Magnetostrictive Sensors

BTL C1 - Rod BN/ZN - EtherCAT

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Basic features

Approval/Conformity	CE UKCA cULus WEEE
Magnets, number (factory setting)	l = 1, 3: 1 l = 2: 2 l = 4, 5: 4
Magnets, number max.	l = 1, 3: 1 l = 2: 2 minimum separation between magnets 65 mm. l = 4, 5: 4 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...85 °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...100 °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	l = 1: 7 Byte l = 2,3: 11 Byte l = 4,5: 19 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	± 50 µm
Measuring length	25...5000 mm
Null point	d = A: 30 mm d = E: 50.8 mm
Repeat accuracy	nnnn ≤ 0500: ≤ ± 10 µm nnnn > 0500: ≤ ± 0.002% FS
Repeat accuracy	≤ ± 10 µm
Resolution, position	1 µm
Sampling frequency max.	nnnn = 25…500: 2000 Hz nnnn = 501…1270: 1000 Hz nnnn = 1271…2650: 500 Hz nnnn = 2651…5000: 250 Hz

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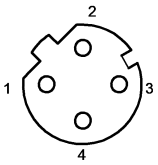
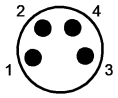
Connector Diagramm

M12 Female



PIN 1: Tx+
PIN 2: Rx+
PIN 3: Tx-
PIN 4: Rx-

M12 male



PIN 1: +24V
PIN 2: n.c.
PIN 3: GND
PIN 4: n.c.

Wiring diagramm

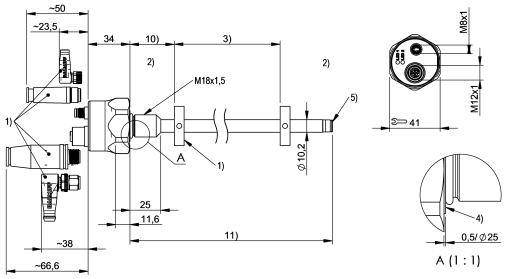
stu = C05: M12 female, M8 connector, 4 pin

Pin	Bus Connectors
1	TX+
2	RX+
3	TX-
4	RX-

Pin	Power Connector
1	+24 V DC
2	NC
3	0 V GND
4	NC

Product View

a = B: M18 thread fastening , a = Z: inch thread , stu = C05



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