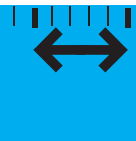


# BALLUFF

sensors worldwide

## Micropulse® BTL-SF filling level sensor

Maximum precision for foodstuffs and hygiene



MICROPULSE®



more added value



# Micropulse transducers

## BTL-SF filling level sensor

### more added value

- Continuously precise measurement in  $\mu$  area delivers excellent filling results
- 100 % stainless steel ensures top hygiene standards and long service life
- International certificate guarantees maximum quality

### Maximum precision for food hygiene – internationally certified

The BTL-SF filling level sensor ensures continuously precise measurement in applications that demand extreme hygiene. Made from corrosion-free stainless steel with excellent surface quality and rounded edges, the sensor meets the highest international hygiene standards and fulfills all strict requirements of the food industry. Take advantage of the best quality directly from the manufacturer.

#### Other benefits

- Neutral for all liquids
- Compensates for foam, thus delivering reliable filling level values
- Adjustment-free installation
- Easy to clean in installed state (CIP – Clean in Place)
- For process temperatures up to 130 °C (SIP – Sterilization in Place)
- Standardized interfaces ensure flexible installation
- Internationally certified quality guarantees global marketing and sales of your system
- Rising and falling signal available



In the USA, 3-A Sanitary Standards Inc. formulates and monitors hygiene guidelines for devices used in the manufacture and packaging of milk and foodstuffs. Our products with this designation are 3-A-approved.



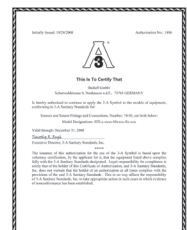
The EHEDG (European Hygienic Engineering & Design) designation is the European standard for hygiene in the food industry. Our products with this logo conform to EHEDG standards.



The FDA (Food and Drug Administration) oversees the US food and medicaments industry and certifies devices, materials, as well as systems and machines, from these areas. With such a product designation, you are also able to receive FDA approval for your system.

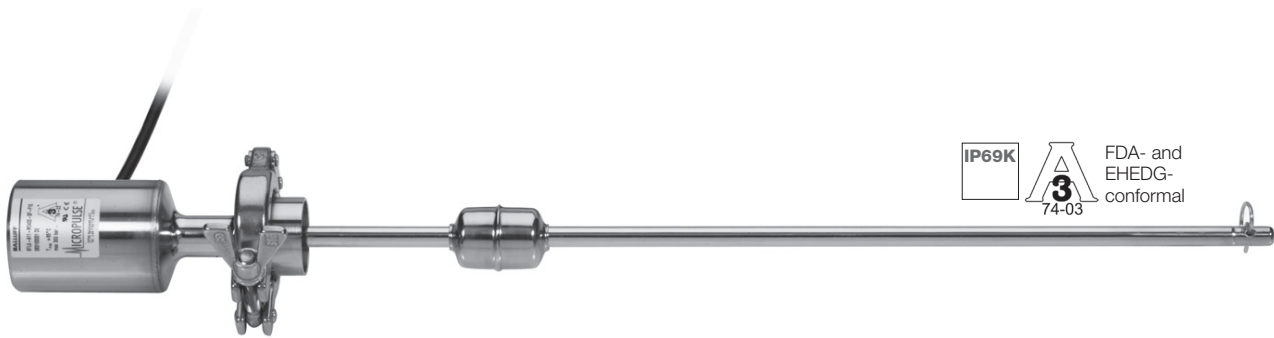


The ECOLAB designation stands for consistency against aggressive cleaning agents. Devices with ECOLAB markings fulfill their standards.



# 100 % stainless steel

## Micropulse transducers BTL-SF filling level sensor



IP69K

A  
3  
74-03

FDA- and  
EHEDG-  
conformal

Series	BTL5 SF rod
Transducer interface	Analog
Customer-side interface	Analog
<b>Ordering code</b>	<b>BTL5-...-M -SF-F</b>
Polarity reversal protected	Yes
Overvoltage protection	36 V
Dielectric strength	500 V (GND to housing)
Degree of protection as per IEC 60529	IP 67/IP 69K (flange and tube)
Housing material	Stainless 1.4404
Flange and tube material	1.4404
Connection	Sensor with lead
Attachment	1.5" Tri Clamp i.a.w. SSI 3A standard 74-03
Pressure rating	300 bar (depends on float)
EMC tests:	
RF Emission	EN 55016-2-3 Group 1, Class A and B
Static Electricity (ESD)	IEC 61000-4-2/EN 61000-4-2 Severity 3
Electromagnetic Fields (RFI)	IEC 61000-4-3/EN 61000-4-3 Severity 3
Rapid Transients (BURST)	IEC 61000-4-4/EN 61000-4-4 Severity 3
Conducted interference induced by high frequency fields	IEC 61000-4-6/EN 61000-4-6 Severity 3
Withstand voltage (Surge)	IEC 61000-4-5/EN 61000-4-5 Severity 2
Magnetic fields	IEC 61000-4-8/EN 61000-4-8 Severity 4
Standard nominal stroke (mm)	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 or in 5 mm increments on request

Scope of delivery:

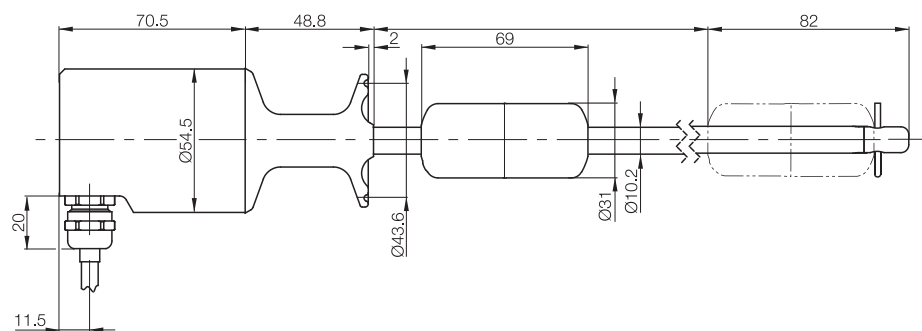
- Transducer
- Brief instructions

Please order separately:

- Tri Clamp Page 6
- Float Page 6
- O-ring Page 6
- Welded hexagon nipple Page 6

### Attention!

Prior to design, installation and startup, please read the instructions in the user guide!



# Micropulse transducers

## Micropulse magnetostrictive measurement

The industry-standard filling level sensor works with the tried-and-tested Micropulse technology, an absolute and contact-free magnetostrictive measurement, which for years has been associated with top reliability. In addition, it also has analog interfaces and can, through this widespread standard signal, be used simply in process automation.

### Analog signal

A signal that can accept continuous, (almost) infinitely variable, values between a minimum and a maximum is described as an analog signal.

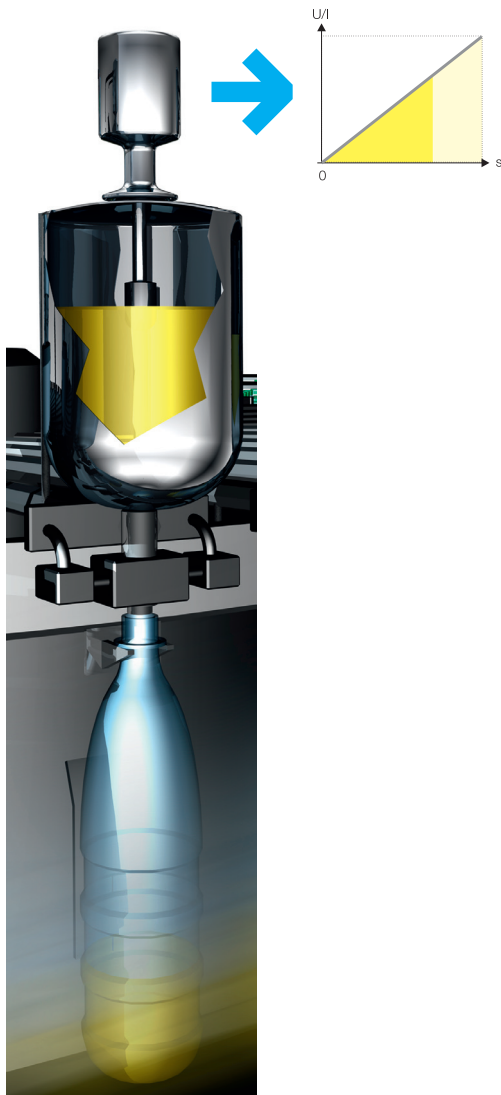
The output signal of the BTL-SF filling level sensor is analog and directly proportional to the position of the float on the sensor tube.

### Features

- Reasonably priced system solution
- Can be used from each controller
- Cable break monitoring through 4...20 mA signal
- Current signal, interference-free signal transfer
- High resolution and repeatability
- Rising and falling signal available

### Variants

- Current (4...20 mA or 0...20 mA)
- Voltage (0...10 V or 10...0 V)



Series	
Output signal	
Transducer interface	
Customer-side interface	
<b>Ordering code</b>	
Output voltage	
Output current	
Load current	
Ripple max.	
Load resistance	
System resolution	
Hysteresis	
Repeatability	
Sampling rate	
Max. non-linearity	
Temperature coefficient	
Operating voltage	
Current draw	
Polarity reversal protected	
Overvoltage protection	
Dielectric strength	
Operating temperature	
Process temperature 130° C for one hour	
Wiring configuration	Color
Output signals	YE
	GY
	PK
	GN
Operating voltage	BU
	BN
	WH

Shield connected to housing

Scope of delivery:

- Transducer
- Brief instructions

Please order separately:

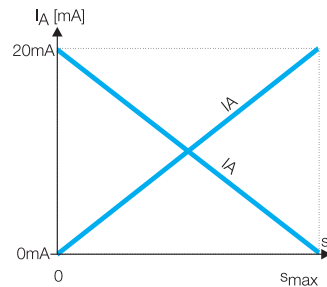
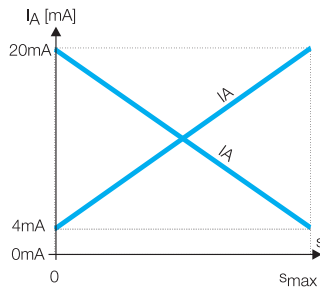
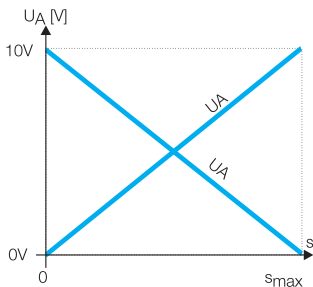
- Tri Clamp Page 6
- Float Page 6
- O-ring Page 6
- Welded hexagon nipple Page 6

Teflon cable – LIF5Y-FC-5Y (7x0.25mm<sup>2</sup>):

- Temperature resistant up to 200 °C
- Good resistance against chemicals and oil



BTL5 SF rod	BTL5 SF rod	BTL5 SF rod
Analogue	Analogue	Analogue
A	E	C
Analogue	Analogue	Analogue
<b>BTL5-A11-M-_-SF-_-_-</b>	<b>BTL5-E1_-M-_-SF-_-_-</b>	<b>BTL5-C1_-M-_-SF-_-_-</b>
0...10 V and 10...0 V	4...20 mA or 20...4 mA	0...20 mA or 20...0 mA
max. 5 mA		
≤ 5 mV		
≤ 0.1 mV	≤ 500 ohm (500 ohm)	≤ 500 ohm (500 ohm)
≤ 4 μm	≤ 0.2 μA	≤ 0.2 μA
System resolution/min. 2 μm	≤ 4 μm	≤ 4 μm
$f_{\text{STANDARD}} = 500 \text{ Hz}$	System resolution/min. 2 μm	System resolution/min. 2 μm
±100 μm to 500 mm nominal stroke	$f_{\text{STANDARD}} = 500 \text{ Hz}$	$f_{\text{STANDARD}} = 500 \text{ Hz}$
±0.02 % 500... max. nominal stroke	±100 μm to 500 mm nominal stroke	±100 μm to 500 mm nominal stroke
≤ 40 ppm/K for nominal stroke 500 mm, float at center of measuring range	±0.02 % 500... max. nominal stroke	±0.02 % 500... max. nominal stroke
20...28 V DC	≤ 40 ppm/K for nominal stroke 500 mm, float at center of measuring range	≤ 40 ppm/K for nominal stroke 500 mm, float at center of measuring range
≤ 150 mA	20...28 V DC	20...28 V DC
Yes	≤ 150 mA	≤ 150 mA
36 V	Yes	Yes
500 V DC (GND to housing)	36 V	36 V
-40...+85 °C	500 V DC (GND to housing)	500 V DC (GND to housing)
-40...+100 °C	-40...+85 °C	-40...+85 °C
BTL5-A11...	-40...+100 °C	-40...+100 °C
0 V Output	BTL5-E10...      BTL5-E17...	BTL5-C10...      BTL5-C17...
10...0 V	4...20 mA      20...4 mA	0...20 mA      20...0 mA
0...10 V	0 V Output      0 V Output	0 V Output      0 V Output
GND	GND      GND	GND      GND
+24 V DC	+24 V DC      +24 V DC	+24 V DC      +24 V DC



### Ordering example:

**BTL5-1-M-\_-SF-\_-\_-**

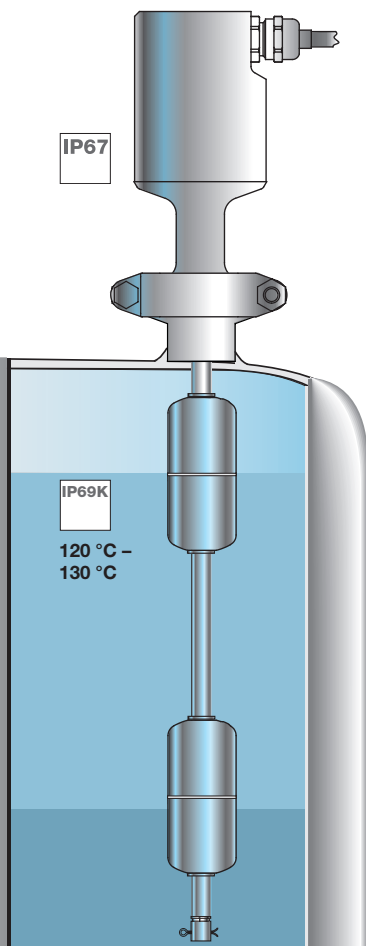
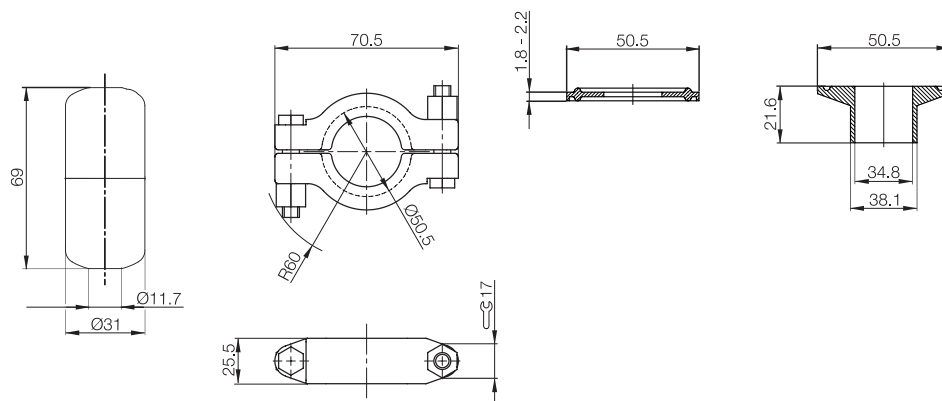
Interface	Output Signal	Standard Nominal stroke [mm]	Radial connection
A	1 rising and falling	0025, 0050, 0075, 0100, 0125, 0150, 0175, 0200, 0225, 0250, 0275, 0300,	F02 Teflon cable 2 m
E	for A	0325, 0350, 0375, 0400, 0425, 0450,	F05 Teflon cable 5 m
C	0 rising (for C and E)	0475, 0500, 0550, 0600, 0650, 0700, 0750, 0800, 0850, 0900, 0950, 1000,	F10 Teflon cable 10 m
	7 falling (for C and E)	1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000, 2250, 2500 or in 5 mm increments on request	F15 Teflon cable 15 m
			F20 Teflon cable 20 m

# Micropulse transducers

## Accessory



Description for series	Float BTL5 SF rod	Tri Clamp (DIN 32676) BTL5 SF rod	O-ring BTL5 SF rod	Welded hexagon nipple BTL5 SF rod
<b>Ordering code</b>	<b>BTL-S-3112-4Z</b>	<b>BAM MC-XA-006-D38,1-5</b>	<b>BAM SE-XA-002-D38,1-5</b>	<b>BAM-AD-XA-003-D38,1-5</b>
Material	Stainless 1.4404	USA ASTM 316 (1.4401)	Platinum catalyzed silicone	Part no. W. 1.4435 BN2 (Fe ≤ 0.5 %) i.a.w. EB 10088
Weight	approx. 30 g			
Operating temperature/ Storage temperature	-40...+130 °C			
Insertion depth in water	approx. 31 mm			
Pressure rating (static)	24 bar			



Process temperature:  
maximum permissible temperature of  
the rod under the flange (with media  
contact).  
Certain production processes require,  
for example sterilization at  
**120 °C – 130 °C** for 0.5 – 1 hour.

"Junction float" on  
request.

- Included in scope of  
delivery for float:
- Float
  - Instructions
  - Splint (spring pin 2x30)



### Attention!

Approvals only issued through  
use of these components.  
Prior to design, installation and  
startup, please read the instruc-  
tions in the user guide!

# Balluff – Competent partnership

For greater efficiency

## On-site competent partnership – technological diversity, optimal solutions, individual service

With over 50 years of sensors experience, Balluff is a globally leading sensor specialist with well-engineered displacement sensing technology and its own line of connectivity products for every area of factory automation. Balluff stands for comprehensive systems from a single source, continuous innovation, the most modern technology, highest quality and greatest reliability. And even more.

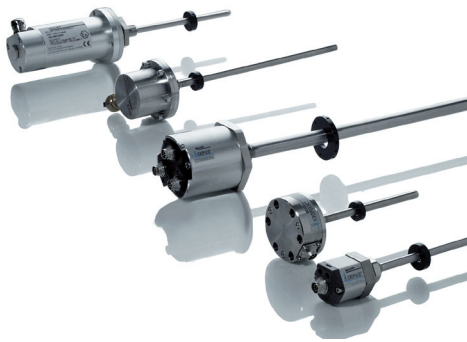
For distinctive customer orientation, custom-tailored solutions, fast worldwide service and outstanding application assistance. In short: for reliable, expert partnership.

Headquartered in Germany and with 54 representatives and subsidiaries, Balluff is tightly networked internationally. So there is always a Balluff expert near you.

## Balluff high quality – high-performance technology for increased productivity

### Extremely precise distance measurement

Balluff distance measurement offers efficient individual solutions. Precisely for your needs. The most diverse operating principles. For travel distances from 1 to 48 m and resolutions from 1 to 100 µm. From position detection to distance measurement. Totally flexible. And use Balluff's mature linear displacement sensing technology to simply increase your added value.



➔ More information at  
[balluff.de/btl7](http://balluff.de/btl7)

### Safety with stainless steel

Our sensors and systems in stainless steel guarantee safety and hygiene. And perform even better. Find out more about the proven Balluff stainless steel program for food, drinks, cosmetics and pharmaceutical industries, as well as medical devices.

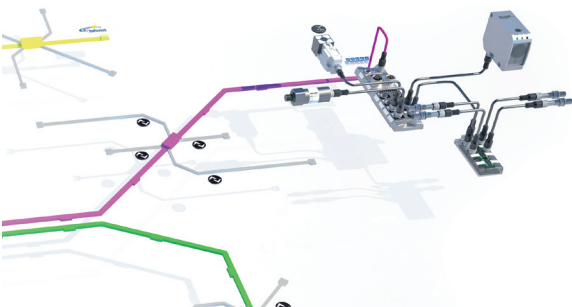


➔ For more information on the topic of stainless steel, please see the "Guaranteed Safety and Hygiene" catalogue or visit [balluff.de/edelstahl](http://balluff.de/edelstahl)



### Refined network

Learn about comprehensive intelligently networked system technology. With components that are optimally matched to the controllers. More about high-performance communication which ensures the full potential of your system.



➔ See the "Industrial Networking" catalogue for more Balluff products used for connecting to the controls or visit [balluff.de/networking](http://balluff.de/networking)

# BALLUFF

sensors worldwide



**Object Detection**



**Linear Position Sensing**



**Industrial Identification**



**Industrial Networking and Connectivity**



**Mechanical Accessories**

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