
| Approval/Conformity               | CE<br>UKCA<br>cULus<br>WEEE |
| Magnets, number (factory setting) | 1                           |
| Magnets, number max.              | cd ≠ 10: 1<br>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  | 150 mA                                                     |
| Inrush current                       | nnnn < 1525: ≤ 500 mA/10 ms<br>nnnn ≥ 1525: ≤ 500 mA/25 ms |
| Operating voltage Ub                 | 10...30 VDC                                                |
| Output current max.                  | 5 mA                                                       |
| Output current max.                  | 5 mA                                                       |
| Output signal adjustable             | with software tool                                         |
| Overvoltage protection               | Ub up to 36 V                                              |
| Switch-on delay max.                 | nnnn < 1525: 600 ms<br>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    | 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<br>I = KA: 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 = 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

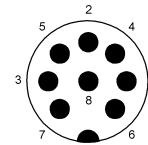
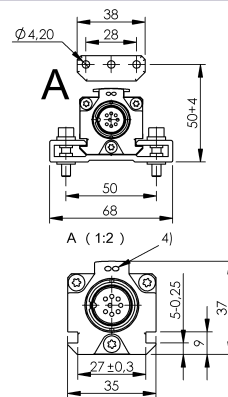
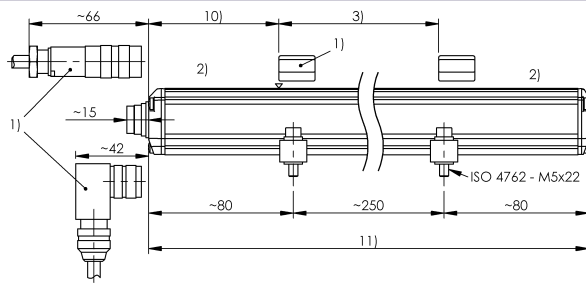
|                         |                                                                                                                                                                              |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Linearity deviation     | nnnn = 0050...0500: ± 50 µm<br>nnnn = 0501...5500: ± 0.01% FS<br>nnnn > 5500: ± 0.02% FS                                                                                     |
| Measuring length        | 50...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 -P- Series - Analog Voltage

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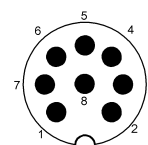
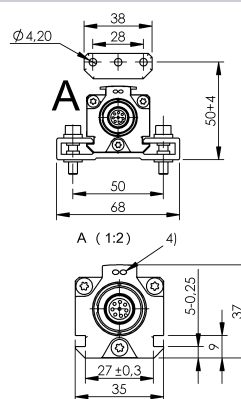
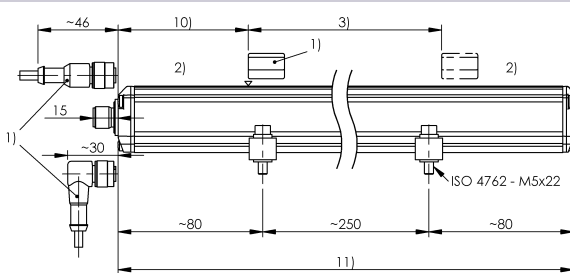
### BTL7-A501-Mxxxx-P-S32



| Pin |          |
|-----|----------|
| 1   | NC       |
| 2   | 0V       |
| 3   | 10...0 V |
| 4   | La       |
| 5   | 0...10 V |
| 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) LED function indicator
- 10) Null point
- 11) Installation length

### BTL7-G501-Mxxxx-P-S115



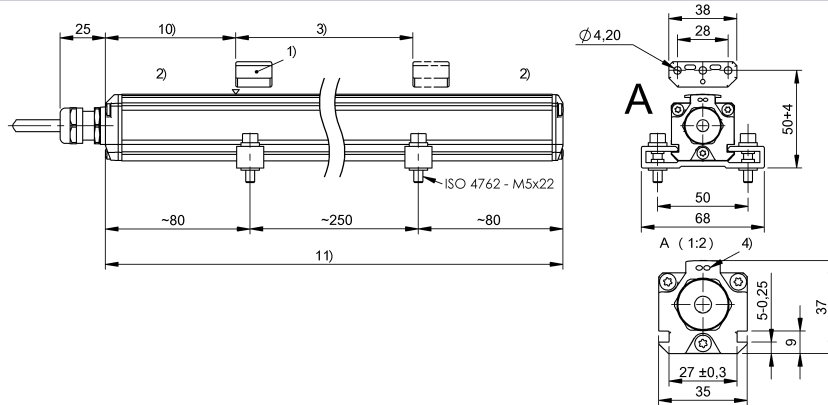
| Pin |              |
|-----|--------------|
| 1   | 0 V (Pin 3)  |
| 2   | 0 V (Pin 5)  |
| 3   | 10...-10 V   |
| 4   | La           |
| 5   | -10...10 V   |
| 6   | GND          |
| 7   | 10...30 V DC |
| 8   | Lb           |

- 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

Magnetostrictive Sensors  
BTL7 -P- Series - Analog Voltage

**BALLUFF**

BTL7-A501-Mxxxx-P-KAxx



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