

MARKET INFORMATION  
PLANT ENGINEERING INDUSTRY



# Trimod'Besta

Solutions for the Plant Engineering Industry



Arroyito Heavy Water Production Plant, Argentina

Bachofen offers standard and industrial type level switches including float chambers for by pass installation for OEMs and plant manufacturers. Additional capacitance switches, float switches, level indicators and transmitters complete our range of convenient, one-stop-shopping products.

Trimod Besta level switches carry ATEX, IECEx, TR CU (GostR Ex / RTN) and Inmetro approvals. The level switches and the Trimod Besta float chambers are available acc. to PED 97/23/EC.

## Typical applications

- Oil and lubrication tanks
- Separation layer measurement
- Pump dry run protection
- Double wall tanks
- Flue gas scrubber
- Edible oil production
- Heavy water production



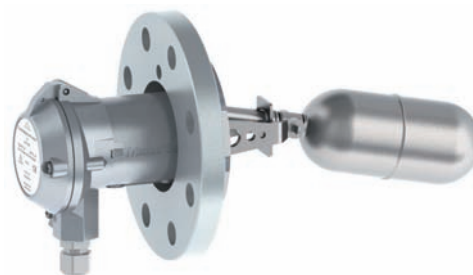
**SIL**  
IEC 61508/615  
SIL 3 Capable



## Level switch for liquids with low density

### Type DB 132R 07

Nominal pressure	ANSI cl. 300
Operating temperature	-30 to 120°C
Ambient temperature	-30 to 120°C
Density of the liquid	Min. 0.5 kg/dm <sup>3</sup>
Operating differential	12 mm, fixed
Wetside material	Stainless steel (CrNiMo/316 equiv.)
Flange material	
Seal part	Stainless steel (CrNiMo/316 equiv.)
Slip-on flange	Carbon steel (P265GH), zinc galvanised, passivated
Housing material	Seawater resistant die cast aluminium
Flange	DN 3", PN cl. 300, ANSI B16.5
Flange facing	Raised face
Switch element	Microswitch with gold plated contacts
Switch rating	30 VDC, 0.3 A / 250 VAC, 5 A
Enclosure	IP67
Cable gland	M20x1.5
Safety Integrity Level (SIL)	SIL 1 (Type DBB 132R 07: SIL 2)



## Options

- Nominal pressure up to ANSI cl. 2500 and EN/DIN PN 320
- All stainless steel version
- Material wet side in Hastelloy C
- Switch element: self-checking proximity switch
- Flange facing: male, tongue, groove and ring joint
- Float chambers for by pass installation

## Level switch for contaminated liquids

### Type AA 01 053

Nominal pressure	PN 25 acc. to EN/DIN
Operating temperature	10 to 200°C
Ambient temperature	0 to 70°C
Density of the liquid	Min. 0.75 kg/dm <sup>3</sup>
Operating differential	12 mm, fixed
Bellow material	FPM
Wetside material	Stainless steel (CrNiMo)
Housing material	Seawater resistant die cast aluminium
Flange	Square 92 x 92 mm, 92 mm PCD
Switch element	Dual SPDT Microswitches, galvanically isolated, with silver contacts
Switch rating	250 VAC, 5 A / 30 VDC, 5 A
Enclosure	IP65
Cable gland	M20x1.5
Safety Integrity Level (SIL)	SIL 2



#### Options

- Flanges acc. to EN/DIN, ANSI, BS, JIS
- All stainless steel version
- Enclosure IP67
- Microswitch with gold plated contacts
- Bellow material: Perbunan, Silicon, PTFE, FPM
- Operating temperature
  - Perbunan Bellow: max. 120°C
  - FPM/Silicon Bellow: max. 200°C
  - PTFE Bellow: max. 250°C
- Float chambers for by pass installation

## Level switch with gold plated contacts

### Type B 01 04

Nominal pressure	PN 25 acc. to EN/DIN
Operating temperature	0 to +300°C
Ambient temperature	0 to +70°C
Density of the liquid	Min. 0.7 kg/dm <sup>3</sup>
Operating differential	12 mm, fixed
Wetside material	Stainless steel (CrNiMo)
Housing material	Seawater resistant die cast aluminium
Flange	Square 92 x 92 mm, 92 mm PCD
Switch element	Microswitch SPDT with gold plated contacts
Switch rating	30 VDC, 0.3 A / 250 VAC, 5 A
Enclosure	IP65
Cable gland	M20x1.5
Safety Integrity Level (SIL)	SIL 1 (Type BB 01 04: SIL 2)



#### Options

- Flanges acc. to EN/DIN, ANSI, BS, JIS
- All stainless steel version
- Enclosure IP67
- Dual SPDT Microswitches, galvanically isolated
- Float chambers for by-pass installation

#### Option: Self checking failsafe features with proximity switch elements

If the level switch is connected for maximum current/voltage in the non alarm state the circuit can be monitored constantly for line and/or instrument failure to initiate operation of a safety shutdown e.g. Type I 01 04, IN 01 04, II 01 04. The sensor circuit of the switch modules IE9, INE9, and IIE9, is self checking and approved for safety circuits (TÜV tested).

## For pneumatic control applications

### Type P 01 04

Function	3/2 way valve
Control air	max. 10 bar
Nominal pressure	PN 25 acc. to EN/DIN
Operating temperature	1 to 250°C
Ambient temperature	1 to 80°C
Density of the liquid	Min. 0.7 kg/dm <sup>3</sup>
Operating differential	12 mm, fixed
Control connections	G 1/8" (BSPP), internal thread
Wetside material	Stainless steel (CrNiMo)
Flange material	Stainless steel (CrNiMo)
Housing material	Seawater resistant die cast aluminium



#### Options

- Type 5P 01 04 all stainless steel design
- Type FP 01 04 with declaration of conformity for use in hazardous areas
- Pneumatic controller with 0.2 to 1 bar output signal e.g. type M 01 04

## Heavy Water Production Plant, Argentina

The Industrial Heavy Water Plant (PIAP), located at Arroyito (province of Neuquén) is classified as a high technology plant among conventional chemical industries. Its production capacity amounts to 200 tons per year and is split into two production lines of 100 tons each. The process selected and applied by the PIAP for obtaining heavy water is based on a method known as "Monothermal Ammonia Hydrogen Isotopic Exchange". The electro mechanic equipment plus the structures weigh more than 27'000 tons.



### Bachofen has delivered 96 units of level switches with float chambers

- 16 units acc. to ANSI cl. 2500
- 32 units acc. to ANSI cl. 1500
- 48 units acc. to ANSI cl. 300

#### Float chamber tests and procedure:

- Charpy-V tests at -30°C
- Non destructive tests at -40°C (Pellini)
- All welding edges 100% dye penetration tests
- Post weld heat treatment 620°C
- 100% dye penetration tests surface
- Cold hydraulic pressure tests, cl. 2500: 420 bar
- Helium leakage tests



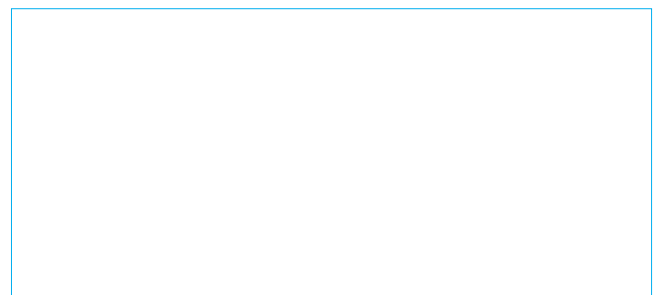
**BACHOFEN**

Industrial Automation

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