



BTL7-abcd-Mnnnn-f-i-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...M2000)

#### f Form factor

CD = Mounting threads M22x1.5, for O-Ring

#### i Variant

NEX = Ignition class "nA" and "tb"

#### l Connection type

S = Connector  
KA = Cable (PUR)

#### m Connection type characteristic 1

for connector:  
32 = M16x0.75 connector with 8 pins

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

# Magnetostrictive Sensors

## BTL7 -CD-NEX- Serie - Analog Strom

# BALLUFF

### Basic features

|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Approval/Conformity               | CE<br>UKCA<br>CSA<br>IECEX<br>WEEE                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Ex marking                        | ATEX: II 3 G Ex nA IIC T4 Gc<br>II 2 D Ex tb IIIC T135°C Db IP6x<br>-40°C ≤ Ta ≤ +60°C<br>IECEX: Ex nA IIC T4 Gc<br>Ex tb IIIC T135°C Db IP6x -40°C ≤ Ta ≤ +60°C<br>NEC: NI: Class I, Division 2, Groups ABCD<br>Class II, Division 2, Groups EFG T4<br>CAN: Class I, Zone 2, Ex nA IIC T4<br>Ex tb IIIC T135°C<br>USA: Class I, Zone 2, AEx nA IIC Gc T4<br>AEx tb IIIC Db T135°C -40°C ≤ Ta ≤ +60°C<br>CCC: Ex nA IIC T4 Gc, Ex tD A21 IP64 T135°C |
| 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  | xyz ≠ E501: ≤ 150 mA<br>xyz = E501: ≤ 180 mA                                          |
| Inrush current                       | nnnn < 1525: ≤ 500 mA/10 ms<br>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<br>cd = 01: Setting aid and 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...60 °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...70 °C                                |
| Surface temperature max.            | 135 °C                                     |
| Temperature coefficient typ.        | ≤ 30 ppm/K at 50% of nominal stroke 500mm  |

### Functional safety

|              |      |
|--------------|------|
| MTTF (40 °C) | 58 a |
|--------------|------|

### Interface

|           |                 |
|-----------|-----------------|
| Interface | Analog, current |
|-----------|-----------------|

### 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                           |
| Material flange                      | HP 160                             |
| Protection tube material             | HP 160                             |

### Mechanical data

|                                          |                                      |
|------------------------------------------|--------------------------------------|
| Installation length from contact surface | nnnn + 90 mm                         |
| Pressure rating max.                     | 1000 bar                             |
| Pressure rating, note                    | when installed in hydraulic cylinder |
| Speed detectable max.                    | 10 m/s                               |
| Tightening torque max.                   | 290 Nm                               |

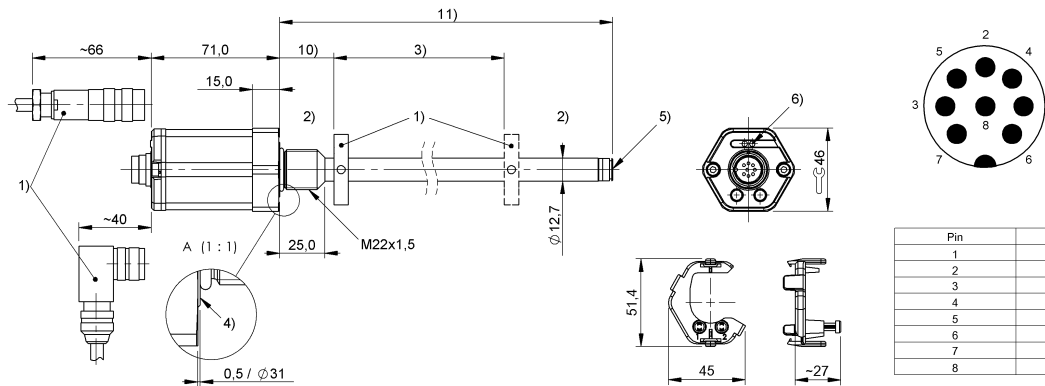
### Range/Distance

|                         |                                                               |
|-------------------------|---------------------------------------------------------------|
| Linearity deviation     | nnnn = 0050...0500: ± 50 µm<br>nnnn = 0501...2000: ± 0.01% FS |
| Measuring length        | 25...2000 mm                                                  |
| Repeat accuracy         | ± 5 µm                                                        |
| Sampling frequency max. | nnnn = 25...1300: 1000 Hz<br>nnnn = 1301...2000: 500 Hz       |

# Magnetostrictive Sensors BTL7 -CD-NEX- Serie - Analog Strom

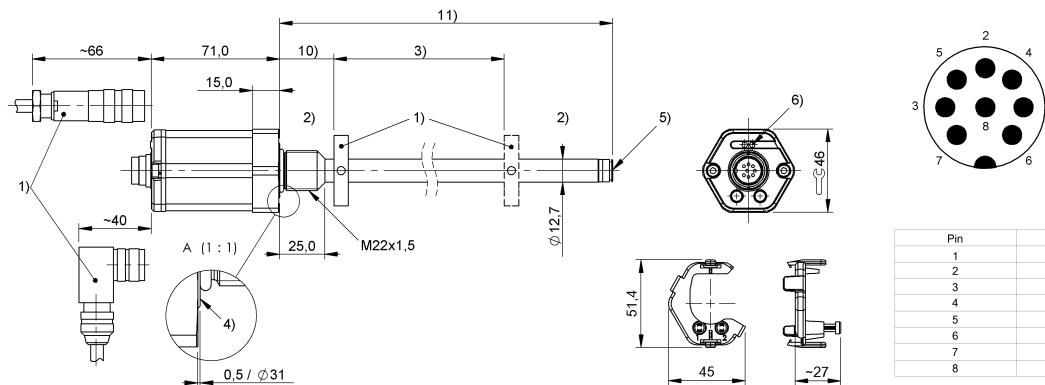
# BALLUFF

## BTL7-E501-Mxxxx-CD-NEX-S32



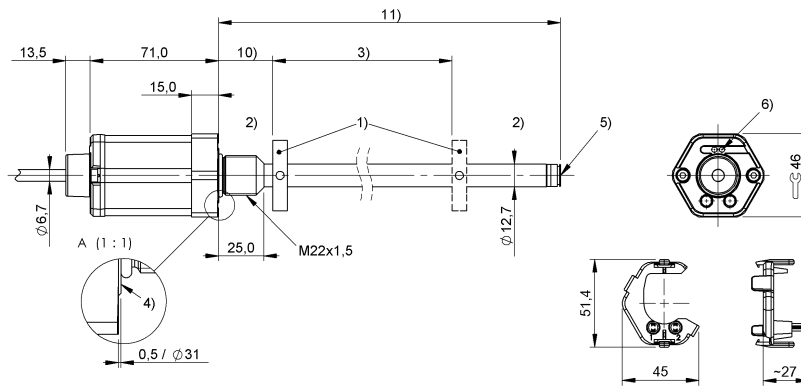
- 1) not included in scope of delivery
- 2) Non-usable area
- 3) Nominal length = Measuring length
- 4) Mounting surface
- 5) Internal threads M4x4/6 deep
- 6) LED function indicator
- 10) Null point
- 11) Installation length

## BTL7-C500-Mxxxx-CD-NEX-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
- 10) Null point
- 11) Installation length

BTL7-E570-Mxxxx-CD-NEX-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
- 10) Null point
- 11) Installation length