



BTL7-abcd-Mnnnn-fg-ij-lm

BTL7

Magnetostrictive linear position sensor Generation 7

a Interface

T = PROFIBUS DP

b Operating voltage

5 = 10 ... 30 V

c + d Interface characteristic 1 + 2

00 = Flexible number of magnets

Mnnnn Nominal length (4-position)

M0500 = metric in mm
(M0025...M7620: with 10.2 mm rod diameter)

f Form factor

J = Flange 18h6

g Form factor characteristic

- = Rod diameter 10.2 mm

i Variant

DEX = Ignition protection category "d" / pressure-proof encapsulation

j Variant characteristic

A/D = float plug

B/E = short plug

l Connection type

K = Cable out radial (PUR) / only for variant characteristic A or B

ZA1K = Wiring chamber for attachment cover / only for variant characteristic D or E

m Connection type characteristic 1

for cable (length in meters):

02, 05, 10, 15, 20, 50

Magnetostrictive Sensors

BTL7 -J-DEX-A/B/D/E- Series - Profibus

BALLUFF

Basic features

Additional features	I = ZA1K: For use only with BAM PC-TL-020-...
Approval/Conformity	CE UKCA IECEX WEEE
Ex marking	ATEX: II 1/2 G Ex db IIC T6 Ga/Gb oder II 1/2 G Ex db eb IIC T6 Ga/ Gb, II 2D Ex tb IIIC T85 °C Db IP67 -40°C to +60°C IECEX: Ex db IIC T6 Ga/Gb Ex db eb IIC T6 Ga/Gb Ex tb IIIC T85 °C Db IP67 -40°C to +60°C
Magnets, number (factory setting)	1
Magnets, number max.	16 minimum separation between magnets 65 mm.

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	120 mA
Error value	0x7FFFFFFF
Inrush current	≤ 500 mA/25 ms
Operating voltage Ub	10...30 VDC
Output signal adjustable	yes
Overvoltage protection	Ub up to 36 V
Switch-on delay max.	5 s
Voltage-proof up to (GND to housing)	500 V AC

Environmental conditions

Ambient temperature	-40...60 °C
EN 55016-2-3, Radiation	For industrial and residential use
EN 60068-2-27, Continuous shock	100 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	IP68
Relative humidity	≤ 90 %, non-condensing
Storage temperature	-40...85 °C
Surface temperature max.	85 °C
Temperature coefficient typ.	≤ 30 ppm/K at 50% of nominal stroke 500mm

Functional safety

MTTF (40 °C)	75 a
--------------	------

Interface

Data format	32-bit signed
Interface	Profibus

Material

Cable flame-resistant	I = K: IEC 60332-1
Cable jacket, material	I = K: PUR
Cover material	1.4301 stainless steel 1.4305 stainless steel 1.4571 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

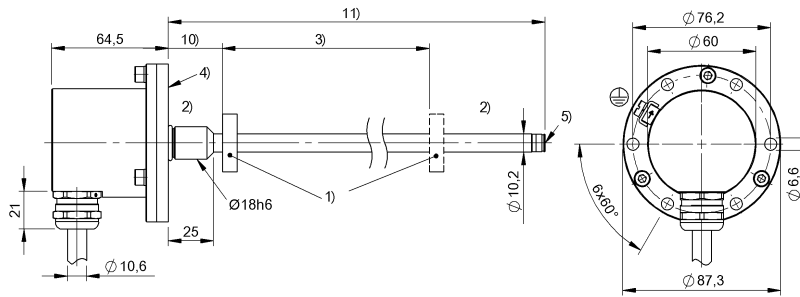
Mechanical data

Installation length from contact surface	j = A, D: nnnn + 99 mm j = B, E: nnnn + 94 mm
Pressure rating max.	350 bar
Pressure rating, note	when installed in hydraulic cylinder
Speed detectable max.	10 m/s
Tightening torque max.	6 Nm

Range/Distance

Linearity deviation	nnnn = 0050...5500: ± 30 µm nnnn > 5500: ± 0.02% FS
Measuring length	25...7620 mm
Repeat accuracy	≤ ± 10 µm
Sampling frequency max.	nnnn = 0050...0250: 2000 Hz nnnn = 0251...0600: 1530 Hz nnnn = 0601...1300: 790 Hz nnnn = 1301...2700: 495 Hz nnnn = 2701...5500: 245 Hz nnnn = 5501...7600: 180 Hz nnnn > 7600: 170 Hz

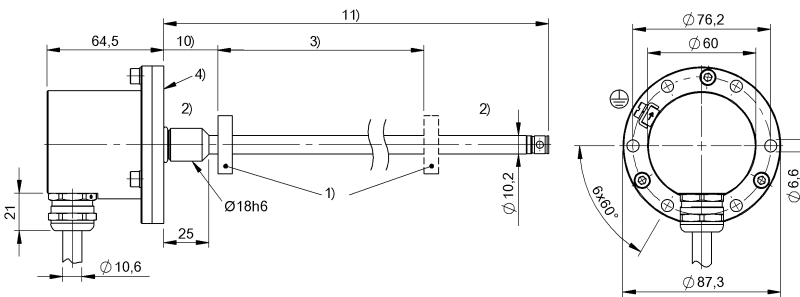
BTL7-T500-Mxxxx-J-DEXB-Kxx



colour	
BN	10...30 V DC
BU	GND
GN	RxD/TxD-N (A) IN
RD	RxD/TxD-P (B) IN
WH	RxD/TxD-N (A) OUT
BK	RxD/TxD-P (B) OUT
PK	+5 V OUT
GY	DGND OUT

- 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

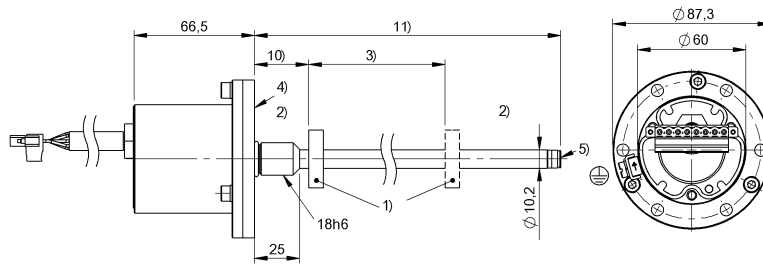
BTL7-T500-Mxxxx-J-DEXA-Kxx



colour	
BN	10...30 V DC
BU	GND
GN	RxD/TxD-N (A) IN
RD	RxD/TxD-P (B) IN
WH	RxD/TxD-N (A) OUT
BK	RxD/TxD-P (B) OUT
PK	+5 V OUT
GY	DGND OUT

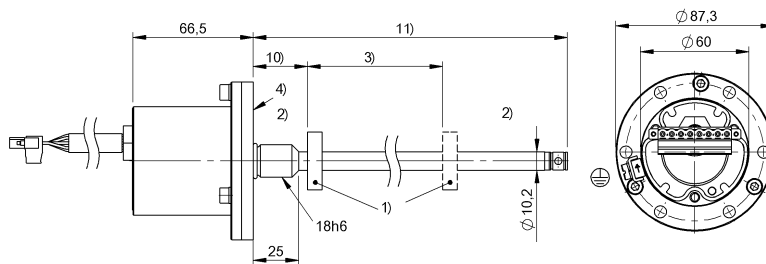
- 1) not included in scope of delivery
- 2) Non-usable area
- 3) Nominal length = Measuring length
- 4) Mounting surface
- 10) Null point
- 11) Installation length

BTL7-T500-Mxxxx-J-DEXE-ZA1K



- 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-T500-Mxxxx-J-DEXD-ZA1K



- 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