

Magnetostrictive Sensors  
BTL6 -A1- Series - Analog voltage

# BALLUFF



### BTL6-abcd-Mnnnn-f-lm

#### BTL6

Magnetostrictive linear position sensor Generation 6

#### a Interface

A = Voltage output 0 ... 10 V  
G = voltage output -10 ... 10 V

#### b Operating voltage

1 = 20 ... 28 V  
3 = 20 ... 28 V (if c + d = 10)  
3 = 18 ... 30 V (if c + d = 01)

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

01 = 2 outputs, each 1 x rising/falling settable/  
programmable  
10 = 2 outputs, 1 x rising/1x falling

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

M0500 = metric in mm  
(M0050...M4012 when c+d = 10)  
(M0050...M1512 when c+d = 01)

#### f Form factor

A1 = Round profile

#### l Connection type

S = Connector

#### m Connection type characteristic 1

115 = M12x1 connector with 8 pins

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### Basic features

<b>Approval/Conformity</b>	CE UKCA cULus WEEE
<b>Magnets, number (factory setting)</b>	cd = 01: 2 cd ≠ 01: 1
<b>Magnets, number max.</b>	cd ≠ 10: 1 cd = 01 AND nnnn < 90: 1 cd = 01 AND nnnn ≥ 90: 2

### Electrical connection

<b>Polarity reversal protected</b>	Ub up to 36 V
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### Electrical data

<b>Current consumption max. at 24 V DC</b>	100 mA
<b>Inrush current</b>	≤ 3A / 0.5ms
<b>Output current max.</b>	5 mA
<b>Output current max.</b>	5 mA
<b>Output signal adjustable</b>	cd = 01: via programming inputs cd = 10: no
<b>Overvoltage protection</b>	Ub up to 33 V
<b>Voltage-proof up to (GND to housing)</b>	500 V DC

### Environmental conditions

<b>Ambient temperature</b>	0...70 °C
<b>EN 55016-2-3, Radiation</b>	For industrial and residential use
<b>EN 60068-2-27, Continuous shock</b>	50 g, 2 ms
<b>EN 60068-2-27, Shock</b>	50 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>IP rating</b>	IP67 with connector
<b>Relative humidity</b>	≤ 90 %, non-condensing
<b>Storage temperature</b>	-40...100 °C
<b>Temperature coefficient typ.</b>	≤ 30 ppm/K at 50% of nominal stroke 500mm

### Functional safety

<b>MTTF</b>	cd = 01: 66 a cd ≠ 01: 84 a
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### Interface

<b>Interface</b>	Analog, voltage
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### Material

<b>Cover material</b>	Zinc, Die casting
<b>Housing material</b>	Aluminium, Anodized
<b>Housing material, surface protection</b>	Anodized

### Mechanical data

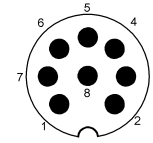
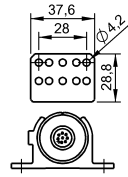
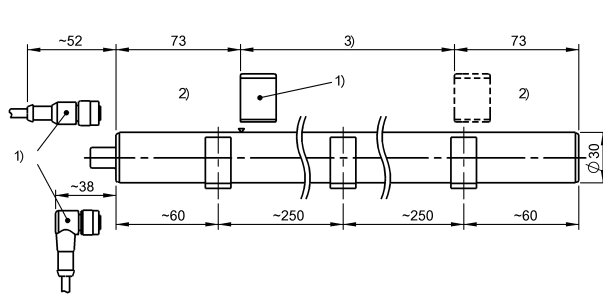
<b>Overall Length</b>	nnnn + 146 mm
<b>Speed detectable max.</b>	10 m/s

### Range/Distance

<b>Linearity deviation</b>	nnnn = 0050...0500: ± 200 µm nnnn > 500: ± 0.04% FS
<b>Measuring length</b>	50...4012 mm
<b>Repeat accuracy</b>	cd = 01: a = G and nnnn ≤ 250 mm: 100 µm a = G and nnnn > 250 mm: 2 mV a = A and nnnn ≤ 500 mm: 100 µm a = A and nnnn > 500 mm: 2 mV  cd ≠ 01: a = G and nnnn ≤ 250 mm: 10 µm a = G and nnnn > 250 mm: 0.2 mV a = A and nnnn ≤ 500 mm: 10 µm a = A and nnnn > 500 mm: 0.2 mV
<b>Sampling frequency max.</b>	cd = 10: nnnn = 0050 ... 1100: 1000 Hz nnnn = 1101 ... 4012: 500 Hz  cd = 01: nnnn = 0050 ... 0850: 1000 Hz nnnn = 0851 ... 0925: 909 Hz nnnn = 0926 ... 1025: 833 Hz nnnn = 1026 ... 1100: 769 Hz nnnn = 1101 ... 1200: 714 Hz nnnn = 1201 ... 1300: 667 Hz nnnn = 1301 ... 1375: 625 Hz nnnn = 1376 ... 1475: 588 Hz nnnn = 1476 ... 1524: 556 Hz

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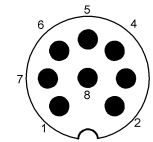
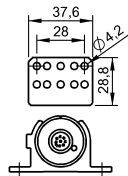
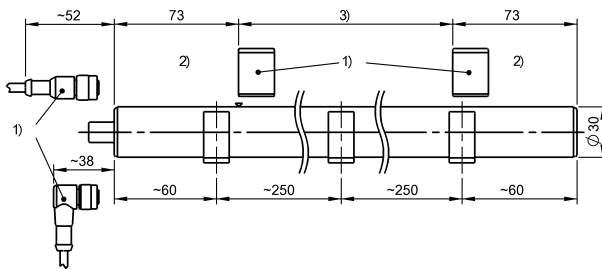
**BTL6-A110-Mxxxx-A1-S115**



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

- 1) not included in scope of delivery
- 2) Non-usable area
- 3) Nominal length = Measuring length

**BTL6-G301-Mxxxx-A1-S115**



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

- 1) not included in scope of delivery
- 2) Non-usable area
- 3) Nominal length = Measuring length