

Magnetostrictive Sensors
BTL B1 - Rod BN/ZN - EtherCAT

BALLUFF



Basic features

Approval/Conformity	CE UKCA cULus WEEE
Magnets, number (factory setting)	I = 1: 1 I = 2: 2
Magnets, number max.	I = 1: 1 I = 2: 2 minimum separation between magnets 65 mm.

Electrical connection

Polarity reversal protected	Ub up to 36 V
Short-circuit protection	Signal output against GND

Electrical data

Current consumption max. at 24 V DC	70 mA
Error value	0x7FFFFFFF
Inrush current	≤ 3 A/0.5 ms
Operating voltage Ub	18...30 VDC
Overvoltage protection	Ub up to 36 V DC
Switch-on delay max.	10 s
Voltage-proof up to (GND to housing)	500 V DC

Environmental conditions

Ambient temperature	-40...75 °C
EN 55016-2-3, Radiation	For industrial and residential use
EN 60068-2-27, Continuous shock	50 g, 2 ms
EN 60068-2-27, Shock	100 g, 6 ms
EN 60068-2-6, Vibration	12 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	IP67 with connector
Relative humidity	≤ 90 %, non-condensing
Storage temperature	-40...85 °C
Temperature coefficient typ.	≤ 30 ppm/K at 50% of nominal stroke 500mm

Functional safety

MTTF (40 °C)	128 a
--------------	-------

Interface

Data format	32-bit signed
Interface	EtherCAT
Process data, Master – Device	0 bytes
Prozess data, Device – Master	I = 1: 7 Byte I = 2: 11 Byte

Material

Cover material	Stainless steel
Material flange	Stainless steel (AISI 316 / V4A)
Protection tube material	Stainless steel (AISI 316 / V4A)

Mechanical data

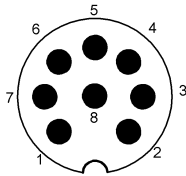
Installation length from contact surface	d = A: n + 90 mm d = E: n + 111 mm
Pressure rating max.	450 bar
Pressure rating, note	when installed in hydraulic cylinder maximum pressure: 750 bar (10 x 1 min)
Speed detectable max.	10 m/s
Tightening torque max.	75 Nm

Range/Distance

Linearity deviation	nnnn = 0025...0500: ± 200 µm nnnn > 0500: ± 0.04% FS
Measuring length	25...4000 mm
Null point	d = A: 30 mm d = E: 50.8 mm
Repeat accuracy	nnnn ≤ 0500: ≤ ± 10 µm nnnn > 0500: ≤ ± 0.002% FS
Resolution, position	1 µm
Sampling frequency max.	nnnn = 25...500: 2000 Hz nnnn = 501...1270: 1000 Hz nnnn = 1271...2650: 500 Hz nnnn = 2651...4000: 250 Hz

Connector Diagramm

stu = S15: M12 connector, 8 pole



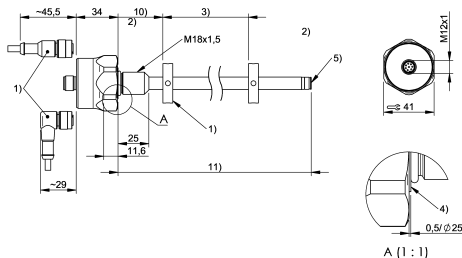
Wiring diagramm

M12 connector, 8 poles

Pin	
1	NC
2	TX+
3	TX-
4	NC
5	RX+
6	GND
7	+24V
8	RX-

Product View

a = B: mounting M18 thread , a = Z: inch thread , stu = S15



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