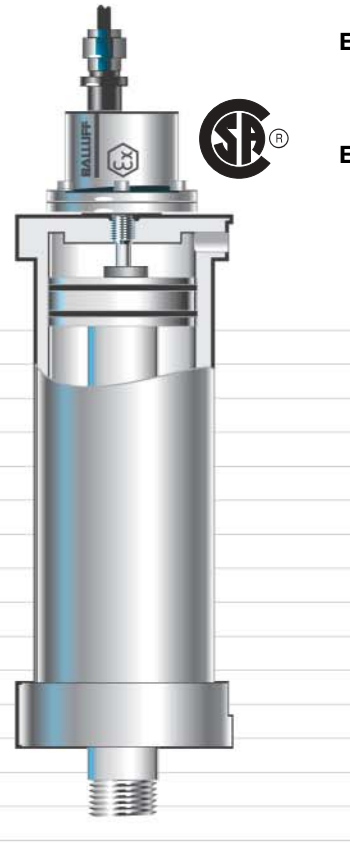
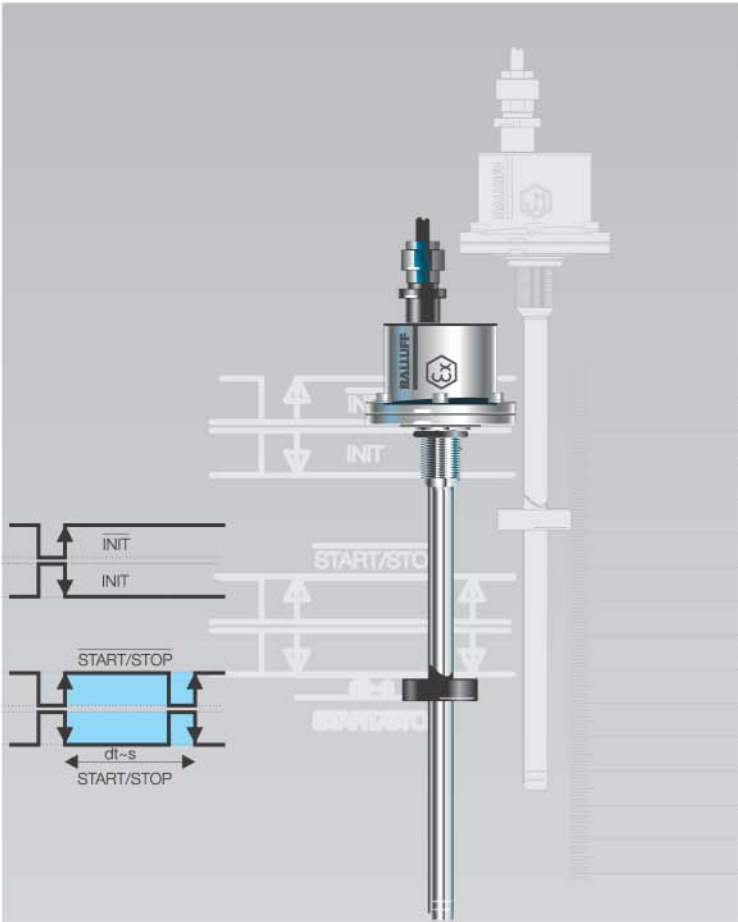




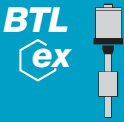
- Ex.2** General data, Installation notes
- Ex.4** Level detector in Zone 0/1
Transducer in Zone 1
- Ex.6** Magnets and Floats



**Zone 0
and
Zone 1**

Flameproof "d"

**Transducers
and
Level Detector**



General data,
Installation
notes

Level detector
in Zone 0/1
Transducer
in Zone 1

Magnets
and
Floats

**Pressure rated to 600 bar,
high repeatability,
non-contact, rugged**

The Micropulse BTL transducer is a rugged position feedback system for use under extreme ambient conditions and measuring ranges of 25 to 4000 mm.

**EX rating "d"
Flameproof enclosure**

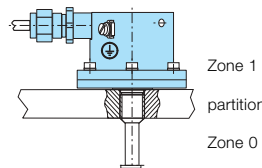
Transducers designated **EEx d IIB + H₂ T6** meet the requirements for electrical devices in explosive atmospheres per EN 50014; 1997 and EN 50018; 1994.

When using you must follow the relevant safety regulations, such as:

- Explosion protection guidelines (EX-RL)
- Constructing electrical equipment in potentially explosive areas (VDE 0165)
- Protection type "d", flameproof enclosure for housing and cable gland (EN 50018)

For this product with designation **EEx dIIB + H₂ T6** the Declaration of Conformity **PTB Nr. Ex-00.E.1004X** has been issued.

- for Zone 0 + 1
- EEx d IIB + H₂ T6
- Stainless



Analog interface no null or end point trim possible, see page K.4

Ordering example:

BTL5- -M -B-DEX -

	Output signal	Standard nominal strokes [mm]	Rod end	Connection type
A11	0...10 V and 10...0 V, rising and falling	0025, 0050, 0075, 0100, 0125, 0150, 0175, 0200, 0225, 0250, 0275, 0300, 0325, 0350, 0375, 0400, 0425, 0450, 0475, 0500, 0550, 0600, 0650, 0700, 0750, 0800, 0850, 0900, 0950, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000, 2250, 2500, 2750, 3000, 3250, 3500, 3750, 3850 or in 5 mm increments on request	A Float stop B Short stop	SR32 connector Axial cable KA02 PUR cable 2 m KA05 PUR cable 5 m KA10 PUR cable 10 m KA15 PUR cable 15 m Radial cable K02 PUR cable 2 m K05 PUR cable 5 m K10 PUR cable 10 m K15 PUR cable 15 m
E10	4...20 mA or 20...4 mA, rising			
E17	4...20 mA or 20...4 mA, falling			
C10	0...10 mA and 10...0 mA, rising			
C17	0...10 mA and 10...0 mA, falling			
G11	-10...10 V and 10...-10V, rising and falling			

Digital pulse interface see page K.6

Ordering example:

BTL5- 1-M -B-DEX -

	Interface	Standard nominal strokes [mm]	Rod end	Connection type
P	Pulse interface P	see example	A Float stop B Short stop	see example
I	Pulse interface I	analog interface		analog interface

SSD interface see page K.8

Ordering example:

BTL5-S1 -M -B-DEX -

	Coding	System resolution	Standard nominal strokes [mm]	Rod end	Connection type
0	Binary code rising (24 bits)	1 1 µm	see example	A Float stop B Short stop	see example
1	Gray code rising (24 bits)	2 5 µm	analog interface		analog interface
6	Binary code rising (25 bits)	3 10 µm			
7	Gray code rising (25 bits)	4 20 µm 5 40 µm			

Compact Rod

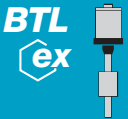
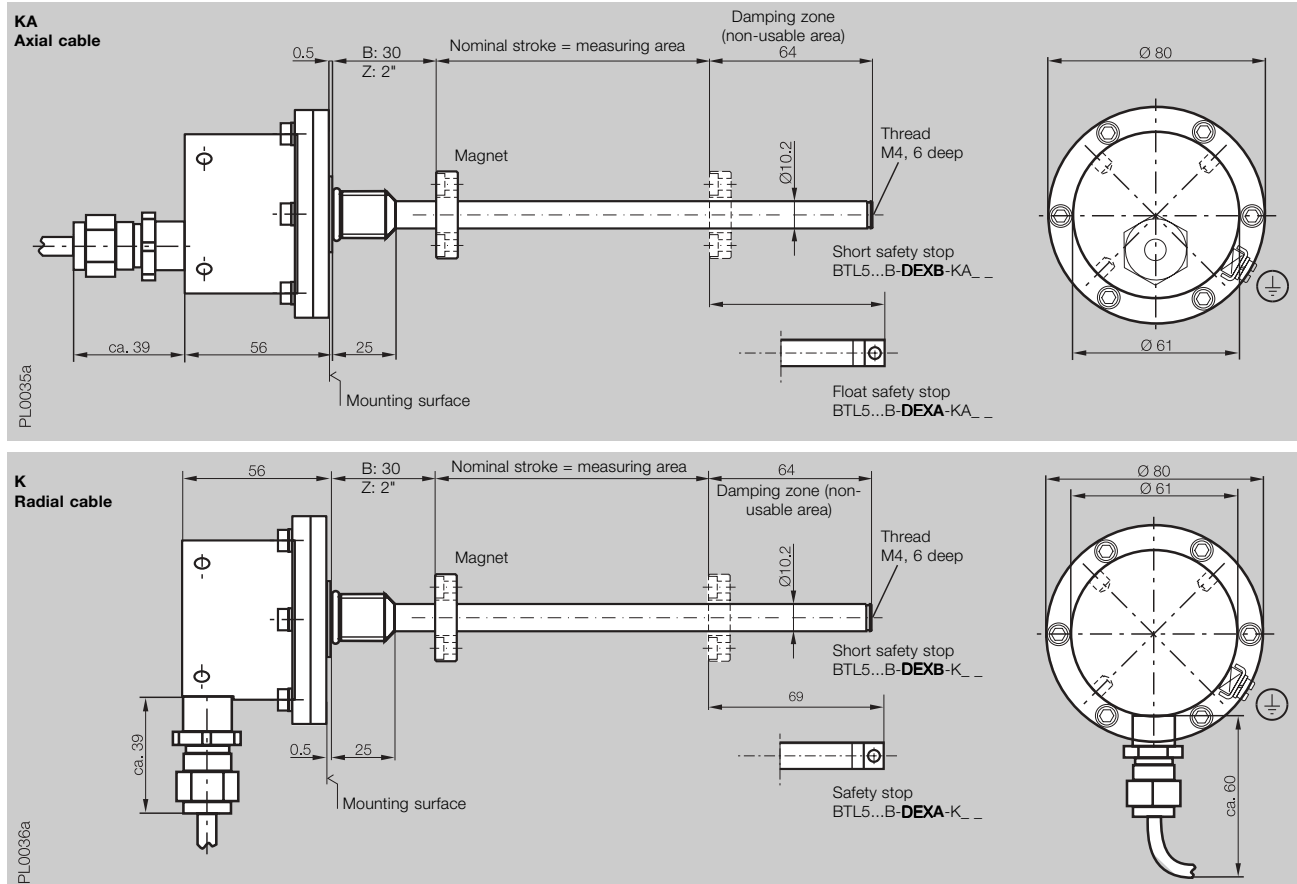


**Micropulse
Transducers**

General data
Compact rod, IS

Series

BTL5 Compact rod, IS



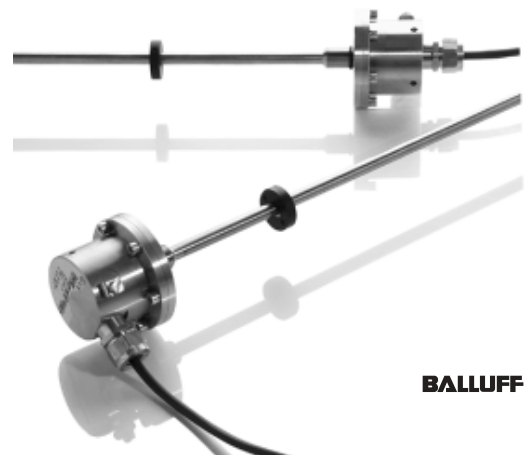
**General data,
Installation
notes**

Level detector
in Zone 0/1
Transducer
in Zone 1
Magnets
and
Floats

Ordering code	BTL5- 1-M _ _ _ -B-DEX - _ _ _
Shock load	100 g/6 ms per IEC 60068-2-27 and 100 g/2 ms per IEC 60068-2-29
Vibration	12 g, 10...2000 Hz per IEC 60068-2-6
Polarity reversal protected	yes
Oversvoltage protection	Transzorb protection diodes
Dielectric constant	500 V (GND to housing)
Enclosure rating per IEC 60529	IP 67
Housing material	Stainless steel 1.4305
Flange and tube material	Tube stainless 1.4571, flange 1.4571 or 1.4429 or 1.4404
Housing mounting	Thread M18x1.5, 3/4"-16 UNF on request
Connection type	Cable connection
EMC testing:	
RF emission	EN 55011 Group 1, Class A
Static electricity (ESD)	IEC 61000-4-2 Severity Level 3
Electromagnetic fields (RFI)	IEC 61000-4-3 Severity Level 3
Fast transients (BURST)	IEC 61000-4-4 Severity Level 4
Line noise	IEC 61000-4-6 Severity Level 3
induced by high-frequency fields	

- Included:
- Transducer
(Select your interface starting page **K.4**)
 - User's Guide

Please order separately:
Magnets page **B.14**
Floats page **Ex.6**



BTL5- 1-M....-B-DEXA- _ _ _

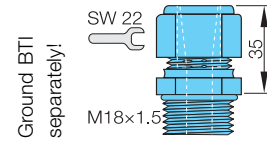
Model "DEXA" is the safe approach to level applications in Zone 0. The float is protected against loss by cotter pin. Floats see page **Ex.6**

Applications

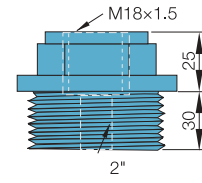
- Filling stations
- Tank systems
- Refineries
- Chemical industry
- Pharmaceuticals

Installation

Threaded adapter BTL2-A-KL01-E-00-Ex for adapting the rod length to the height of the tank.

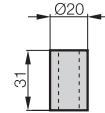


Adapter flange (in development) for installing in a tank having 2" thread.



DIN ISO 228/1-G.A

The BTL2-A-DH01-E-32-Ex spacer prevents the BTL2-S-4414-... floats from dropping past the measuring area into the damping zone.

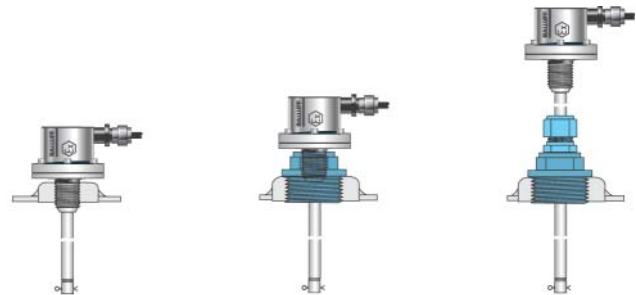
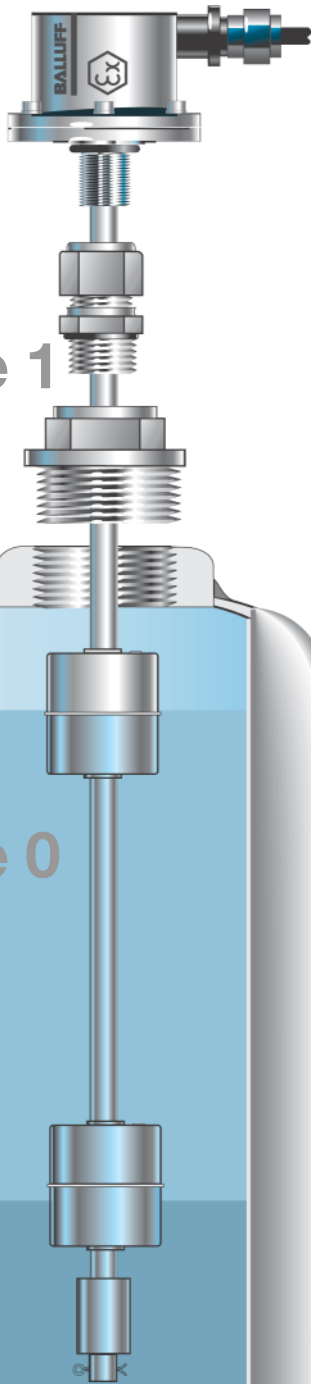


With the union and an additional adapter flange the BTL can be easily installed in any container and adapted to various heights (see illustrations). The thread

penetration depth must comply with DIN EN 50018 in order to ensure safe isolation from Zone 0 to Zone 1.

Zone 1

Zone 0

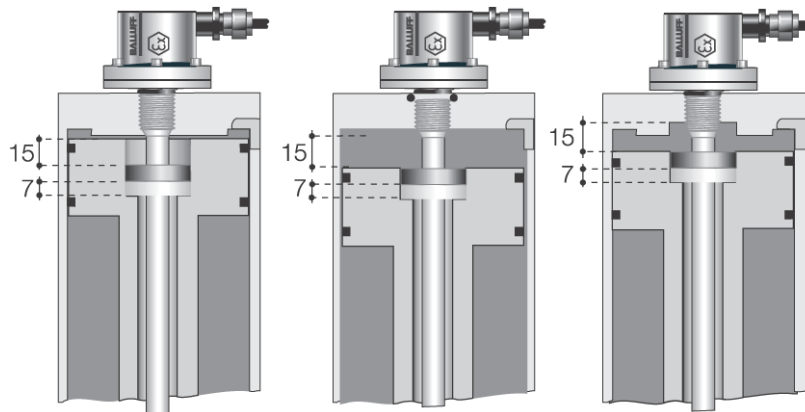


Zone 1

BTL5-1-M....-B-DEXB-... Applications

The BTL can be used to sense the position of a hydraulic piston directly and without contact - even up to pressures of 600 bar. The BTL is threaded into the head of the cylinder. The rod section fits into the gun-drilled cylinder rod.

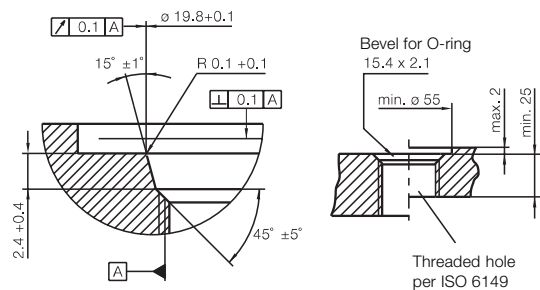
- Position feedback in hydraulic cylinders
- Valve positioning in power plants
- Dosimetry
- Positioning spray guns



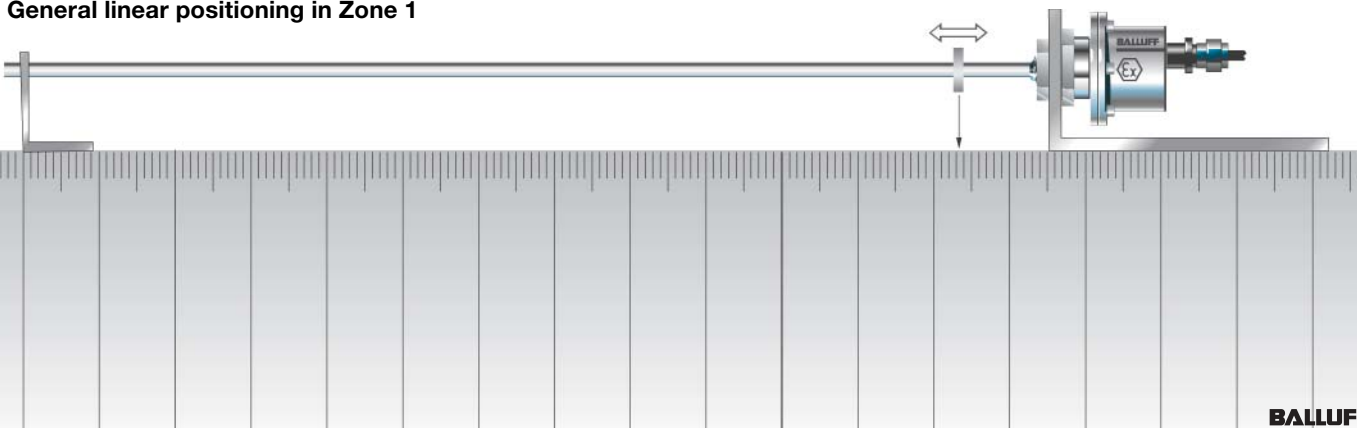
Installation

The Micropulse BTL transducer is provided with an M18x1.5 thread for mounting. We recommend non-magnetizable material for holding the BTL.

When using magnetizable material, the steps illustrated at right must be rigidly observed. Sealing is at the flange mounting surface behind the M18x1.5 thread and a supplied O-ring 15.4 x 2.1.



General linear positioning in Zone 1



General data,
Installation
notes

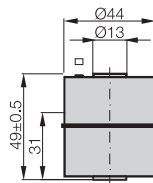
**Level detector
in Zone 0/1
Transducer
in Zone 1**

Magnets
and
Floats

Floats (Zone 0)

BTL2-S-4414-4Z-Ex

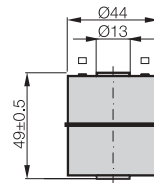
Cylindrical float Zone 0 permitted up to specific gravity $\rho \geq 0.7 \text{ g/cm}^3$



Orientation:
Raised dimple on upper side of float
Included:
BTL2-A-DH01-E-32-Ex

BTL2-S-4414-4Z01-Ex

Cylindrical float Zone 0 Float density $\rho = 0.85 \text{ g/cm}^3$ for liquid interface sensing



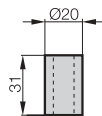
Orientation:
2 raised dimples on upper side of float
Included:
BTL2-A-DH01-E-32-Ex

Interface

A second float can be added to measure the position of the interface between two liquids, such as oil and condensed water.
Recommended:
BTL2-S-4414-4Z01-Ex.

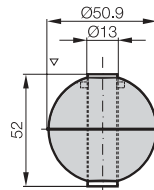
BTL2-A-DH01-E-32-Ex

Spacer (only required for floats BTL2-S-4414-... and BTL2-S-5113-...)



BTL2-S-5113-4K-Ex

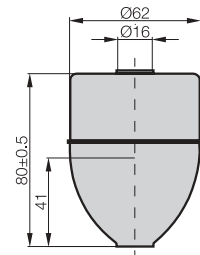
Ball float Zone 0 permitted up to specific gravity $\rho \geq 0.7 \text{ g/cm}^3$



Orientation:
Raised dimple on upper side of float
Included:
BTL2-A-DH01-E-32-Ex

BTL2-S-6216-8P-Ex

Parabolical float usable up to $\rho \geq 0.6 \text{ g/cm}^3$



Float model	Immersion depths assuming	
	$\rho = 1 \text{ g/cm}^3 \text{ (H}_2\text{O)}$	$\rho = 0.7 \text{ g/cm}^3 \text{ (H}_2\text{O)}$
BTL2-S-6216-8P-Ex	$s_s \sim 41 \text{ mm}$	$s_s \sim 57 \text{ mm}$
BTL2-S-5113-4K-Ex	$s_s \sim 26 \text{ mm}$	$s_s \sim 40 \text{ mm}$
BTL2-S-4414-4Z-Ex	$s_s \sim 30 \text{ mm}$	$s_s \sim 39 \text{ mm}$
BTL2-S-4414-4Z01-Ex	$s_s \sim 45 \text{ mm}$	submerges

Adapter flange

BTL2-A-AD01-E-00-Ex

2"/M18×1,5 see page **Ex.4**

Thread adapter

BTL2-A-KL01-E-00-Ex

M18×1,5 see page **Ex.4**

**Magnets (Zone 1)
for installing in hydraulic
cylinder**

See page **B.14**

**Processor cards,
digital displays**

See starting page **BTA.2**