



## 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

W = Compact rod, threads 3/4"-16UNF, for O-Ring

#### g Form factor characteristic

8 = Rod diameter 8 mm  
- = Rod diameter 10.2 mm

#### l Connection type

S = Connector  
K = Cable out radial (PUR)  
KA = Cable out axial (PUR)  
F = Cable out radial (PTFE)  
FA = Cable out axial (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 -W- Series - Analog Voltage

# BALLUFF

### Basic features

Approval/Conformity	I = K, KA: CE + UKCA + cULus + WEEE I = F, FA: 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.	nxxx < 1525: 600 ms nxxx ≥ 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, KA: -40 °C ... 90 °C I = F, FA: -40 °C ... 200 °C
Cable temperature, flexible routing	I = K, 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, SR: IP67 with connector I = K, KA, F, FA: 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
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### Interface

Interface	Analog, voltage
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### Material

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

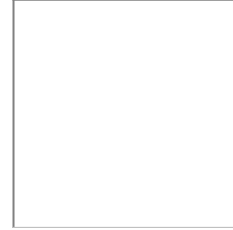
### Mechanical data

Installation length from contact surface	nxxx + 111 mm
Pressure rating max.	g ≠ 8: 600 bar g = 8: 250 bar
Pressure rating, note	when installed in hydraulic cylinder
Speed detectable max.	10 m/s
Tightening torque max.	100 Nm

### Range/Distance

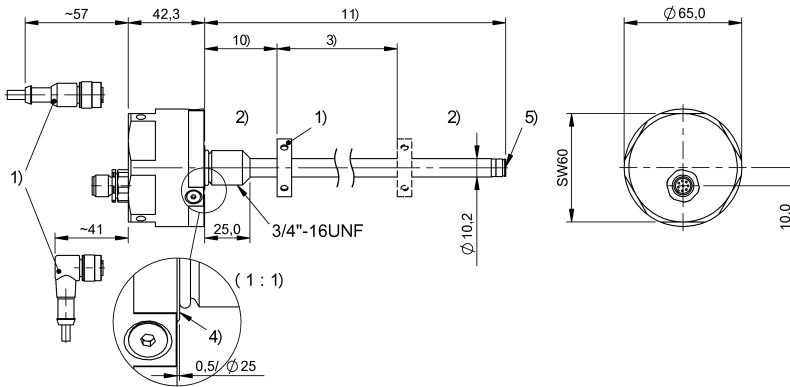
Linearity deviation	nxxx = 0050...0500: ± 50 µm nxxx = 0501...5500: ± 0.01% FS nxxx > 5500: ± 0.02% FS
Measuring length	25...7620 mm
Repeat accuracy	± 10 µm
Sampling frequency max.	nxxx = 0050...0250: 4000 Hz nxxx = 0251...0600: 2000 Hz nxxx = 0601...1300: 1000 Hz nxxx = 1301...2700: 500 Hz nxxx = 2701...5500: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

**BTL7-A510-Mxxxx-W-S32**



Pin	
1	NC
2	0V
3	10...0 V
4	La
5	0...10 V
6	GND
7	+24 V DC
8	Lb

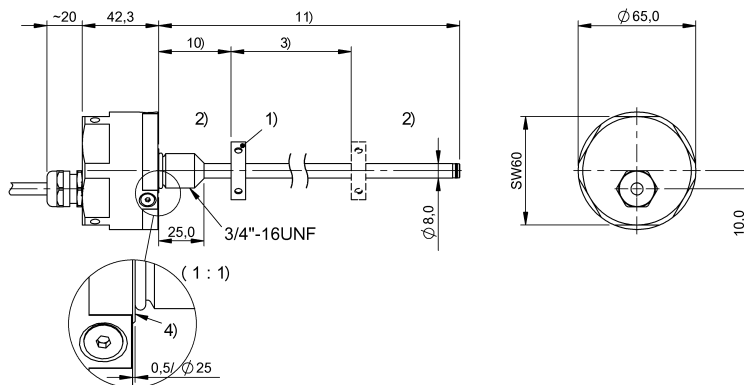
**BTL7-G510-Mxxxx-W-S115**



Pin	
1	0V (Pin 3)
2	0V (Pin 5)
3	10...-10 V
4	La
5	-10...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) Mounting surface
- 5) Internal threads M4x4/6 deep
- 10) Null point
- 11) Installation length

**BTL7-A510-Mxxxx-W8-Kxx**



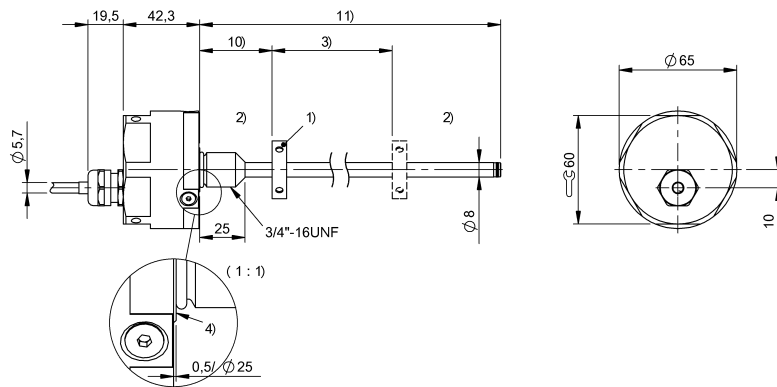
colour	
YE	NC
GY	0 V
PK	10...0 V
RD	La
GN	0...10 V
BU	GND
BN	+24 V DC
WH	Lb

- 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

Magnetostrictive Sensors  
 BTL7 -W- Series - Analog Voltage

**BALLUFF**

**BTL7-G510-Mxxxx-W8-FAxx**



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