

# BAMO

Liquid Control Solutions



## PRODUCTS GUIDE



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EUROPEAN COMPANY FOR INDUSTRIAL INSTRUMENTATION

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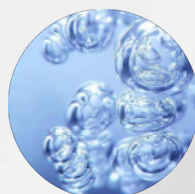
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# pH/mV Meter BAMOPHAR 107



Panel mounting



Wall mounting



Panel mounting unit + Extension unit

- Color touch screen
- 2 existing scales:  
0... 14 pH or  $\pm 1000$  mV
- Temperature compensation:  
Automatic or manual
- 2 outputs 0/4-20mA (pH and T °C)
- 4 relays (Thresholds, alarm and/or regulation)
- Options:  
RS 422 / J-BUS + LOGGER  
Extension terminal for 2nd measuring parameter

## APPLICATIONS

Measurement of pH or ORP, alarms and/or regulation for water treatments, chemical industries, industrial applications.

### Example

- Electroplating industry
- Processed water treatment
- wastewater treatment (e.g. pH neutralization)
- Groundwater or runoff water survey
- Swimming pool pH regulation (or spa or fish tank)
- Alarming on cooling plant ( $\text{NH}_3$ )
- Etc.

## DESCRIPTION

The device is equipped with a color touch screen for the display of a multilingual menu friendly and intuitive. It provides easy reading of measurement, temperature and state of the thresholds. It displays a menu with all parameters for configuration of analogue outputs, thresholds and regulation mode. In order to facilitate its commissioning, a programming menu can simulate the measurement, acting on the measurement analog outputs and P.I.D., as well as on the thresholds.

Analogue output reflects the measurement and may be scaled all along the range. Temperature analogue output is available as well as a 4-20 mA signal.

A complete measuring system includes:

- pH/mV-meter BAMOPHAR
- One pH or ORP electrode (data-sheet 150-01/03)
- One electrode holder (data-sheets 130- to 145-)
- Accessories: pH/ORP cable, connectors, buffers (data-sheet 160-01)
- Option: Temperature probe (Data-sheet 150-02)

*For any information and special request: please contact us.*

### An extension terminal (wall, panel or DIN rail mounting):

- Allows a second measuring parameter (pH, flow-rate, conductivity, etc.)  
*Data from this blind unit are displayed on the main unit*
- Connected to main unit with 4 wire shielded cable  
*(Cable length between both devices: max. 500 m)*
- RS422 and Data Logger of main unit are shared between both units

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pH/mV Meter  
**BAMOPHAR 107**

01-08-2018

D-107.01-EN-AE

pH

107-01 /1



## TECHNICAL FEATURES

End-user interface	Color touch screen 4.3", resolution 480x272 pixels Display of measurements, menus, temperature, relay status Configuration - Keyword protected
Measuring scales	0... 14 pH as pH-meter or $\pm 1000$ mV as mV-meter
Accuracy	$\pm 0.03$ pH or $\pm 3$ mV
Input impedance	$>10^{13} \Omega$
Sensor signal input	For coaxial connector (9054) on panel and rail mounting devices Screw connector on wall mounting devices
Temperature compensation	
Automatic	Input for sensor Pt 100 $\Omega$ at 0 °C, range 0 to 100 °C
Manual	From 0 to 100 °C, by configuration
Relay outputs	4 contacts N.O., voltage free
Configurable thresholds	S1, independent threshold, to set up for measurement or temperature S2, independent threshold, to set up for measurement or temperature S3, independent threshold, to set up for measurement or temperature or external function S4, threshold, to set up for alarming function Too long injection - Timer exceeded pH value out of range Temperature sensor defect or electrode cleaning mode
Contact Initial resistance	100 m $\Omega$ max. (voltage drop 6 V DC 1 A)
Switching power	831 VA AC / 3 A / 277 V AC 90 W / 3 A / 30 V DC
Switching capacity (min.)	100 mA, 5 V DC ( 100 mA, 5 V DC (variable according to switching frequency, environmental conditions and accuracy).
ON/OFF Regulation	Adjustable cycle time from 0 to 9999 s, high and low proportional bandwidths, high and low dead zones
PID Regulation	Adjustable proportionality from 0 to 200%, Integrant and Derivative: 0 to 999 s
Calibration routine	Relay outputs inhibited, Analogue outputs on standby at latest values
Auto-cleaning menu	Settings of frequency and duration, relay outputs inhibited, analogue outputs on standby at latest values
Program Testing	Simulation through the menu on measurement, temperature, PID and relays output
Measurement output	0/4 - 20 mA (max. 600 $\Omega$ ) proportional to measurement
Temperature output / PID	0/4-20 mA (max. 600 $\Omega$ ), scaling 0...100 °C This output is not available when PID regulation function is operating.
Main power supply	230 V AC / 50-60 Hz (others on request) - Consumption 10 VA
Models	Panel mounting, 96x144 mm, Front IP65, rear IP40 Wall mounting, IP65, cable glands
Storage temperature	-10 ... +70 °C
Operating temperature	-5 ... +50 °C
<b>OPTION (RS 422 + Logger)</b>	
Interface	RS422 output, J-BUS link - Binary slave mode - 2400 to 9600 bauds
Data Logger	Record of cycle average measurement - 150 000 records max. on memory card.

**EC Conformity: The instrument meets the legal requirements of the current European Directives**

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pH/mV Meter  
**BAMOPHAR 107**

01-08-2018

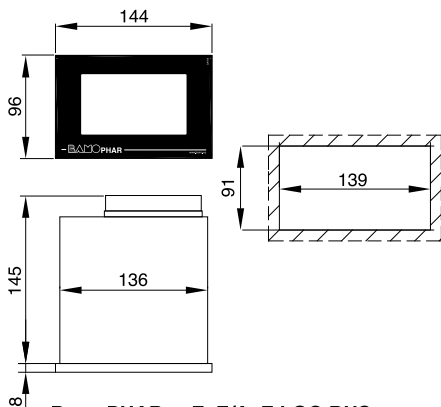
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pH

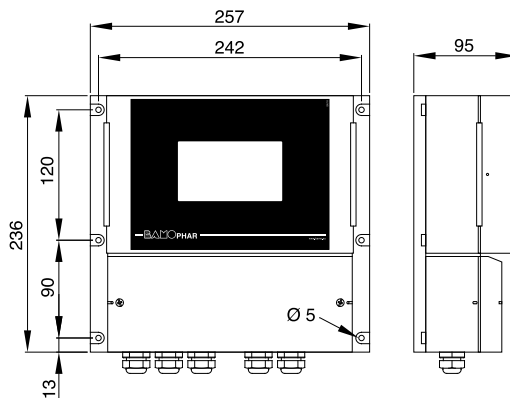
107-01 /2



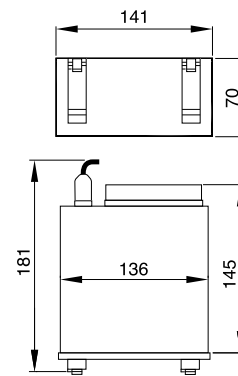
## DIMENSIONS



BamoPHAR ... E, E/A, E LOG BUS



BamoPHAR ... M, M/A, M LOG BUS



BamoPHAR ... D/A

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
107 500	BAMOPHAR 107 E	Panel mounting 96x144 mm - Front IP 65; Rear IP 40
107 501	BAMOPHAR 107 E/A	Panel mounting 96x144 m- Extension, blind monitor / IP40
107 503	BAMOPHAR 107 D/A	Rail mounting - Extension, blind monitor / IP40
107 505	BAMOPHAR 107 E LOG BUS	Panel mounting 96x144 m - RS422 + LOGGER - Front IP 65; Rear IP 40
107 520	BAMOPHAR 107 M	Wall mounting, IP 65, cable glands
107 521	BAMOPHAR 107 M/A	Wall mounting - Extension, blind monitor - IP 65, cable glands
107 524	BAMOPHAR 107 M LOG BUS	Wall mounting - RS 422 + LOGGER - IP 65, cable glands

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pH/mV Meter  
**BAMOPHAR 107**

01-08-2018

D-107.01-EN-AE

pH

107-01/3

# ph and ORP immersion probe 9336



- Protective holder
- Simplified calibration routine
- For 1 electrode with PG 13.5 fitting
- Adjustable immersion depth
- PVC, PPH or PVDF

## APPLICATIONS

- For all pH and ORP measurements in basins, open channels and tanks.

## DESCRIPTION

Support 9336 insures adjustable position and protection of electrode in basins, channels and tanks. It allows an easy calibration routine without risks to break the electrode.

Standard construction is of PVC, PPH or PVDF tubes O.D. 50 mm Fastening collar or adjustable flange, allow the PVC or PPH probes to be positioned at the right height.

For the calibration routine, the electrode protection end is removable from the holder, which is perfectly adapted to our buffer flasks (9011; 9012; 9013; 9015). There is no need to hold the probe during calibration. Flask and probe are tightly assembled and they can stand on the floor. No more spilled buffer neither damaged electrode.

### Associated electrodes:

Associated electrodes are to be selected from our pH - Redox data-sheet (150-01). Only electrodes with sealing PG 13.5 fit on these probes.

## TECHNICAL FEATURES

Immersion height	1 m (On request from 0.3 up to 3.0 m)
Construction	PVC, PPH or PVDF
Pressure	Atmospherique pressure
Head	PBT glass fiber reinforced - IP 65
Cable output	PG 9
Fitting	PE flange 9358, adjustable height or PE collar, for diam. 50 mm
Temperature limits	0... 55 °C (PVC) 0... 100 °C (PPH or PVDF)

### Options:

- PE flange 9358, adjustable height, for probes O.D. 50 mm (9336 & 9337)
- Rocking bucket in PPH

**CE conformity:** The instrument meets the legal requirements of the current European Directives.



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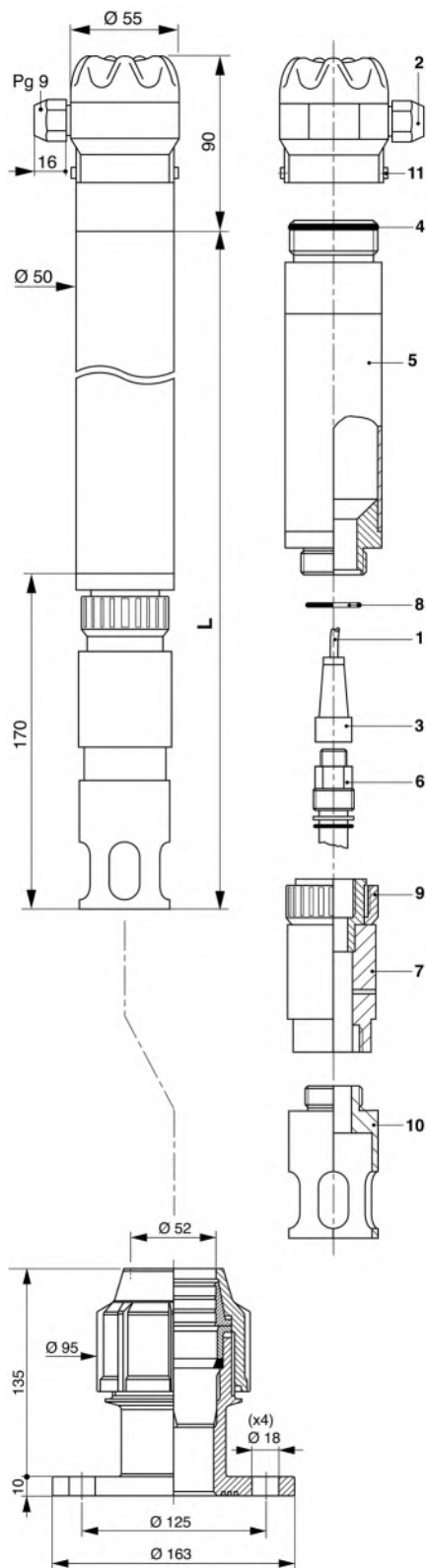
ph and ORP immersion probe  
**9336**

22-01-2018

D-130.01-EN-AC

pH

130-01 /1



## CODE NUMBERS AND REFERENCES

Code	Reference	Description
130 150	9336 PVC	Probe PVC, 1 m, for 1 electrode
130 250	9336 PPH	Probe PPH, 1 m, for 1 electrode
130 350	9336 PVDF	Probe PVDF, 1 m, for 1 electrode
130 114	9338 PVC	Probe PVC, 1 m, for 1 electrode with rocking bucket in PPH
<b>Accessories</b>		
130 112	9358 PE	Adjustable flange (probes 9336/9337, O.D. 50)
<b>Spare parts</b>		
130 113	9338 Rocking bucket	Rocking bucket in PPH with holder base (for probe 9336)
130 155	9336 PVC BDS	Holder base PVC, for 1 electrode
130 255	9336 PPH BDS	Holder base PPH for 1 electrode

Note : Holder base includes 1 electrode holder (7), 1 o-ring seal (8), 1 screw nut (9) and 1 protective end (10).

## DIMENSIONS AND COMPONENTS

- 1) Coaxial cable 9060 (1) (To be ordered separately)
- 2) Cable gland on probe head
- 3) Connector 9054 (To be ordered separately)
- 4) O-ring seal for head housing
- 5) Extension tube
- 6) Electrode (To be ordered separately)
- 7) Electrode holder
- 8) O-ring seal on extension tube
- 9) Loose nut on electrode holder
- 10) Protective end
- 11) Blocking screws

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ph and ORP immersion probe  
**9336**

22-01-2018

D-130.01-EN-AC

ph

130-01 /2



# Immersion probe with built-in temperature sensor 9337

- Protective holder
- Built-in temperature sensor Pt100
- Simplified calibration routine
- For 1 electrode (PG 13.5 sealing)
- Adjustable immersion depth
- Fastening by flange or collar
- PVC construction



Pt100 connection terminal

## APPLICATIONS

For all pH or ORP and temperature measurements in basins, open channels and tanks

## DESCRIPTION

Support 9336 insures adjustable position and protection of electrode in basins, channels and tanks. It allows temperature measurement or automatic compensation with the Pt100 sensor built-in the bottom of probe. The probe is designed to avoid electrode damaged during calibration routine.

Standard construction is of PVC, O.D. 50 mm tube. Fastening collar or adjustable flange, allows the probe to be positioned at the right height.

For the calibration routine, the electrode protection end is removable from the holder. This one is perfectly adapted to our buffer flasks (9011; 9012; 9013; 9015). There is no need to hold the probe during calibration. Flask and probe are tightly assembled and they can stand on the floor. No more spilled buffer neither damaged electrode.

## ASSOCIATED ELECTRODES

Associated electrodes for pH and ORP are described on data-sheet 150-01. Only electrodes with sealing PG 13.5 are adapted with our probe holders.

## TECHNICAL FEATURES

Immersion depth	200 mm, as a minimum
Temperature sensor	Built-in Pt100 Ohm at 0 °C, 3 wires
Length probe	Standard 1 m (from 500 to 3000 mm on request)
Construction	PVC
Head housing	PBT fiber glass reinforced; IP 65
Cable output	Two PG 9
Fitting	Adjustable flange 9358 or PE collar for tube O.D. 50 mm
Operating temperature	55 °C, as a maximum
Recommended cables	Temperature, 3 wire type, shielded, 0.22 mm <sup>2</sup> pH, coaxial cable type 9060

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
130 151	9337 PVC	PVC 1 m long probe with Pt100 sensor
130 112	9358 PE	Adjustable PE flange for probes 9336 & 9337
160 300	9060	Coaxial cable, specific for pH
610 010	C3B	Shielded cable, 3-wire 0.22 mm <sup>2</sup>

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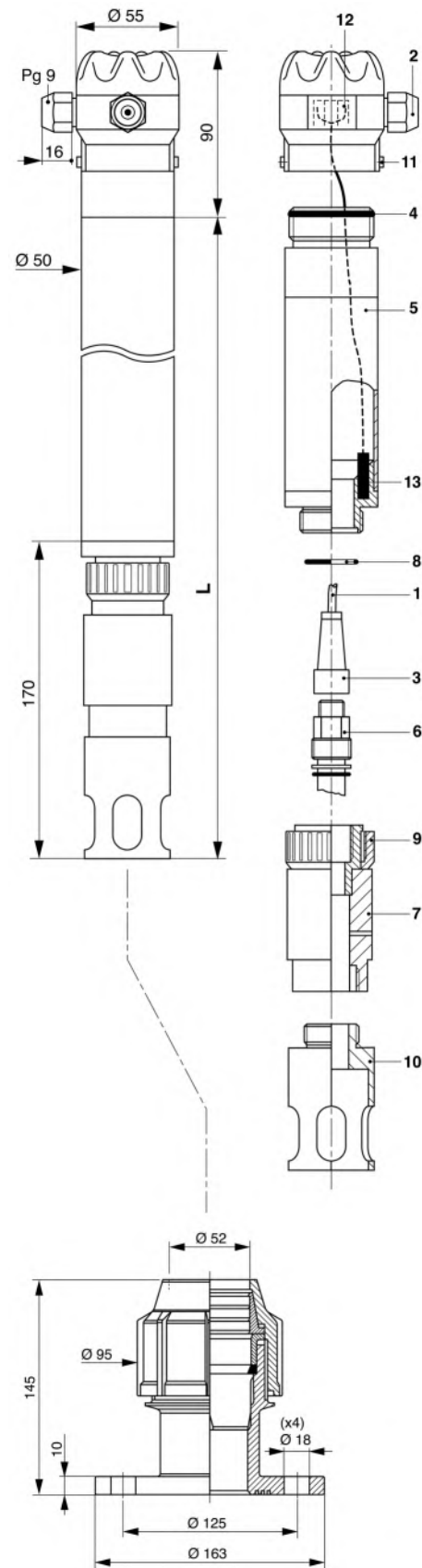
Immersion probe with built-in  
temperature sensor  
**9337**

22-01-2018

D-130.02-EN-AB

pH

130-02/1



## MOUNTING THE ELECTRODE

- Introduce the temperature cable through a cable gland of head housing (2).
- Connect inside the head the 3 wires on terminal (12), already connected to Pt100 (13).
- Introduce the pH cable 9060 (1) through the cable gland of probe head (2): cable length should be of probe length plus 20 cm.
- Weld on the connector 9054 (3), see also manual msa160 (9054).
- Check the O' ring (4) is on its support and screw on the probe head (2) on extension tube (5).
- Ensure that the connector is going out of bottom of tube.
- Install the electrode (6) on the holder (7).
- Check the O' ring (8) is on its support.
- Screw tightly the connector on the electrode.
- Pull out smoothly the cable in order to have the electrode holder (7) close to the extension tube.
- The cable must not be stretched inside the tube.
- Screw the nut (9) keeping the holder in its position. Prevent the electrode holder to rotate during this operation.
- Screw on by hand the electrode protection (10).
- This protective end must be kept easy to dismantle.
- Screw tightly the cable gland on the head.
- Rotate the head in the good position and block it with the two screws (11).

## DISASSEMBLING THE ELECTRODE

Proceed as above on reverse steps; take care not to lose the O-ring (8).

## CALIBRATING THE MEASURING SYSTEM

You may find detailed information in the instruction manuals of pH monitor.

- Unscrew the electrode protection end (10).
- Clean up the electrode with tap water.
- Adapt the buffer flask on the holder (7).
- Ending the calibration sequences, screw in the electrode protection.

This protection end should kept easy to dismantle, screw it by hand.

Holder outer diameter and electrode length are in correspondence with our buffer flasks; no risk to damage the electrode when performing calibration. The flask grips on holder; the probe can stand on the floor

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Immersion probe with built-in  
temperature sensor  
**9337**

22-01-2018

D-130.02-EN-AB

pH

130-02/2

# Immersion probe pH/ORP 9339

- Electrode protection holder
- Easy calibration routine
- For 1 electrode (fitting PG 13.5)
- Dismantable protection end
- Material: AISI 316 L



## APPLICATIONS

- pH and ORP measurements in tank, vessel, etc.

## DESCRIPTION

Holder 9339 insures positioning and protection of electrode in a tank; it allows an easy calibration routine with low risks to break the electrode.  
Standard material is stainless steel 316 L.  
Fitting on site is done with a fixed flange (AISI 316 L) welded on the extension tube.  
Flange type, dimensions, distance to electrode end, other fitting type: feasibility must be confirmed by our technical department.  
Cable passes through a cable gland fitted on a clamp connection, or on a head housing in aluminum alloy.

### Associated electrodes:

Associated electrodes are to be selected through the data-sheets 150 -01 & -03.  
Only electrodes with fitting PG 13.5 are convenient.

## TECHNICAL FEATURES

Immersion height	1 000 mm <i>Other on request (From 200 up to 3000 mm)</i>
Construction	AISI 316 L
Cable output	Or 1 Cable gland M10, centered on tri-clamp fitting Or 1 Cable gland PG 16 on aluminum head, for pH and temperature signal cables
Fitting	Or ND50 fixed flange, AISI 316 L Or ND50 adjustable flange, AISI 316 L <i>(Other ND on request)</i>

OPTION *Temperature sensor Pt 100  $\Omega$  at 0 °C, 3-wire*

**CE conformity: The instrument meets the legal requirements of the current European Directives**

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
131 150	9339-PE	AISI 316 holder, 1 m, cable gland M 10
131 155	9339-T	AISI 316 holder, 1 m, cable gland PG 16 Pt 100 $\Omega$ , aluminum head, cable gland PG 16
131 200	9359-F	ND50 fixed flange, PN 10/16
131 210	9359-C	ND50 adjustable flange, PN 10/16



Welded fixed flange, ND50



Height adjustable flange

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Immersion probe pH/ORP  
**9339**

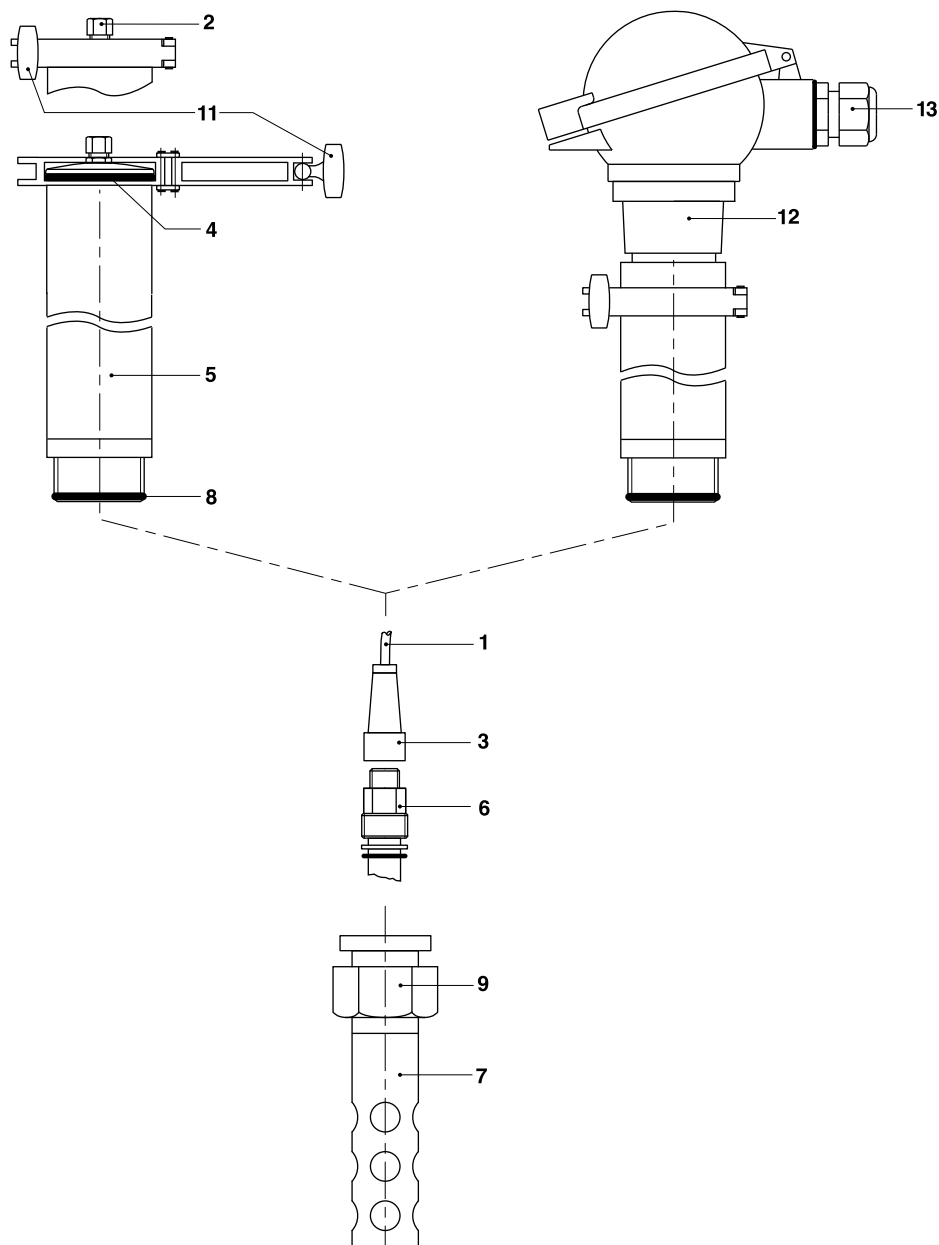
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D-131.01-EN-AB

pH

131-01 /1





- 1) pH measurement cable 9060
- 2) Cable gland on tri-clamp end
- 3) Connector 9054
- 4) EPDM o-ring seal for tri-clamp end
- 5) Extension tube, O.D. 42.4 mm
- 6) pH/ ORP electrode
- 7) Electrode holder on dismantable protection end
- 8) FPM o-ring seal
- 9) Loose nut
- 10) Electrode holder with fitting option for rocking bucket
- 11) Tri-clamp end cap
- 12) Aluminum head housing
- 13) Cable gland PG 16

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Immersion probe pH/ORP  
**9339**

03-11-2020

D-131.01-EN-AB

pH

131-01 /2

# Immersion probe for pH and ORP measurements 9346



- Electrode holder and protector
- Easy calibration routine
- For 2 or 3 electrodes PG 13.5
- PVC or PPH construction
- Adjustable flange or PE collar fitting
- Cables: through pressure glands
- Easy to use, easy to install

## APPLICATION

For pH or ORP measurements in tank, drain, basin, open channel. With or without temperature compensation. Probes 9346 are designed to avoid electrode damaged during calibration and to protect the measuring connections from humidity.

## ASSOCIATED ELECTRODES

Only electrodes with sealing by PG 13.5 thread could be mounted on our probes. Associated electrodes for pH and ORP are described on data-sheet 150-01.

## TECHNICAL FEATURES

Immersion depth	1 m as standard (from 0.2 up to 3 m on request)
Construction	PVC or PPH
Fitting	Flange PE 9358 for adjustable immersion depth or PE collar for tube O.D. 75 mm
Operating temperature	+ 55 °C for PVC model (P < 1 bar) +100 °C for PPH model (P < 0 bar)

For temperature limits you may consider also limits of operating conditions of electrodes.

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
135 520	9346/2 PVC	Probe PVC - 2 fittings PG 13.5
135 530	9346/3 PVC	Probe PVC - 3 fittings PG 13.5
135 620	9346/2 PPH	Probe PPH - 2 fittings PG 13.5
135 630	9346/3 PPH	Probe PPH - 3 fittings PG 13.5
135 112	9358 PE	Adjustable PE flange for probes 9346
P41 576	Ø 75 PE	Collar for probes 9346

## TEMPERATURE COMPENSATION

Temperature probe 9090 for automatic compensation are listed on data-sheet 150-02.

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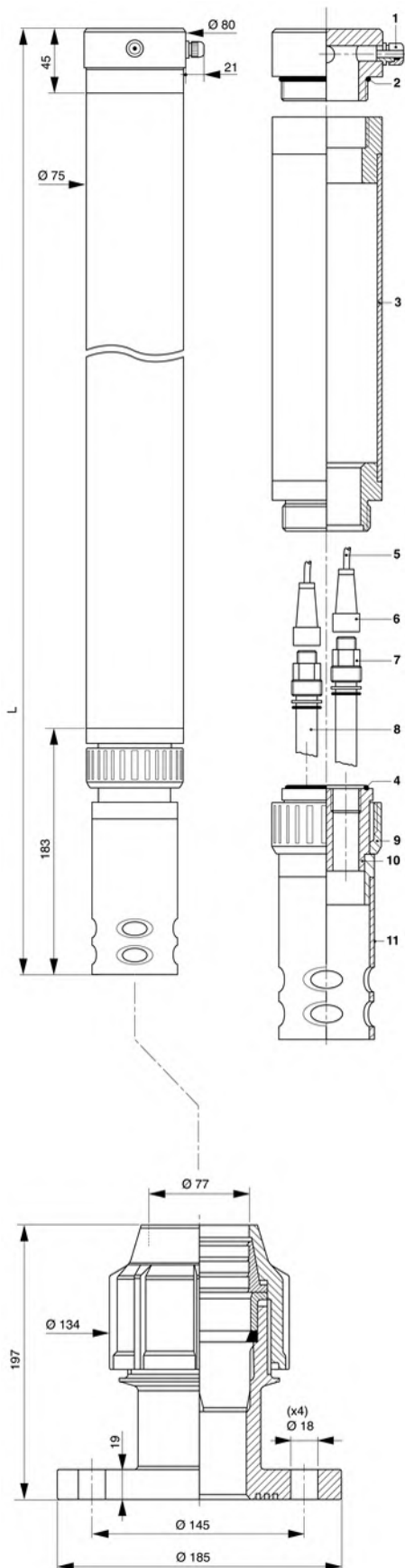
Immersion probe for pH and  
ORP measurements  
**9346**

10-03-2017

D-135.01-EN-AB

pH

135-01 /1



## ELECTRODE MOUNTING

Introduce the pH cable 9060 (5)  
 Through the cable gland (1).  
 Cable must cover inside distance: probe length plus 20 cm.  
 Mount the connector 9054 (6) to the cable (manual msa160-01).  
 Check the seal (2) is on place  
 Screw probe head (1) on extension tube (3).  
 Ensure that connector goes out from bottom of tube.  
 Install the electrode (7 and 8) on the holder (10).  
 Fit the O' ring (4) on place.  
 Screw tightly the connector on the electrode.  
 Pull cable through cable gland in order to have  
 electrode holder close to the extension tube.  
 The cable must not be stretched inside the tube.  
 Screw nut (9) keeping holder in its position.  
 Tight firmly this nut by hand, not excessively.  
 Prevent the electrode holder to rotate during this operation.  
 Screw on the electrode protection end (11) by hand.  
 This protective end must be easy to screw off.  
 Screw on the cable gland (head housing).

## ELECTRODE DISMANTLING

Proceed as above on reverse steps; Be careful not to lose the O-ring (4)

## CALIBRATION

You may find detailed information in the instruction manuals of pH monitor.  
 Rinse the electrode with water.  
 Unscrew the electrode protection end.  
 Insert the electrode end in the buffer.  
 Ending the calibration sequences, screw gently by hand, the electrode protection  
 back in place.

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Immersion probe for pH and  
 ORP measurements  
**9346**

10-03-2017

D-135.01-EN-AB

pH

135-01 /2



# In-line holders for 1 to 3 electrodes, pH or ORP

## 9200 series

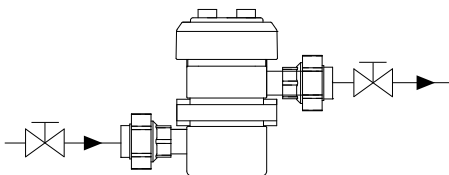
- Holder for 1, 2 or 3 electrodes
- Construction: PVC or PPH
- Process fitting: Union ND 20, diam. 25 mm



Holder 9223



Holder 9222



Installation example

### APPLICATIONS

In-line or by-pass holder for up to 3 sensors on pH, ORP, temperature monitoring.

### DESCRIPTION

9200 series holders allows pH, ORP and/or temperature in-line measurements (flow through cells). They are designed to receive measuring electrodes with a fitting PG 13.5 (data-sheet 150-01 and 150-02). Choice of materials should consider chemical compatibilities and operating conditions of the application.

Mounting: The inlet of fluid is lower than the outlet in order to maintain the electrode in immersion in the liquid.

For pipes with a diameter greater than 25 mm, installation must be done as a bypass, adding a pressure drop (restriction, elbow, valve, etc.) in order to ensure a correct circulation of liquid around the electrodes. It is recommended to provide valves, upstream and downstream, to have at any time, comfortable calibration and maintenance routines.

### TECHNICAL FEATURES

Materials	Body: PVC - Unions ND 20, diam. 25 mm, for solvent welding Body: PPH - Unions DN 20, diam. 25 mm, for welding (Flanged fittings on request)
Seals	FPM
Temperature	PVC: 0 ... 50 °C PPH: 0 ... 90 °C
Pressure limit	6 bar

### CODE NUMBERS AND REFERENCES

Standard supply: Holder delivered with 2 stoppers PG 13.5 and 1 mounting collar

Code	Reference	Description
140 301	9222	PVC Holder for 1 to 3 electrodes PG 13.5
140 351	9223	PPH Holder for 1 to 3 electrodes PG 13.5

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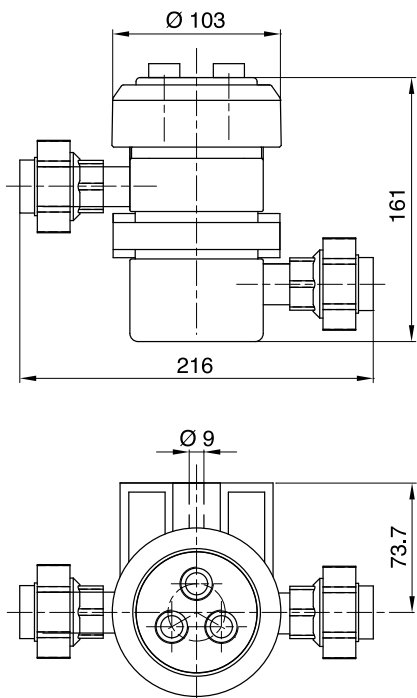
In-line holders for 1 to 3  
electrodes, pH or ORP  
**9200 series**

15-06-2018

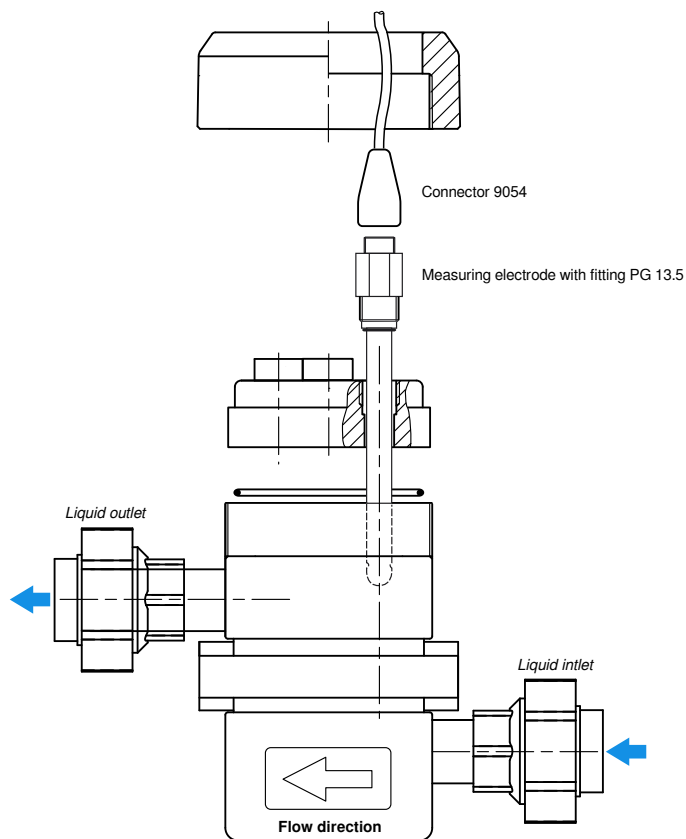
D-140.01-EN-AE

pH

140-01 /1



Overview (electrodes not included)



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In-line holders for 1 to 3 electrodes, pH or ORP  
**9200 series**

15-06-2018

D-140.01-EN-AE

pH

140-01/2

# In-line electrode holder for 1 electrode, pH or ORP 9240



- Holder for 1 electrode
- Construction: in PVC
- Spigot ends Ø 25 mm for solvent welding

## APPLICATIONS

Holder for pH or ORP electrodes to install in line or as a by-pass.

## DESCRIPTION

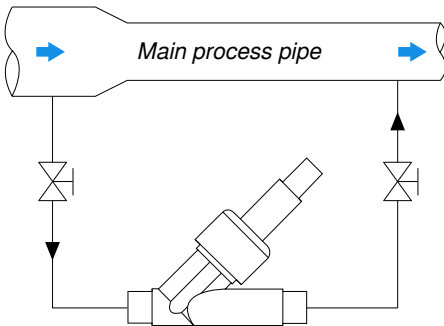
Holder 9240 with suitable electrode allows in-line measurements of pH or ORP under pressure.

Holder is suitable for electrodes with fitting PG 13.5 (see data-sheet 150-01).

For a pipe with a diameter greater than 25 mm, its installation must be done in a bypass, adding a pressure drop (restriction, elbow, valve, etc.) to ensure proper circulation of the liquid around the electrode. It is recommended to install valves, upstream and downstream of the bypass, to allow easiest calibration and maintenance routines.

For a direct on-line measurement, see the holders 9400 series (data-sheet 141.01).

Note: An average flow rate limit to respect is max. 500 l/h



Example as a bypass

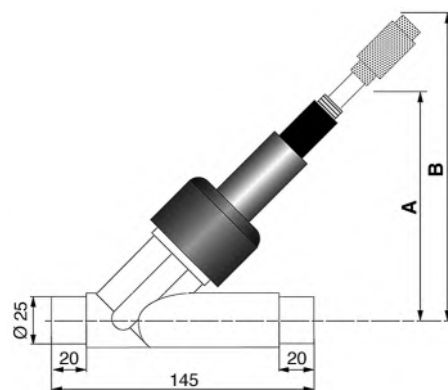
## TECHNICAL FEATURES

Materials	PVC / Transparent PVC
Seal	EPDM
Temperature	0 ... +50 °C
Pressure	Max. 7 bar at 20 °C
Fittings	O.D. 25 mm spigot end, for solvent welding

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
140 600	9240 PVC Y	Te Holder for for 1 electrode PG 13.5

## DIMENSIONS



With coaxial connector 9054:  
A = 140 mm and B = 280 mm

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In-line electrode holder for 1  
electrode, pH or ORP  
**9240**

14-06-2019

D-140.02-EN-AC

pH

140-02/1

# On-line holder for pH or ORP electrode 9400



Type 9423

- On-line holder for 1 electrode
- For full piping
- Materials: PPH or PVDF
- For inserting and removing the electrode (PG 13.5) with full pipe

## APPLICATIONS

- Holder for pH/ ORP electrodes for on-line mounting, full pipe

## DESCRIPTION

9420 Series holders, with pH or ORP electrodes, allow measurements directly on pipe under pressure. Holders 9423 and 9424 allow assembly and disassembly of the electrode even on full pipe, for calibration.

*Note: Assembly or disassembly only when the pipe is not under pressure.*

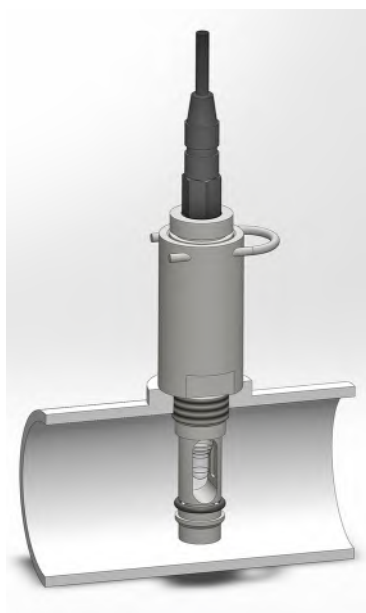
### Associated electrodes:

9420 series holders are compatible with combined electrodes (fitting PG 13.5).  
Caution: Conductivity cells BF1200 are not compatible with holders 9400 series.  
Please contact us for more information and solutions according your operating conditions.

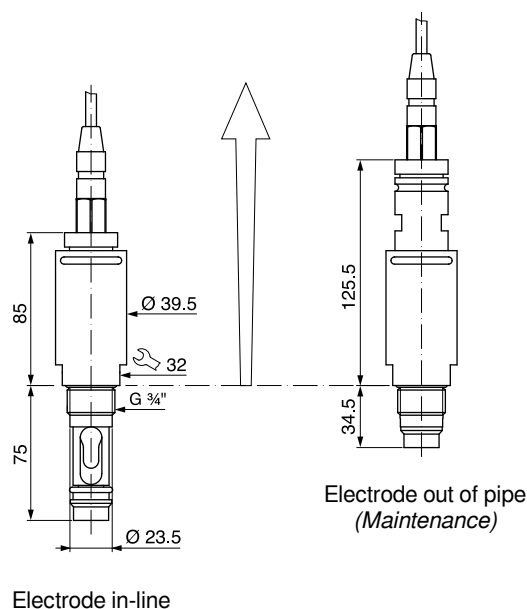
## CODE NUMBERS AND REFERENCES

Code	Reference	Materials	Temperature vs. pressure
141 425	9423	PPH / FPM	Max. 70 °C (Atm), Max. 50 °C at 5 bar
141 426	9424	PVDF / FPM	Max. 100 °C at 5 bar

## DIMENSIONS



- Fitted on full pipeline



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On-line holder for pH or ORP  
electrode  
**9400**

04-03-2020

D-141.01-EN-AC

pH

141-01 /1

# On-line holder for pH and ORP electrodes 9410



- Holder for 1 electrode
- For stainless steel piping
- Pipe from ND 50 mm
- Wet parts: AISI 316 L; FPM
- Fitting: Adaptor to weld on pipe

## APPLICATIONS

Holder for pH or ORP electrodes PG 13.5, on-line, with full pipe.

## DESCRIPTION

9410 holder with pH or ORP electrodes PG 13.5 allows measurements on-line with full pipe under pressure; for Nominal Diameter of 50 mm or larger.

The fastening system facilitates removal of the measuring electrode for maintenance.

Caution: Pipeline must not be under pressure during removal of electrode for calibration routine.

### Associated electrodes:

The holder is convenient for combined electrodes with standard fitting PG 13.5. We may help you on choosing the right type of electrode according operating conditions; See also data-sheet 150-01.

## TECHNICAL FEATURES

Construction	AISI 316 L
Sealing	FPM
Fitting	Ø 41.9 mm; To weld on pipe
Temperature limit	110 °C Max.
Pressure limit	16 bar Max.

## CODE NUMBER AND REFERENCE

Code	Reference	Description
141 410	9410	AISI 316 L holder, adaptor to weld on pipe

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On-line holder for pH and ORP  
electrodes  
**9410**

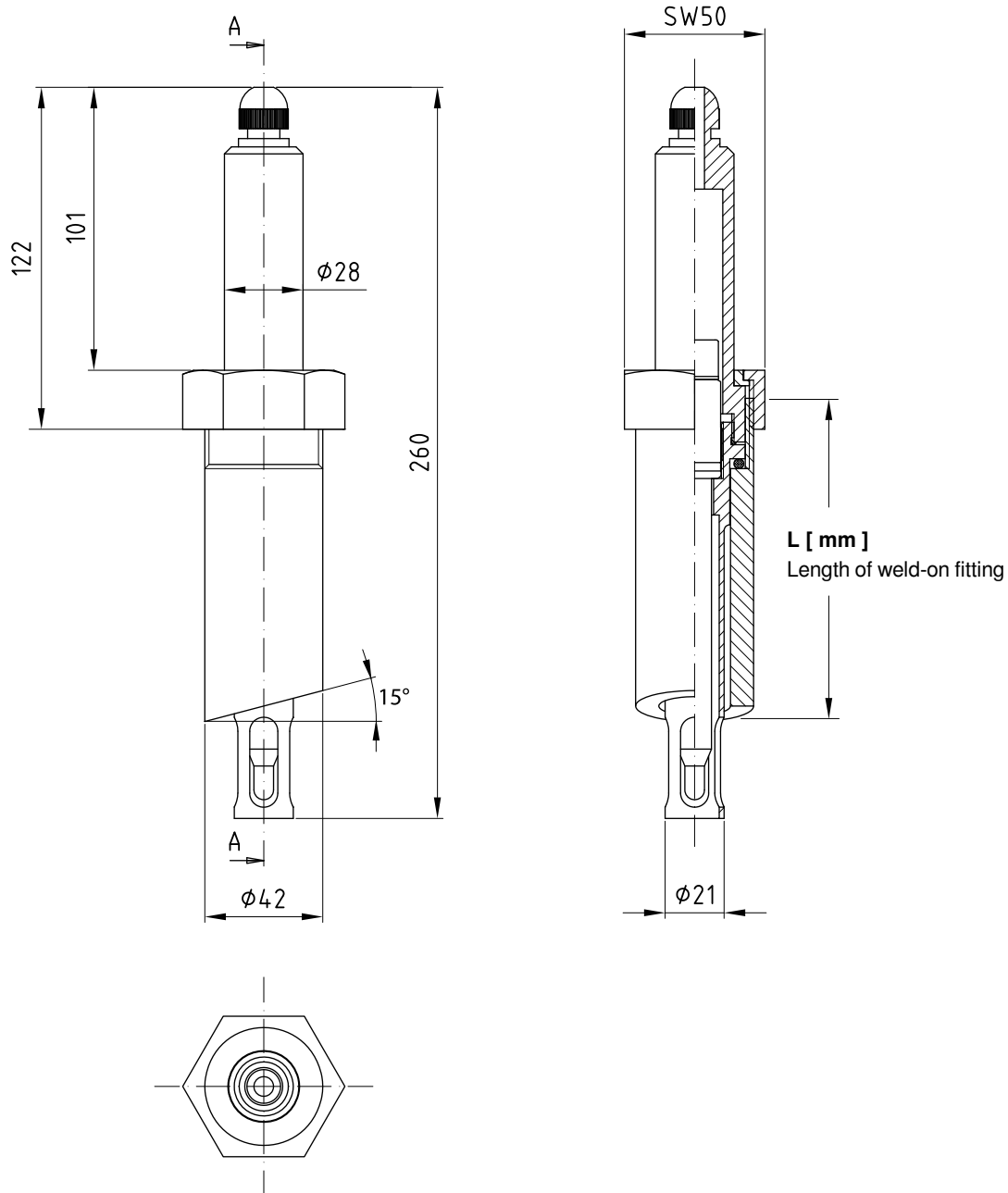
17-05-2019

D-141.02-EN-AD

pH

141-02/1





	DN 50	DN 65	DN 80	DN 100	DN 110	DN 125	DN 150	DN 200	DN > 200
L [ mm ]	115	108	100	90	85	78	65	40	40

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On-line holder for pH and ORP electrodes  
**9410**

17-05-2019

D-141.02-EN-AD

pH  
**141-02/2**

# In-line electrode holders under pressure

## 9500



- pH or ORP measurement
- Construction: AISI 316 L
- Pressure max. 16 bar
- Temperature max. 110 °C
- Fittings PG13.5 or BSP 1/2"
- For electrodes with fitting PG 13.5
- Process connections ND 15 to 32 mm

### DESCRIPTION

This electrode holder series is designed for pH/ ORP in-line measurements under pressure. Electrodes are described on data-sheet 150-01. It is possible to fit up to 3 sensors, pH and/ or ORP electrodes, temperature sensor. These holders are made of AISI 316 L with seals of EPDM. For an easy start up and operation, the lid is locked with a tri-clamp, to ensure a perfect water tightness and pressure resistance.



### TECHNICAL FEATURES

Construction AISI 316 L  
 Pressure max. 16 bar at 20 °C  
 Temperature max. 110 °C  
 Fittings For weld-on ends, flanges or unions  
 Option FPM seal

### CODIFICATION



#### FITTINGS

- 1 Flanges
- 2 Threaded ends
- 3 To weld-on ends
- 4 Unions, spigot ends (male, to weld-on)
- 5 Unions, sockets (female, for thread)

#### NUMBER OF SENSORS

- 1 One
- 2 Two
- 3 Three

#### DIAMETER [mm]

- 1 ND 15
- 2 ND 20
- 3 ND 25
- 4 ND 32

142	-	-	-
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In-line electrode holders  
under pressure  
**9500**

05-04-2017

D-142.01-EN-AA

pH

142-01 /1

# Probe holder poles 8306



- For immersion probes 9336, 9337 or 9346
- Totally modular
- All stainless steel and aluminum
- Protecting roof for monitor
- Rotation on 360°
- Translation on both axes
- Quick installation

## DESCRIPTION

This holder is designed for pH, ORP or dissolved oxygen sensors mounted on immersion probe holders beside a tank, a basin or an open channel (See data-sheets 130-01, 135-01 & 451-01).

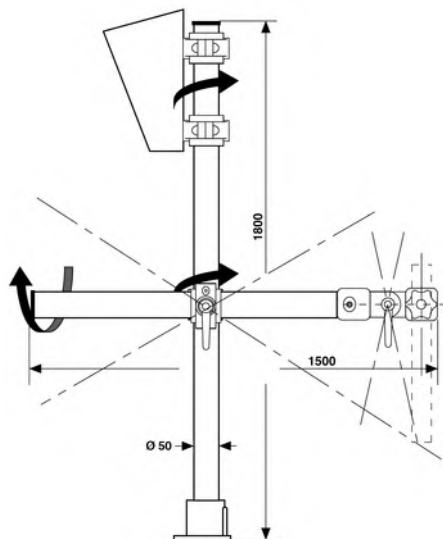
It allows adjustable distances and orientation on 360° to clear of barrier, post, border.

Equipped with a protecting roof, the mounted monitor is accessible for reading and configuration.

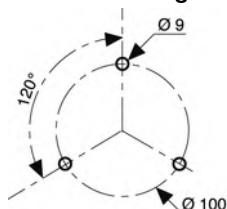
Tubes are made of stainless steel, there are oblong holes to pass through the cables. Base and junction devices are made of aluminum.

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
143 052	8306P	Base of holder 8306 + vertical pole
143 061	8306AUV1	Protecting roof for 1 BAMOPHAR
143 062	8306AUV2	Protecting roof for 2 BAMOPHAR
143 071	8306BS36	Arm holder for 1 probe (9336, 9337 and O.D.O.)
143 072	8306BS46	Arm holder for 1 probe 9346
143 073	8306BD36	Twin arm holders for 2 probes (9336 and/or 9337)



Ground fittings:



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Probe holder poles  
**8306**

10-03-2017

D-143.01-EN-AA

pH

143-01 /1

# FLOATING HOLDERS



(a)



(b)

- Floating holders for varying levels
- Type a: for pH immersion probe
- Type b: for hydrocarbons layer probe
- Construction: AISI 316 L float
- With fastening rings

## APPLICATIONS

Floating holders allow measurement or detection (pH, hydrocarbons layer thickness) on varying level of fluids, even with great amplitudes. They may be secured by two fastening rings and accept slow stream in rivers, basins, lagoons, lakes.

### Examples

- Rainwater retention
- Underground reservoir

## PRINCIPLE

Floating holder for pH is annular, in stainless steel, with a great stability. Adjustable (sliding flange) fitting allows adjustment of immersion depth of 9336 pH probe.

For hydrocarbon layer detector, the floating holder is based on 3 stainless steel floats, allowing free movement of hydrocarbon fluids.

Immersion depth of probe is adjusted through the fitting.

On each type there are 2 rings to secure the complete system.

Design is a robust construction for no necessary maintenance.

(a): Floating holder for pH

(b): Floating holder for hydrocarbon fluids survey

Contact us for any specific application.

## CODE NUMBERS AND REFERENCES

Code	Description
143 510	Floating holder for pH immersion probe
143 500	Floating holder for hydrocarbon layer probe

(Probes are not included in the supply, to order separately).

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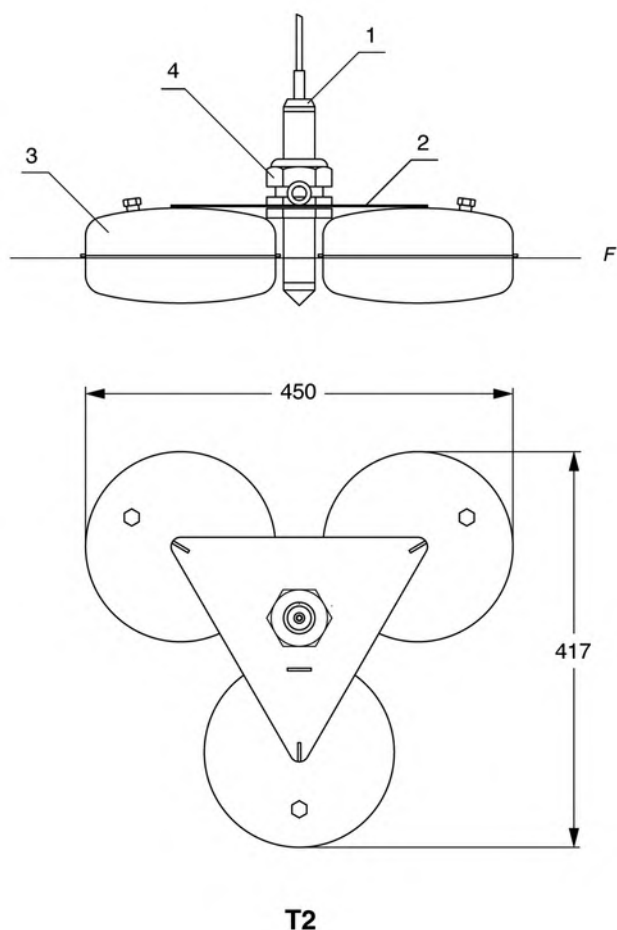
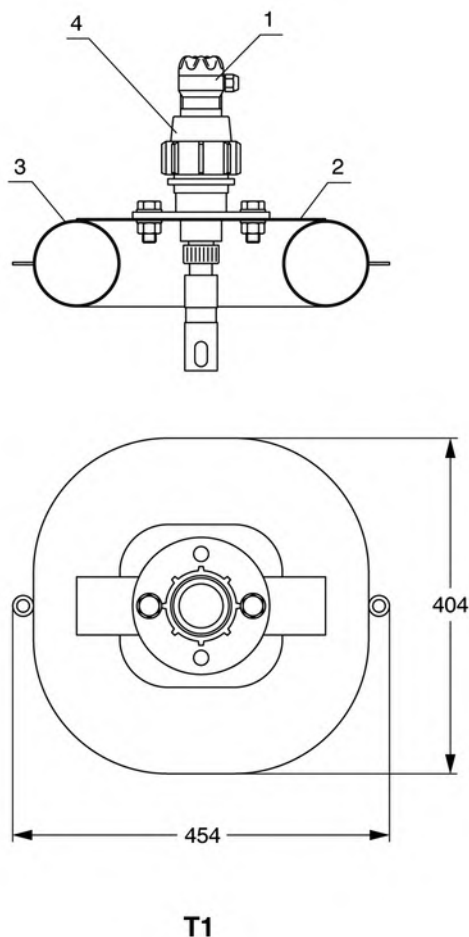
## FLOATING HOLDERS

15-03-2017

D-143.02-EN-AC

pH

143-02/1



**Type a: Floating holder for pH immersion probe**

- (1): Immersion probe 9336, height max. 1 m
  - (2): Plate
  - (3): Float AISI 316 L, Ø 100 mm
  - (4): Adjustable fitting
- The probe is not included.

**Type b: Floating holder for hydrocarbons layer probe**

- (1): Hydrocarbon layer probe
  - (2): Plate
  - (3): Floats AISI 316 L, Ø 200 mm, 3 pieces
  - (4): Adjustable fitting, PG M50 x 1,5
- F: Water line
- The probe is not included.

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**FLOATING HOLDERS**

15-03-2017

D-143.02-EN-AC

pH

143-02/2



# Auto-cleaning probe 9360



Probe 9360 completes an immersion probe 9336

- Chemical and mechanical cleaning
- For one pH electrode PG 13.5
- Easy to install
- Installation at any time on existing 9336 probe

## APPLICATIONS

Where pH is measured, there is a risk of electrode fouling; result is a drift of measured value. To be free of this, it is necessary to clean carefully the electrode. For this purpose, we designed the auto cleaning probe 9360 to inject pressurized cleaning liquid on the electrode to remove impurities.

For instance: injection of hydrochloric acid to remove sodium carbonate.

## DESCRIPTION

The probe 9360 accepts our electrode holder "probe 9336" (data-sheet 130-01). The tubing for cleaner liquid is all inside the probe body.

The auto-cleaning probe may be adapted at anytime on existing pH immersion probe 9336.

The cleaner fluid, water or acid + water, is projected through 3 nozzles around the electrode, 2 mm close to the bulb.

Fitting of the probe consist of an adjustable flange.

The sliding ND 65 mm flange, allows adjustment of immersion depth.

Only the immersion probe 9336 may be used with the system 9360.

The cleaning sequence is set up by our BAMOPHAR or BAMOPHOX. During the cleaning, the regulation is switched on "STAND-BY", not to interfere with the process.

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
145 700	9360	PCV Auto cleaning probe, 1 meter
135 112	9358 PE	Adjustable flange, PE, ND 65 mm



Close view on 9360 bottom end

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Auto-cleaning probe  
**9360**

10-03-2017

D-145.01-EN-AA

pH

145-01 /1

# Industrial applications electrodes

## pH - ORP

- Suitable with mainly all pH-meters
- Combined electrodes (measurement + reference)
- For connectors type S7
- Gel electrolyte



9308 RP2

9308 RP



9318 RD

9312 OR

All types = Ø 12 mm,  
length 120 mm, PG 13.5

### DESIGN

#### Reference system:

When no specific mention applies, our electrodes use a reference system as Ag/AgCl with a porous reference junction in ceramic: theoretical zero is at pH 7 (0 mV). Theoretical gain is close to 58 mV per pH units (at 20 °C). Fluid conductivity must be over 50 µS/cm

#### pH combined electrodes:

Glass and reference electrodes are always as a combination system. The measuring electrode is totally protected by the surrounding low resistive electrolyte from the reference electrode. The measuring area corresponds to special glass bulb end.

#### ORP combined electrodes:

For these electrodes, the glass bulb is replaced by a metallic element, in platinum or gold. Gold is mainly used for ORP measurement in liquids containing cyanides.

### DIMENSIONS - MOUNTING

All our electrodes have a S8 plug to receive a coaxial connector ref. 9054. Safe fitting and water tightness is ensured with a threaded connector type Pg 13.5. Our industrial electrodes fit on adapted electrode holders, in order to protect them and for optimized measurements.

For immersion in tank please see the data-sheets 130-01, 135-01 and 145-01. For in-line flow through cells see the data-sheets: 140-01, 140-02, 141-01 and 142-01.

### CODE NUMBERS AND FEATURES

Code	Type	Parameter	Range	Element
150 210	9321	pH	0...12 pH	Glass
150 112	9308 RP	pH	0...14 pH	Glass
150 113	9308 RP2	pH	0...14 pH	Glass
150 342	9387	pH	0...14 pH	Glass
150 117	9318 RD	ORP	±2000 mV	Platinum
150 120	9312 OR	ORP	± 1500 mV	Gold (ring)
150 125	9326 F	pH	0...12 pH	Glass

Code	P max.	T° max.	Junction	PG 13.5
150 210	6 bar	-30...+30 °C	Ceramic (x3)	Fixed
150 112	6 bar	-5...+60 °C	Ceramic (x1)	Fixed
150 113	10 bar	-5...+70 °C	PTFE	Rotating
150 342	10 bar	-5...+100 °C	Ceramic (x1)	Fixed
150 117	6 bar	-5...+80 °C	Ceramic (x1)	Fixed
150 120	2 bar	-5...+70 °C	Ceramic (x1)	Rotating
150 125	6 bar	-5...+60 °C	PTFE	Fixed

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Industrial applications  
 electrodes  
 pH - ORP

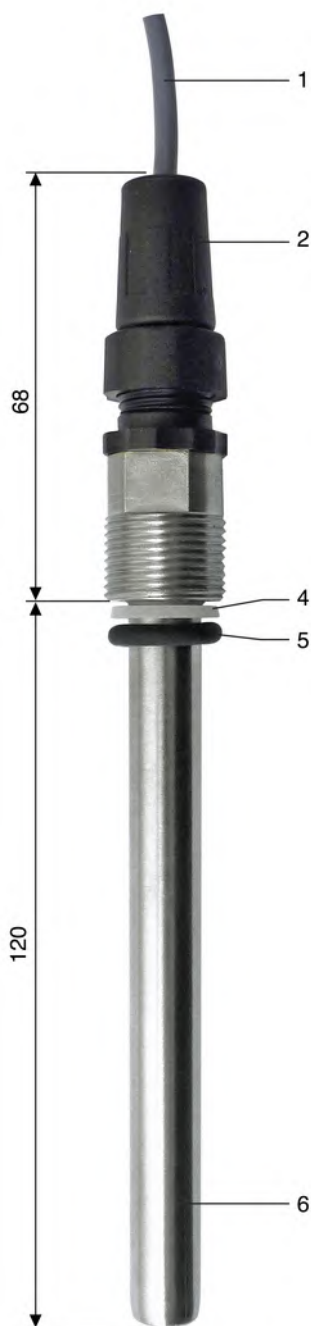
10-03-2017

D-150.01-EN-AA

pH

150-01 /1

# Temperature compensation probe 9094 probe



9094

- For mounting on holders 9200, 9500 et 9346
- Sensor Pt 100  $\Omega$  at 0 °C
- Versions: Simplex or Duplex
- Fitting PG 13.5

## APPLICATION

9090 probes with sensor Pt 100  $\Omega$  are designed for temperature measurement in the range -20 et +150 °C for pH monitoring systems.

Built-in sensor is a Pt resistor, 100  $\Omega$  at 0 °C; probe is or simplex or duplex construction.

Probes 9090 are in conformity with standard DIN 43760.

They are used in particular on pH monitoring systems for automatic compensation of temperature.

## DESCRIPTION

The sensor is a Pt100 resistor, built-in a stem.

The stem is mounted on holder with its own fitting PG 13.5 or with an additional pressure gland  $\varnothing$  12 mm (not provided).

Connection: specific connector with a low contact resistance.

The connector is molded on the cable to protect wires against humidity.

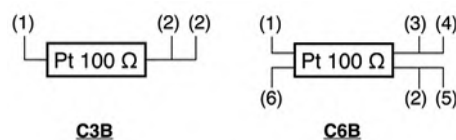
Connector is for shielded cable, 3 or 6 wires (0,22 mm<sup>2</sup>).

9094 probe: (1)= Shielded cable; (2)= Connector; (3)= PG 13.5; (4)= Nylon seal; (5)= O-ring seal; (6)= Stem  $\varnothing$  12 mm

## TEMPERATURE LIMITS

PVC	0 ... +45 °C
PVDF	-20 ... +140 °C
Stainless steel	-20 ... +150 °C

## ELECTRICAL CONNECTION



(1)= White; (2)= Red; (3)= Yellow, (4)= Blue;  
(5)= Black, (6)= Green

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
150 903	9093	Temperature probe in PVDF - L = 120 mm
150 904	9094	Temperature probe in AISI 316 L - L = 120 mm
150 906	C3B/10/CO	Connector with C3B cable, 10 m long
150 907	C3B/20/CO	Connector with C3B cable, 20 m long
150 908	C6B/10/CO	Connector (Duplex) with C6B cable, 10 m long
150 912	C6B/20/CO	Connector (Duplex) with C6B cable, 20 m long
150 917	9096	Temperature probe in PVC, L= 120 mm - Duplex
150 918	9097	Temperature probe in PVDF, L= 120 mm - Duplex

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Temperature compensation  
probe  
**9094 probe**

10-03-2017

D-150.02-EN-AB

pH

150-02/1

# pH heavy duty electrodes 2000 series



- Pressure limit: up to 30 bar
- High chemical resistance
- Long lifetime
- No KCl leaking

## SPECIFIC REFERENCE SYSTEM

Our reference system includes a cell Ag/AgCl type, built in a conductive polyester jacket, which external surface is used as electrolyte and junction.

So, 2000 series electrodes are free of trouble from porous junction. Complete ionic conduction is through the interface in polyester, therefore the reference protection is optimum. Reference is protected against toxic salts and pollutants.

## APPLICATIONS

- Ultrapure water
- Chlorinated water
- Polluted fluids
- WWTP
- Fluids contaminated with sulphides or proteins
- Measurements in fluids with suspended solids and emulsions

## TECHNICAL FEATURES

Type	: Combined electrode
Reference junction	: Non porous and solid interface with ionic conductivity Ag/AgCl in KCl 2.8 mol/L
Measuring range	: 0 ... 13 pH
Impedance Glass pH/Reference	: < 400 MΩ / 1 MΩ
Pressure	: 0 ... 30 bar (increasing slowly)
Temperature	: 0 ... 100 °C
Dimensions	: 12 x 120 mm
Connector	: S8 type
Fitting	: PG 13.5

## CODE NUMBERS AND REFERENCES

Code	Reference	Measurement	Range	Pressure	T° max.
150 370	2001	pH	0...13	0...30 bar	100 °C

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pH heavy duty electrodes  
**2000 series**

05-10-2016

D-150.03-EN-AA

pH

150-03/1

# pH and ORP accessories



## Coaxial connectors (DIN)

(1) & (2): To connect cable 9060 type on any pH/ mV-meters or electrodes with head S7 type.

This patented connector allows connection with cables below, on site with only a soldering iron thin pane and a wire stripper.

Code	Reference	Description
160 200	9054	Coaxial connector (to electrode or pH-meter)
160 100	9050	DIN connector, metal for pH-meter

## DIN molded connector 9054 on cable 9060 for pH

(3): Connection electrode / pH-meter. Convenient distances from power supply cables and process signals must be respected.

Code	Description
160 205	DIN molded connector 9054 on 5 m long cable 9060 type
160 210	DIN molded connector 9054 on 10 m long cable 9060 type
160 220	DIN molded connector 9054 on 20 m long cable 9060 type
160 230	DIN molded connector 9054 on 30 m long cable 9060 type

## Cable 9060 special for pH - Triple coaxial cable 9061 (double shield)

9060: Connection electrode / pH-meter for distances less than 30 m. Convenient distances from power supply cables and process signals must be respected.

9061: Connection electrode / pH-meter for distances over 30 m and/or areas where electrical interferences exist.

This cable 9061 has a second shield to protect the measuring signal.

The second shield (external) must be connected to ground and only on monitor side.

Convenient distances from power supply cables and process signals must be respected.

9059: Workshop mounting of any connector 9054, 9050, BNC, etc. on the cable of your choice (Code 160 400)

Code	Reference	Description
160 300	9060	Coaxial cable for pH
160 310	9061	Triple coaxial cable (double shield)

## Junction box 9055

(4): IP 55, case, 2 plugs S7, shielded inside

Code	Reference	Description
160 250	9055	Junction box

## (5) : Buffer solutions

Code	Reference	Description
160 500	9005	KCl electrolyte, 500 ml
160 607	9011	pH 7 buffer, 100 ml
160 604	9012	pH 4 buffer, 100 ml
160 609	9013	pH 10 buffer, 100 ml
160 616	9016	rH 200 mV solution, 100 ml

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## pH and ORP accessories

10-03-2017

D-160.01-EN-AA

pH

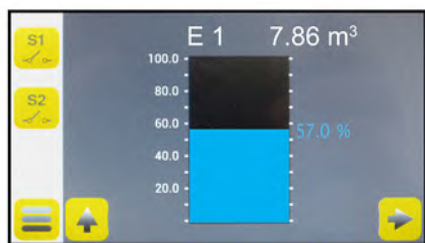
160-01 /1



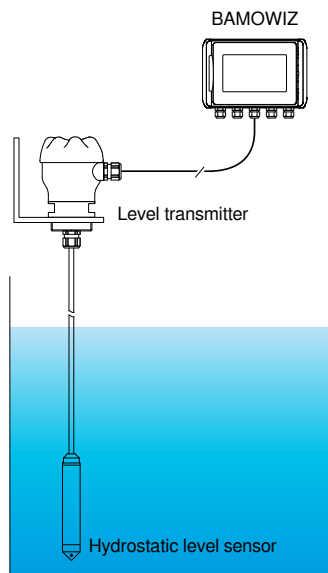
# Digital and graphical display BAMOWIZ



Digital display



Graphical display (Bar Graph)



Operating, example

- Graphic color touch-sensitive screen
- Multilingual end-user interface
- 2 (3) Inputs, 4-20 mA
- Setting of 8 thresholds for 2 (3) relays
- Units: set on keyboard
- 1 (0) Output 4-20 mA
- 1 (0) Serial interface RS485 MODBUS
- 1 (0) Frequency input

## APPLICATIONS

- Local display of any process (Level, turbidity, pressure, etc.)
- Flow counter and totalizer through frequency input
- Display and monitoring of measurements
- Display of level or volume with possibility of linearization
- Differential between two input signals (example: differential pressure with 2 sensors)

## DESCRIPTION

The instrument has a colour touch-sensitive screen to navigate through an intuitive and multilingual menu. BAMOWIZ converts analogue input signals (4-20 mA) and delivers clear information on its large digital and graphic (Bar Graph) display for an easy reading of measurements and thresholds status.

2 versions of BAMOWIZ available to cover different applications. Version 302 comes with 3 inputs, 2 relays, 8 thresholds to assign on 1 or 2 relays. Version 213 comes with 2 inputs 4-20 mA, 1 output 4-20 mA, 8 thresholds to assign at 2 or 3 relays, 1 frequency input and a serial interface RS485 MODBUS.

Settings are keyword protected.

BAMOWIZ has a flexibility of use for analysis of input data such as the display of level, volume or a specific parameter (pressure, temperature, turbidity, etc.). The keyboard on the touch screen allows you to set the measuring unit (Example:  $\mu\text{S}$ , Ohm,  $\Omega$ ,  $^{\circ}\text{C}$ , bar, etc.).

### To resume, BAMOWIZ allows:

- To choose the language
- To set the measurement range
- To choose the unit to display for each input
- To calculate and display the volume inside square or cylindrical tanks, or specific tanks (Linearization with 20 steps).
- To calculate and display the differential between inputs 1 and 2
- To set each of the 8 thresholds
- To assign each thresholds to relay outputs
- Counter and totalizer through the frequency input

### From graphic display you can access to:

- For each input: Identification (TAG) - Value - Unit
- Synoptic of measurements (Bar Graph)
- Identification and status of each relay
- Display of minima and maxima

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Digital and graphical display  
**BAMOWIZ**

16-10-2020

D-217.01-EN-AG

RE

217-01 /1

**TECHNICAL FEATURES**

User interface                      Graphic color touch-sensitive screen, 4/3  
 Resolution of 480 x 272 pixels  
 Languages                            English; French; German;  
 Polish; Portuguese; Spanish  
 Alphanumeric touch keyboard    Dedicated for each language  
 Displayed measuring units        By type writing, according to the process

**BAMOWIZ ... 302**  
 Input signal                            3 Inputs 4-20 mA, 2-wire, with power supply to sensors 12 ... 11 V DC / 0 ... 20 mA (input load 50Ω)  
 Relay outputs                          2 relays, N.O. contacts, potential free  
 Thresholds                            Up to 8 thresholds to assign to both relays  
 Switching power                      3 A / 250 V AC  
 Hysteresis                             To set between 0 and 100 %  
 Delay                                    To set between 0 and 9999 s

**BAMOWIZ ... 213**  
 Input signal                            2 Inputs 4-20 mA, 2-wire, with power supply to sensors 24 V DC / 0...20 mA (input load 50Ω)  
     1 Frequency input (0.04 Hz up to 10 kHz)  
 Output signal                          1 output 4-20 mA (with or without linearization)  
 Relays                                    3 relays, N.O. contacts, potential free  
 Thresholds                            Up to 8 thresholds to assign to 2 or 3 relays  
 Switching power                      3A / 250 V AC  
 Hysteresis                             To set between 0 and 100 %  
 Delay                                    To set between 0 and 9999 secondes  
 Communication                        Serial interface RS485 MODBUS

Other features                        Linearization through 20 steps  
     Graphical display (Bar Graph) of measurements  
     Display of min. and max. values  
     Differential [ input 1 - input 2 ]; Available on display, thresholds  
     Flow counter and totalizer with pulse signal (0.04 Hz up to 10 kHz)

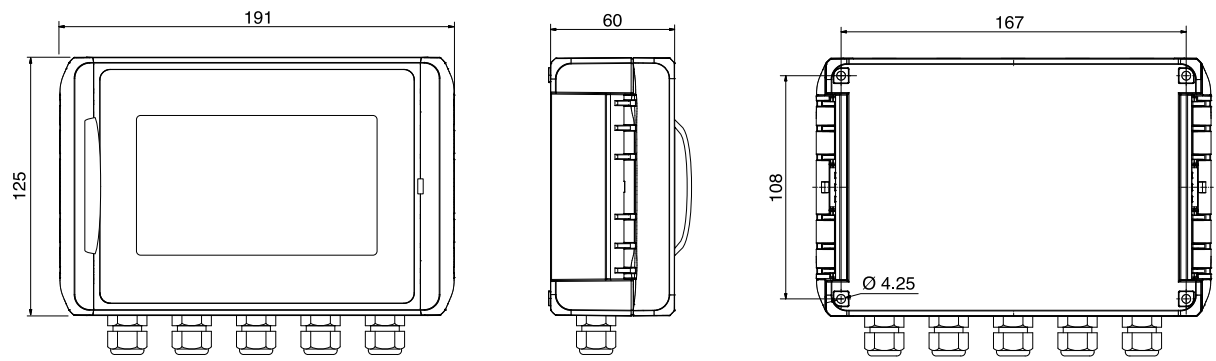
Main power                            100 ... 240 V AC 50/60 Hz  
 Consumption                          Max. 5 VA  
 Cable connections                    Screw terminals  
 Cable inlets                            5 Cable glands, PG 9  
 Mounting                                IP 65 cabinet, in ABS  
 Operating temperature               -10 ... +50 °C

**EC Conformity: The instrument meets the legal requirements of the current European Directives.**

**CODE NUMBERS AND REFERENCES**

Code	Reference	Description	Output signal	Relay output	Communication
217 302	BAMOWIZ 302	3 Inputs 4-20 mA /12 V DC	-	2 Outputs N.O. contacts	-
217 213	BAMOWIZ 213	2 inputs 4-20 mA / 24 V DC 1 Frequency input	4-20 mA	3 outputs N.O. contacts	RS 485 Interface, MODBUS

**DIMENSIONS**



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**Digital and graphical display  
 BAMOWIZ**  
 16-10-2020 D-217.01-EN-AG

**RE**  
**217-01 /2**

# 2 Channels, 4 thresholds, Relay EVEREST 214S



- 4 adjustable thresholds, one is available as a timer
- Adjustable hysteresis
- 24 V DC power supply to 2 sensors
- 2 Inputs 4-20 mA
- Built-in timer: 1 s up to 24 h, e.g. for venting operation on MEMPRO

## APPLICATIONS

Control device for standardized 4-20mA transmitters in industrial applications

## DESCRIPTION

The two-channel measuring amplifier EVEREST 214S is a processor-controlled display device for DIN rail mounting. It has a built-in timer; It supplies 2-wire sensors with 24 V DC voltage. It allows a simple conversion of analog signals to limit values remote controls. Free scalable inputs and relays allows a wide domain of application.

## TECHNICAL FEATURES

Main power	100 ... 240 V AC 50/60 Hz or 10 ... 30 V DC or 12 ... 24 V AC
Consumption	1 to 5 W
Measuring loops	2 Input channels, 4-20 mA (adjustable from 0 to 25 mA)
Power supply to sensors	24 V DC max. 100 mA and 5 V DC max. 100 mA
Accuracy	0.5 % ±0.5 digit
Input signal filter	Adjustable from 0.1 to 9.9 s
Hysteresis	Adjustable from 1 to 99 %
Relay outputs	250 V AC, 2 A / 30 V DC, 1 A

### Recommendation:

The contacts are not protected against overloads: Provide an external protection device.

Threshold contacts S1, S2, S3	Common shared by the 3 contacts N.O. and N.C. by setting
Relay output S4	N.O. or N.C. by setting, or As a timer: 1 s up to 24 h
Indicator	2½ digit LED 5x7 dot matrix display 4 LED = Threshold status 1 blue LED = Channel 1 1 green LED = Channel 2
Resolution	1%
Setting	Via push and rotary button
Electrical connection	Screw terminals (cable cross section Max. 1.5 mm <sup>2</sup> )

### Recommendation:

Protection against accidental contact according to DIN EN 61010-1 is only guaranteed when installed in a closed housing with at least protection class IP54.

Ambient temperature	-10 ... +45 °C
Case	DIN rail mounting 35x7.5 mm (EN 50 022), IP40 according to EN 60 529

**EC Conformity: The instrument meets the legal requirements of the current European Directives**

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2 Channels, 4 thresholds,  
Relay  
**EVEREST 214S**

20-02-2020

D-232.04-EN-AD

RE

232-04/1

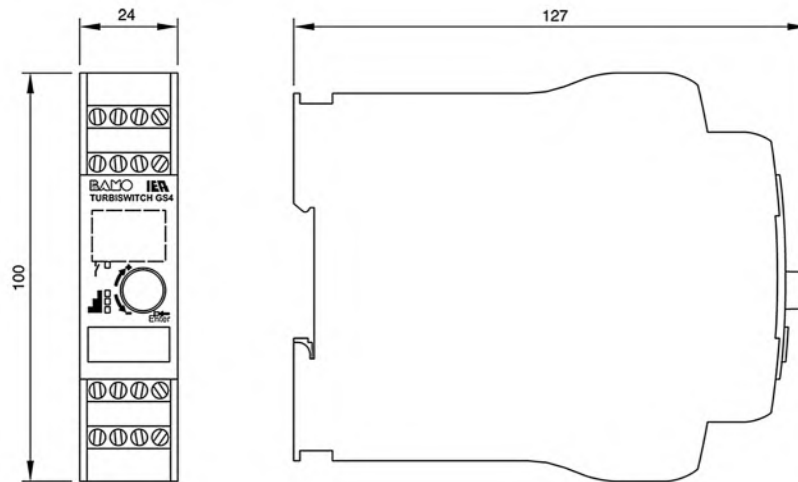
## CODE NUMBERS AND REFERENCES

Code	Reference	Description
232 116	EVEREST 214S G	100 ... 240 V AC - 50/60 Hz
232 113	EVEREST 214S D	10 ... 30 V DC and 12 ... 24 V AC

## Accessory

Code	Reference	Description
232 122	Cabinet	Wall-mounted, protection IP65

## DIMENSIONS



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2 Channels, 4 thresholds,  
Relay

**EVEREST 214S**

RE

232-04/2

20-02-2020

D-232.04-EN-AD

# Amplifier relay ES 2001

- Protection of Reed contact
- Outputs: 2 change over contacts, voltage free; 5A / 250 V AC / 500 VA
- Status relay display
- Regulation between two trigger points
- Adjustable time delay



## PRINCIPLE

All Reed contacts suffer of inductive or capacitive charge due to starting pumps or motors, leading to early aging and malfunction.

A solution is to protect Reed contacts with a relay amplifier, to insure greater switching power and lifetime.

ES 2001 amplifies commutation signals on low current and low voltage detection loops, e.g. by use of Reed contacts. Mounting: on DIN rail for easy integration in industrial cabinets. On the front a LED displays the output relay status. This relay ES 2001 is also perfect for liquid detection or liquid level regulation (documentation 530-01).

## APPLICATIONS

ES 2001 relays are designed for:

- Reed contact, models included in BRK60, MNR6, MNR7 etc.
- Flow switch, such as Z42 (IDP - PDP), CDP etc.

Each relay allows a regulation between two trigger points. For instance to fill in or emptying a tank by automation of a pump (or a valve). Each relay has 2 outputs change over contacts, potential free to allow driving for example, a power loop or an automate.

## TECHNICAL FEATURES

Power input	230 V AC $\pm 10\%$ , 50-60 Hz (standard); others on request
Consumption	2 VA
Ambient temperature	-15...+45 °C
Housing	IP40 cabinet
Galvanic insulation	Between main line and electrodes circuit
Mounting	Rail DIN 46277
Outputs	2 changeover contacts AC: 250 V, 5 A, 500 VA / max. DC: 125 V, 1 A, 40 W / max.
Time delay	Adjustable from $t = 0.5$ to 5 s for increasing level, $1/2 t$ for decreasing level
Measuring loop	6 V AC; < 1,5 mA

## CODES AND REFERENCES

Code	Reference	Description
530 200	ES 2001/230	Power supply 230 V AC / 50-60 Hz
530 210	ES 2001/115	Power supply 115 V AC / 50-60 Hz
530 220	ES 2001/48	Power supply 48 V AC / 50-60 Hz
530 230	ES 2001/24	Power supply 24 V AC / 50-60 Hz
530 252	ES 2001/12 V DC	Power supply 24 V DC
530 254	ES 2001/24 V DC	Power supply 24 V DC

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Amplifier relay  
**ES 2001**

04-07-2018

D-250.02-EN-AB

RES

250-02/1



# Flow-rate and totalizer BIF 6040



- For flow-rate sensors
- Fast programming
- Input signal: NPN, PNP, TTL contact
- Low frequencies: from 0.03 up to 30 000 Hz
- Main power supply: 95 ... 265 V AC
- Display: 6 digits
- Resolution: Adjustable
- OPTIONS : 2 or 4 alarms on relay NO/NC;  
Analogue output 4-20 mA

## DESCRIPTION

The concept BIF 6040 is without menu, this provides direct and simplified access to parameters setting.

The intuitive configuration allows an easy programming for decimal point position, alarms setting, analogue output calibration and linearization functions.

BIF 6040 accepts input signal from a BAMOFLU (up to 30 kHz) and counters M series.

Scaling is assumed, entering a scale factor, to display total volume in the desired unit (m<sup>3</sup>; l; else), or instant flow rate in volume per hour, minute or second.

Display switches from total volume to flow rate through a single push button.

A scan rate setting allows damping of transient phenomena in order to obtain a stable display.

The microprocessor allows the end-user to modify the range and the calibration frequency directly from the front plate.

The saved settings are protected by a locking-switch on the rear panel of the device.

## TECHNICAL FEATURES

Input frequency	0.03 ... 30 000 Hz
Input signal type	NPN, PNP, potential free contact (mV level selectable)
Input voltage	24 V DC, 100 mA max. (Code 282 200) 12 V DC, 30 mA max. (Code 282 201)
Accuracy	Frequency: $\pm 0.01$ % of input at 25 °C Delay: $\pm 100$ pulse/min / °C
Display	6 Digits; Red LEDs; 14.2 mm high, High brightness; Decimal point setting
Counter reset	Through external potential free contact or through keyboard
Safeguard	On EEPROM (10 years)
Mains power supply	95 ... 265 V AC
Consumption	8 VA max.
Temperature	Operating: 0 ... +50 °C; Storage: -10 ... +70 °C

HOUSING	Panel mounting, 48 x 96 mm, DIN Black polycarbonate, 300 g, Terminals: DIN / EN 50027, Front: IP 65
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OPTIONS	PCB extra for thresholds; relay outputs (SPST) protected 5 A at 250 V AC, resistive load, Hysteresis selection 2 alarms (code 282 202) or 4 alarms (code 282 204) Analogue output 4-20 mA (flow-rate); 0/10 V; $\pm 5$ V; isolated 250 V AC
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Flow-rate and totalizer  
**BIF 6040**

29-06-2018

D-282.01-EN-AA

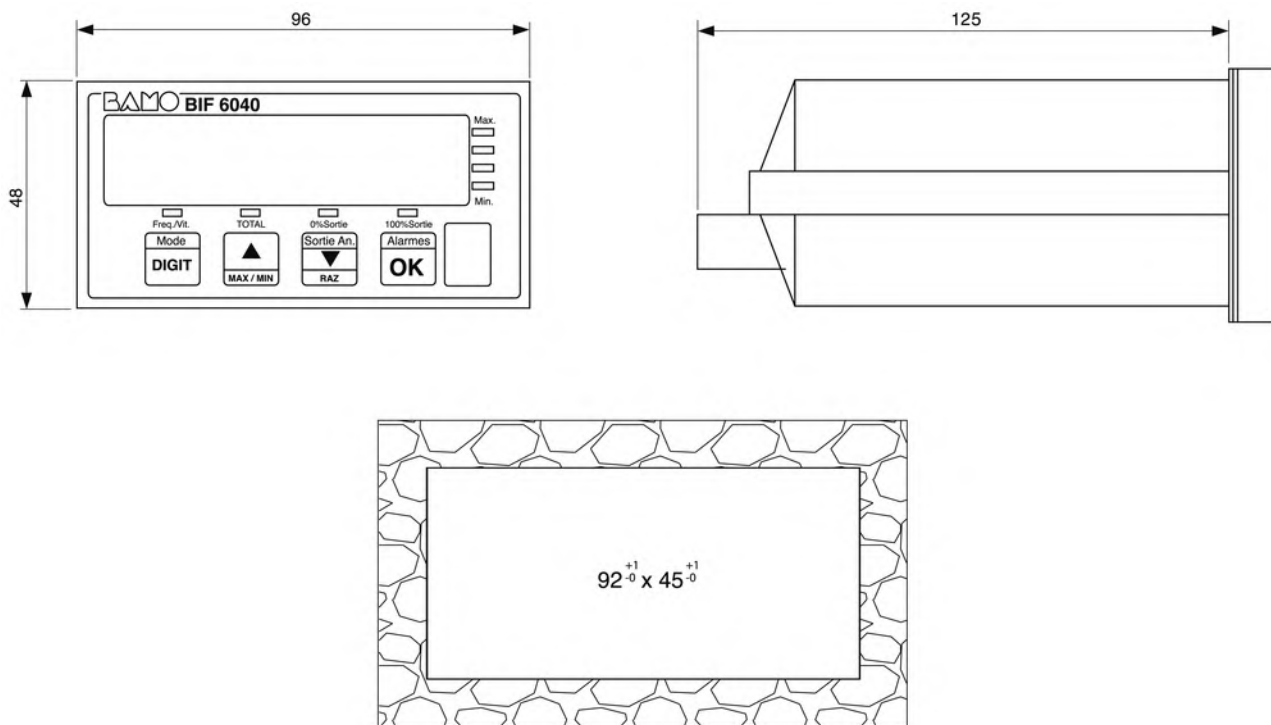
RE

282-01 /1

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
282 200	BIF 6040 - A24V	Standard flow-rate and totalizer indicator with power supply to sensor 24 V DC
282 201	BIF 6040 - A12V	Standard flow-rate and totalizer display with power supply to sensor 12 V DC
282 202	AL2	PCB extra for 2 alarms, relay outputs
282 204	AL4	PCB extra for 4 alarms, relay outputs
282 210	ANA	PCB extra for analogue output 4-20 mA (flow-rate)

## DIMENSIONS



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Flow-rate and totalizer  
**BIF 6040**

29-06-2018

D-282.01-EN-AA

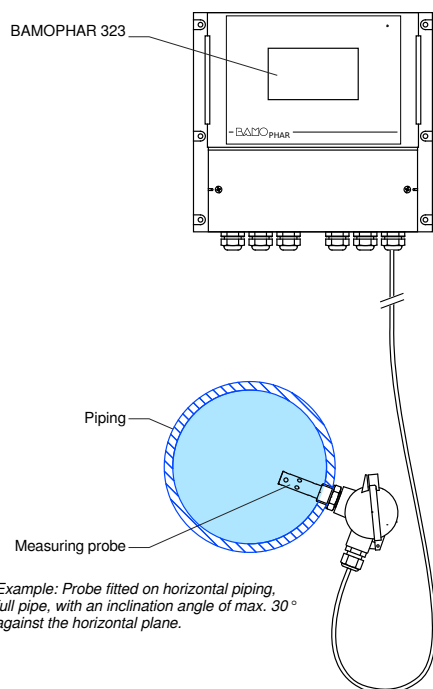
RE

282-01 /2

# Conductivity / Resistivity BAMOPHAR 323



- Color touch screen
- Programmable ranges:  
From 0-200 Ω .cm up to 0-200 MΩ .cm  
From 0-2 μS/cm up to 0-20 mS/cm
- Associated measuring cells:  
Cell factors: 10 - 1 - 0.1 - 0.01
- Temperature compensation  
Automatic or manual compensation
- 2 outputs 0/4-20 mA, configurable
- 4 relays (Thresholds, alarm)
- Options:  
RS422/ J-BUS + LOGGER  
Extension terminal for 2nd measuring parameter



## APPLICATIONS

In combination with one of our conductivity cells (data-sheet 360-01), BAMOPHAR 323 is designed for conductivity or resistivity measurements.

Examples:

- Conductivity on drinkable and ground water
- Conductivity in cooling tower
- Resistivity on demineralized water
- Control of ultra pure water production units

## DESCRIPTION

The device is equipped with a color touch screen for the display of a multilingual menu friendly and intuitive. It provides easy reading of measurement, temperature and state of the thresholds.

It displays a menu with all parameters for configuration of analogue outputs, thresholds set up and regulation mode. In order to facilitate its commissioning, a programming menu can simulate the measurement, acting on the analog outputs, as well as on the thresholds.

Associated measuring cells have cell factors from 0.01 up to 10 for accurate measurements between 0 to 2 μS/cm and 20 mS/cm or 0 to 200 Ω.cm and 200 MΩ.cm .

BAMOPHAR 323 displays an absolute or compensated temperature measurement (Access to two reference charts: 20 °C and 25 °C).

**An extension terminal (wall, panel or DIN rail mounting):**

- Allows a second measuring parameter (pH, flow-rate, turbidity, etc.)  
Data from this blind unit are displayed on the main unit
- Connected to main unit via a 4 wire shielded cable  
(Cable length between both devices: max. 500 m)
- RS422 and Data Logger of main unit are shared between both units.

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Conductivity / Resistivity  
**BAMOPHAR 323**

01-08-2018

D-323.01-EN-AE

RES

323-01 /1

## TECHNICAL FEATURES

End-user interface	Color touch screen 4.3", resolution 480x272 pixels Display of measurements, menus, temperature, relay status Configuration: Keyword protected
Measuring range	From 0-2 $\mu\text{S/cm}$ up to 0-20 $\text{mS/cm}$ or from 200 $\Omega\cdot\text{cm}$ up to 200 $\text{M}\Omega\cdot\text{cm}$
Accuracy	$\pm 0.3\%$ ; $\pm 0.3\text{ }^\circ\text{C}$
Connection of probe	With a BNC connector
Temperature compensation	Automatic with built-in Pt 100 sensor, from 0 to 100 $^\circ\text{C}$ Manually between 0 and 100 $^\circ\text{C}$
Relay outputs	4 contacts, N.O., potential free
Configurable thresholds	S1, independent threshold, to set up for measurement or temperature S2, independent threshold, to set up for measurement or temperature S3, independent threshold, to set up for measurement or temperature or external function S4, to set up for alarming function: out of range or broken cable
Hysteresis	To set up between 0 and 100 % on S1, S2 and S3
Contact Initial resistance	100 $\text{m}\Omega$ max. (voltage drop 6 V DC 1 A)
Switching power	831 VA AC / 3 A / 277 V AC 90 W / 3 A / 30 V DC
Switching capacity (min.)	100 mA, 5 V DC (variable according to switching frequency, environmental conditions and accuracy).
Measurement output	0/4-20 mA (max. 600 $\Omega$ ) proportional to measurement
Temperature output	0/4-20 mA (max. 600 $\Omega$ ), for all scales from 0 to 100 $^\circ\text{C}$
Main power supply	230 V AC / 50-60 Hz (others on request) - Consumption 10 VA
Models	Panel mounting, 96x144 mm, front IP65, rear IP 40 Wall mounting, IP65, cable glands
Storage	-10 ... +70 $^\circ\text{C}$
Operating temperature	-5 ... +50 $^\circ\text{C}$

### OPTION (RS 422 + Logger)

Interface	RS 422 output, J-BUS link - Binary slave mode - 2400 to 9600 bauds
Data Logger	Record of cycle average measurement, programmable cycle time - 150 000 records max. on memory card.

**EC Conformity: The instrument meets the legal requirements of the current European Directives**

### MEASURING RANGES

CONDUCTIVITY: Measurements with BAMOPHAR 323 C				
WITH temperature compensation:				
Cell factor	0.01	0.1	1	10
Scale Nr 1	2.000 $\mu\text{S/cm}$	20.00 $\mu\text{S/cm}$	200.0 $\mu\text{S/cm}$	2.000 $\text{mS/cm}$
Scale Nr 2	20.00 $\mu\text{S/cm}$	200.0 $\mu\text{S/cm}$	2.000 $\text{mS/cm}$	20.00 $\text{mS/cm}$
WITHOUT temperature compensation:				
Cell factor	0.01	0.1	1	10
Scale Nr 1	2.000 $\mu\text{S/cm}$	2.000 $\mu\text{S/cm}$	20.00 $\mu\text{S/cm}$	200.0 $\mu\text{S/cm}$
Scale Nr 2	20.00 $\mu\text{S/cm}$	20.00 $\mu\text{S/cm}$	200.0 $\mu\text{S/cm}$	2.000 $\text{mS/cm}$
Scale Nr 3		200.0 $\mu\text{S/cm}$	2.000 $\text{mS/cm}$	20 $\text{mS}$
RESISTIVITY: Measurements with BAMOPHAR 323 R				
WITH temperature compensation:				
Cell factor	0.01	0.1	1	10
Scale Nr 1	20.00 $\text{M}\Omega\cdot\text{cm}$	2.000 $\text{M}\Omega$	200.0 $\text{k}\Omega$	20.00 $\text{k}\Omega$
Scale Nr 2	2.000 $\text{M}\Omega$	200.0 $\text{k}\Omega$	20.00 $\text{k}\Omega$	2.000 $\text{k}\Omega$
WITHOUT temperature compensation				
Cell factor	0.01	0.1	1	10
Scale Nr 1	200.0 $\text{M}\Omega\cdot\text{cm}$	20.00 $\text{M}\Omega\cdot\text{cm}$	2.000 $\text{M}\Omega\cdot\text{cm}$	200.0 $\text{k}\Omega\cdot\text{cm}$
Scale Nr 2	20.00 $\text{M}\Omega\cdot\text{cm}$	2.000 $\text{M}\Omega\cdot\text{cm}$	200.0 $\text{k}\Omega\cdot\text{cm}$	20.00 $\text{k}\Omega\cdot\text{cm}$
Scale Nr 3	2.00 $\text{M}\Omega\cdot\text{cm}$	200.0 $\text{k}\Omega\cdot\text{cm}$	20.00 $\text{k}\Omega\cdot\text{cm}$	2.000 $\text{k}\Omega\cdot\text{cm}$
Scale Nr 4	200.0 $\text{k}\Omega\cdot\text{cm}$	20.00 $\text{k}\Omega\cdot\text{cm}$	2.000 $\text{k}\Omega\cdot\text{cm}$	200.0 $\Omega\cdot\text{cm}$

See on page 4: "Temperature compensation".

Note: This function can be enabled or disabled on all BAMOPHAR 323.

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Conductivity / Resistivity  
**BAMOPHAR 323**

01-08-2018

D-323.01-EN-AE

**RES**

**323-01/2**

## CODE NUMBERS AND REFERENCES

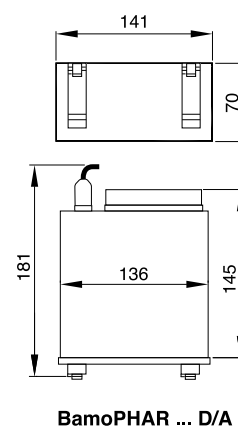
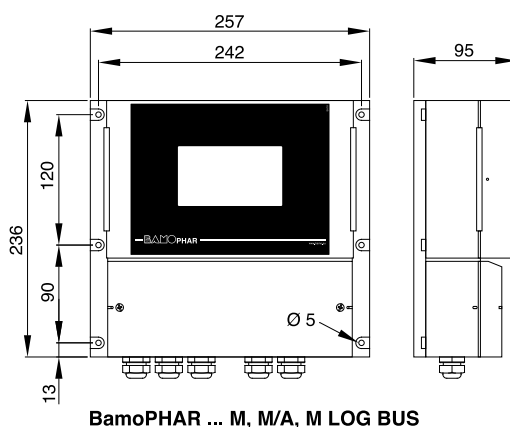
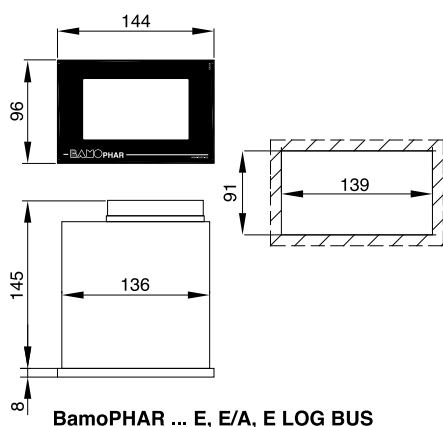
### RESISTIVITY

Code	Reference	Description
323 300	BAMOPHAR 323 RE	Panel mounting, box 96x144 mm, Front IP65, rear IP40
323 301	BAMOPHAR 323 RE/A	Panel mounting, box 96x144 m- Extension, blind monitor; Front IP65, rear back IP40
323 303	BAMOPHAR 323 RD/A	DIN Rail mounting/ Extension, blind monitor/ IP40
323 304	BAMOPHAR 323 RE LOG BUS	Panel mounting, box 96x144 mm/ RS422 + logger/ Front IP65, rear IP40
323 400	BAMOPHAR 323 RM	Wall mounting, Box IP 65, cable glands
323 401	BAMOPHAR 323 RM/A	Wall mounting, box IP 65/ Extension, blind monitor/ cable glands
323 450	BAMOPHAR 323 RM LOG BUS	Wall mounting, box IP 65/ RS 422 + logger/ cable glands

### CONDUCTIVITY

Code	Reference	Description
323 500	BAMOPHAR 323 CE	Panel mounting, box 96x144 mm, Front IP65, rear back connector IP40
323 501	BAMOPHAR 323 CE/A	Panel mounting, box 96x144 m- Extension, blind monitor; Front IP65, rear back connector IP40
323 503	BAMOPHAR 323 CD/A	DIN Rail mounting/ Extension, blind monitor/ IP40
323 504	BAMOPHAR 323 CE LOG BUS	Panel mounting, box 96x144 mm/ RS422 + logger/ Front IP65, rear back connector IP40
323 505	BAMOPHAR 323 CM	Wall mounting, Box IP 65, cable glands
323 506	BAMOPHAR 323 CM/A	Wall mounting, box IP 65/ Extension, blind monitor/ cable glands
323 509	BAMOPHAR 323 CM LOG BUS	Wall mounting, box IP 65/ RS 422 + logger/ cable glands

### DIMENSIONS



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Conductivity / Resistivity  
**BAMOPHAR 323**

01-08-2018

D-323.01-EN-AE

**RES**

**323-01 /3**

## COMPONENTS OF A MEASURING SYSTEM

### 1) Selecting a measuring cell and probe

The measuring range imposes the cell factor in order to work under the best conditions for a correct measurement. Our technical department will help you in choosing the most appropriate probe. See table "Measuring ranges" on page 2.

The cell constant will determine the possible ranges to program on the BAMOPHAR.

If the scale is exceeded, the display flashes with the symbol  $> M\Omega$  and the maximum value of the preselected scale.

### 2) With or without temperature compensation

BAMOPHAR 323 is able to display or an absolute value or a temperature compensated value.

BAMOPHAR uses two charts at 20 °C or at 25 °C for the temperature compensation.

One more option for operator is to set the temperature compensation as manual or as automatic mode.

#### Manual mode:

Temperature will be set up manually.

Conductivity (or resistivity) displayed value corresponds to corrected value at 20 °C or at 25 °C: to set up by choosing the chart through the menu.

This application is valid if the temperature is known and constant.

#### Automatic compensation

The temperature will be measured by a Pt 100  $\Omega$  sensor integrated into cell or separated from the probe.

The correction is carried out by BAMOPHAR between 0 and 100 °C on one of the two reference charts (20 °C or 25 °C).

For specific applications, our technical department can achieve a specific compensation mode for your application.

### 3) Measuring loop cable

The choice of cable is very important.

Because of intrinsic impedance (resistance and capacitance) the cable could induce an error of 50 % on measurements, mostly on low conductivity ranges (high resistivity ranges). The connecting cable must be connected directly from the probe to the terminal block of the device without any intermediate connection. The maximum length depends on the measuring range and the cell factor (see table below).

In general, the cable used will be of the aerated coaxial type reference CCA (code 368 100). With specific cells BF 1200 series with connector 9054, it is recommended to use the cable BRG-58 (code 368105).

#### Cable length for conductivity:

The cable can have a length of 100 m and work on all measuring ranges independantly of the cell factor.

#### Cable length for resistivity:

Table of recommended lengths:

Cell factor	0.01	0.1	1	10
Scale: 200 M $\Omega$	10 m			
Scale: 20 M $\Omega$	50 m	10 m		
Scale: 2 M $\Omega$	100 m	50 m	10 m	
Scale: 200 k $\Omega$		100 m	50 m	10 m
Scale: 20 k $\Omega$		100 m	100 m	50 m
Scale: 2 K $\Omega$			100 m	100 m
Scale: 200 $\Omega$			100 m	100 m

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Conductivity / Resistivity  
**BAMOPHAR 323**

01-08-2018

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323-01 /4



# Conductivity and resistivity probes

## BS - BC



BS 1285



BC 1427



BS 570

- Conductivity and resistivity probes
- Cell factors 0.1 and 0.01
- Reliability and sturdiness
- Construction: AISI 316 and PTFE, PVC
- For in-line or immersion measurements

### APPLICATIONS

Conductivity measurements (0.05 to 10  $\mu\text{S}/\text{cm}$ ) or resistivity (10  $\text{k}\Omega\cdot\text{cm}$  to 30  $\text{M}\Omega\cdot\text{cm}$ , on water:

- Controls of rainwater or runoff
- Controls on demineralized water in industrial process:
  - Boilers monitoring, etc.
  - Parts rinsing in galvanic process
  - Electronic components rinsing

### DESCRIPTION

External frame surrounds the active part (centric electrode) and limit the measuring area used for measurement, ensuring perfect shield grounding. Some models have a built-in temperature sensor (Pt100 type). For a high mechanical resistance, cells are in AISI 316 L with PTFE insulation.

#### Cell factor

The cell factor is the ratio between the measurement done with the cell and value displayed on the monitor.

Example: A probe with a cell factor  $K = 0.1$  immersed in a liquid of resistivity 10  $\text{k}\Omega\cdot\text{cm}$ , measures a resistor value of 1  $\text{k}\Omega$ . The monitor will display a corrected value by factor  $K$ : resistivity of 10  $\text{k}\Omega\cdot\text{cm}$ .

For highly conductive liquids (low resistivity) it will be necessary to use probes with cell factor of  $K=1$  or  $K=10$  (BF1200; data sheet 361-01) or inductive sensors (toroidal sensor on data sheet 364-01/ 05).

#### Complete measuring system:

A complete system includes:

- 1 Coaxial probe with  $K = 0.01$  or  $K = 0.1$
- 1 Connector PL259 or direct connection to screw connectors or cable output
- Coaxial cable CCA type
- A 3-wire cable C3B type (when Pt 100 sensor is built-in the probe)
- One BNC plug for monitor connection.
- A monitor BAMOPHAR 323 (see data-sheet 323-01).

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Conductivity and resistivity  
probes  
**BS - BC**

20-03-2019

D-360.01-EN-AC

RES

360-01 /1

## TECHNICAL FEATURES

### Probe connection:

Electric connection is done as following, according to probe model:

- With a removable coaxial connector PL 259 type.
- With integrated screw terminals for industrial heads.
- With cable (cable output probes).
- With a BNC plug.

### CABLE FOR CONDUCTIVITY

It transfers the signal between probe and BAMOPHAR.

A cable of a bad quality may procure errors over 50 %. The specific cable CCA is a safe solution, 100 % compatibility with our probes BS-BC. In parallel, some probes have a cable output.

### Connector on the monitor:

A coaxial plug BNC is necessary to connect with the BAMOPHAR monitor. A standard connector or electric cable will induce errors on measurements, even on a short distance.

The cable must be of one length between the probe and the indicator without intermediate junction box.

### Cable for temperature measurement:

For temperature, cable should be 3-wire type and shielded (3 x 0.22 mm<sup>2</sup>). The shield is connected to ground only on one end. Probes with a Pt100 built-in sensor have 2 specific cable-glands, insuring a perfect water-tightness.

**CE Conformity: The instrument meets the legal requirements of the current European Directives.**

## CODE NUMBERS AND REFERENCES

Code	Reference	Factor	T° Comp.	Fitting	Body	Insulation	Head	P. bar	T°
<b>IN-LINE MEASUREMENT</b>									
360 100	BS 570	0.1	-	3/4"	AISI 316 L	PTFE + NBR	Connector PL 259	10	70
360 112	BS 572	0.1	-	3/4"	AISI 316 L	PTFE + NBR	Head (aluminum)	10	70
360 125	BS 650 CT	0.1	YES	3/4"	AISI 316 L	PTFE + NBR	Head (aluminum)	10	70
360 127	BS 651 CT	0.1	YES	3/4"	AISI 316 L	PTFE + NBR	Cable output (5 m)	10	70
360 135	BS 660 CT	0.01	YES	3/4"	AISI 316 L	PTFE + NBR	Head (aluminum)	10	70
360 137	BS 661 CT	0.01	YES	3/4"	AISI 316 L	PTFE + NBR	Cable output (5 m)	10	70
360 310	BS 1284	0.1	-	1/2"	AISI 316 L	PTFE + NBR	Connector PL 259	10	70
360 313	BS 1283/50	0.1	-	Clamp Ø 50	AISI 316 L	PTFE + NBR	Connector PL 259	10	70
360 315	BS 1285	0.1	-	1/2"	AISI 316 L	PTFE + NBR	Head (aluminum)	10	70
360 502	BC 1425	0.1	-	1/4"	AISI 316 L	PTFE + NBR	Cable output (5 m) + BNC plug	5	50
360 507	BC 1427	0.1	-	1/4"	AISI 316 L	PTFE + NBR	BNC plug	5	50
<b>MEASUREMENT IN BASIN</b>									
360 200	BS 575	0.1	-	Flange ND 20	AISI 316 L		Head (aluminum)	10	70
360 210	BS 575 CT	0.1	YES	Flange DN 20	AISI 316 L		Head (aluminum)	10	70
360 211	BS 575 CT	0.1	YES	3/4"	AISI 316 L		Head (aluminum)	10	70
360 400	BS 1287	0.1	-	1"	PVC		Junction box (PP)	5	50
<b>ACCESSORIES</b>									
360 410	BS 1288	PVC flange ND 20 - PN 10/16 for BS 1287							
368 100	CCA	Coaxial cable for resistivity/ conductivity							
368 200	PL 259	Coaxial connector, metallic, for BS 1284 et BS 570							
368 210	BNC/CCA	BNC Connector to screw on cable CCA type							
610 010	C3B	Cable 3 wires, 0.22 mm <sup>2</sup> , shielded for temperature compensation							

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Conductivity and resistivity  
probes  
**BS - BC**

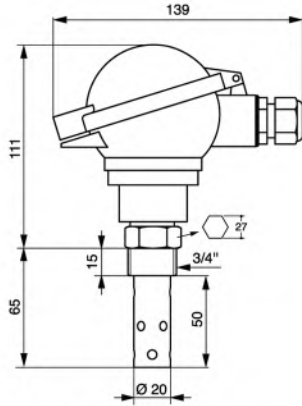
**RES**

**360-01 /2**

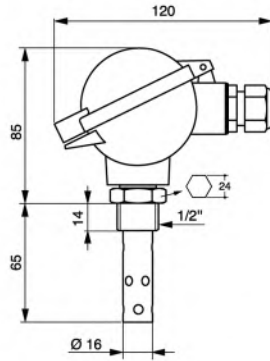
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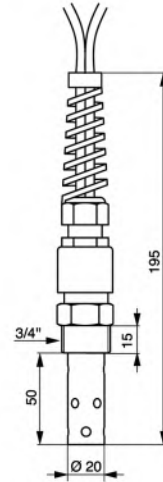
**DIMENSIONS**



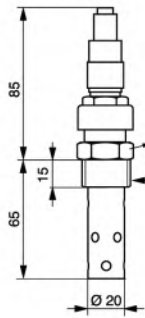
**BS 650 CT - BS 660 CT - BS 572**



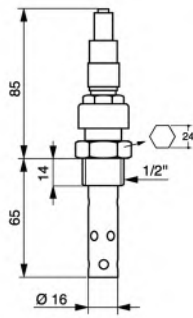
**BS 1285**



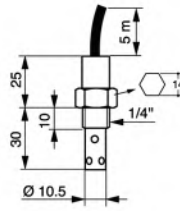
**BS 651 CT - BS 661 CT**



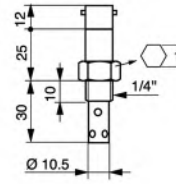
**BS 570**



**BS 1284**



**BC 1425**



**BC 1427**



**BS 1287**

**360**

**360**

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**Conductivity and resistivity  
 probes  
 BS - BC**

20-03-2019

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**RES**

**360-01 /3**

# Conductivity measuring electrode BF 1200 SERIES

- Cell factor  $K = 1$
- Fitting PG 13.5
- Body: Plastic PSU, tube  $\varnothing 12$  mm
- Graphite measuring elements

## APPLICATIONS

BF 1200 conductivity cell is designed for low and high conductivity measurements. In use with our monitor BAMOPHAR, this cell allows accurate measurements on clear solutions from  $0.5 \mu\text{S}/\text{cm}$  up to  $2 \text{ mS}/\text{cm}$ .

## DESCRIPTION

The electrode BF 1200 is available with a fitting PG 13.5; The tube is 120 mm long (diam. 12 mm).  
In order to protect the measuring tube and connector integrity, they may be supplied with an electrode holder for measurements in-line or in immersion.

- BF 1200 cell is connected with a coaxial connector type 9054.

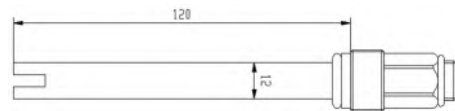
## DEDICATED HOLDERS

### For BF 1200 electrodes:

These conductivity electrodes are compatible with pH electrode holders. Then, it is recommend to use the same holders as those of the pH series, according applications for in-line or immersion measurements.

## TECHNICAL FEATURES

Body	PSU (length: 120 mm)
O-ring	Neoprene
Gasket	Nylon
Electrodes	Graphite (sealing: epoxy)
Measuring range:	$1 \mu\text{S}/\text{cm} \dots 100 \text{ mS}/\text{cm}$ (according to signal frequency and voltage)
Maxima of temperature & pressure	$-5 \dots +80 \text{ }^\circ\text{C} / 6 \text{ bar}$
Cell factor	$1 \text{ cm}^{-1} \pm 20 \%$
Immersion depth	Min.: 15 mm
Fitting	S8 type with PG 13.5
Connector	Coaxial connector type 9054



### Electrode holders for BF 1200:

In-line	Holders 9222 & 9223 (data-sheet 140-01) Holders 9240 (data-sheet 140-02)
Immersion	Probes 9336 and 9337 (data-sheets 130-01 & -02)

## CODE NUMBER AND REFERENCE

Code	Reference	Cell factor	Connector
361 200	BF 1200	1	Coaxial type 9054

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Conductivity measuring  
electrode  
**BF 1200 SERIES**

23-11-2020

D-361.01-EN-AE

RES

361-01 /1

# Inductive conductivity probe in NORYL TCS 3020 Series

- Range: from 10  $\mu\text{S}/\text{cm}$  up to 2000  $\text{mS}/\text{cm}$
- Material: NORYL
- Temperature max. 70 °C
- Low fouling incidence
- Built-in Pt 100 sensor



## APPLICATIONS

TCS 3020 is an inductive conductivity probe useful in wastewater treatment and in the chemical industry.

- Monitoring of aeration tower
- Clear water control (wells, drinking water, thermal baths, etc.)
- Control of stormwater and runoff water
- Monitoring of NaCl concentration (0 to 26 %)

## DESCRIPTION

TCS 3020 probe is convenient for measuring conductivity on a wide range between 10  $\mu\text{S}/\text{cm}$  and 2000  $\text{mS}/\text{cm}$ .

It uses inductive measurement principle that offers many advantages. There is a total galvanic insulation between measuring loop and the liquid which makes the measurement reliable on many chemicals.

### Measurement in immersion

The probe is fixed to end of probe holder for immersion from 500 to 2000 mm with an optional flange fitting.

### On-line measurement

Probe is mounted on a Te, ND 50 mm.

Complete measuring system includes:

- An inductive probe TCL S50, cable output.
- A probe holder for immersion or on-line measurement.
- A converter (factory calibration)
- A monitor BAMOPHAR 364 (data-sheet 364-04) previously BAMOPHOX 364

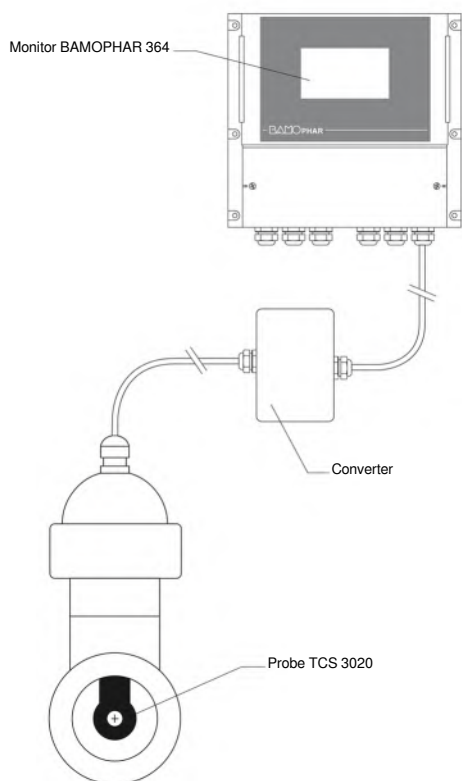
### Associated monitors

BAMOPHAR 364 (or BAMOPHOX 364) are designed for inductive conductivity monitoring.

Available ranges:

- 0... 2  $\text{mS}/\text{cm}$
- 0... 20  $\text{mS}/\text{cm}$
- 0... 200  $\text{mS}/\text{cm}$
- 0... 2000  $\text{mS}/\text{cm}$

Temperature compensation is performed by the monitor which provides a 4-20 mA signal output, copy of the measurement. Factory calibrations are done on each measuring system for a quick and easy start up on site.



Complete measuring system

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Inductive conductivity probe  
in NORYL  
**TCS 3020 Series**

11-03-2021

D-364.01-EN-AC

RES

364-01 /1

## TECHNICAL FEATURES

Measuring range From 10  $\mu$ S/cm to 2000 mS/cm  
 Wet parts material NORYL  
 Fitting 3/4" NPT  
 Temperature max. 70 °C  
 Temperature sensor Built-in sensor Pt 100  $\Omega$  at 0 °C  
 Pressure max. 10 bar  
 Cable output version 5 m long cable

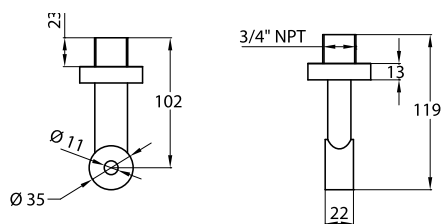
## CODE NUMBERS AND REFERENCES

Code	Reference	Description
364 056	TCS 3020 NORYL	Inductive conductivity probe; NORYL; 3/4" NPT; 5 m long cable
364 100	T PVC	Te holder; PVC; ND 50 mm
364 150	T PPH	Te holder; PPH; ND 50 mm
364 200	T PVDF	Te holder; PVDF; ND 50 mm
364 300	SI PVC / 364	Immersion probe holder; PVC; Height 500 up to 2000 mm
364 400	SI PVDF / 364	Immersion probe holder; PVDF; Height 500 up to 2000 mm
368 108	C8B	Shielded 8-wire cable

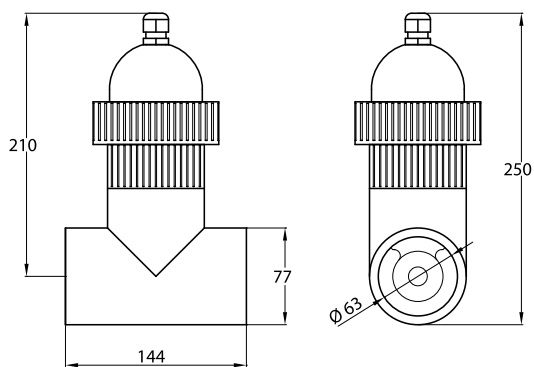
### NOTE:

For every system, a converter is inserted between the probe and the monitor. The converter in its case will be ideally located on the holder. **A correct length of C8B cable is necessary to connect the converter to the monitor.**

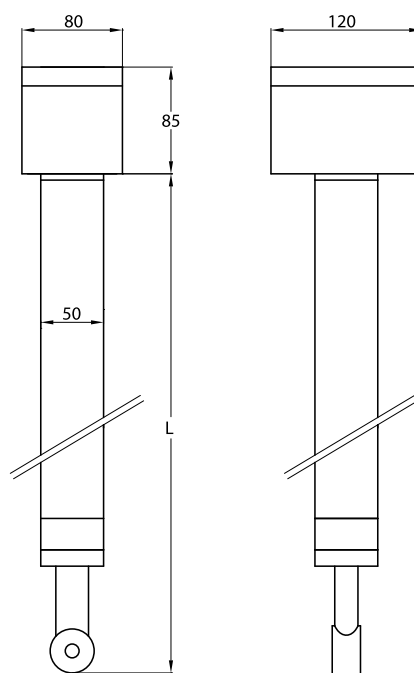
## DIMENSIONS



TCS 3020 probe (alone)



In-line probe holder



Immersion probe holder

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Inductive conductivity probe  
 in NORYL  
**TCS 3020 Series**

11-03-2021

D-364.01-EN-AC

RES

364-01/2



# Conductivity meter for inductive probe BAMOPHAR 364



- Color touch-sensitive screen
- Measuring range, 4 scales:  
0 - 2 mS/cm up to 0 - 2000 mS/cm
- Automatic temperature compensation
- 2 Outputs 0/4-20mA
- 3 Independent relays
- 1 Relay for alarms
- **OPTIONS :**  
RS 422 /J-BUS + **LOGGER**  
Extension terminal for 2nd measuring parameter

## APPLICATIONS

Conductivity measurement for monitoring and/ or regulation in water treatment, chemical industries, industrial applications:

- Cooling towers survey
- Clean water control (wells, drinking water, thermal baths ...)
- Stormwater and runoff water survey
- WWTP survey
- Concentration measurements of acid and base
- Chemicals quality survey
- Option: display in concentration of NaCl, NaOH or HCl

## DESCRIPTION

BAMOPHAR displays on a color touch-sensitive screen a multilingual friendly using menu. The reading is easy for measurement, temperature and relay status. Conductivity and temperature values are available as well from outputs 4-20 mA

With inductive probes TCS 3020 or TCS S50, BAMOPHAR 364 allows measurements from 10  $\mu$ S/cm up to 2000 mS/cm all along process routines.

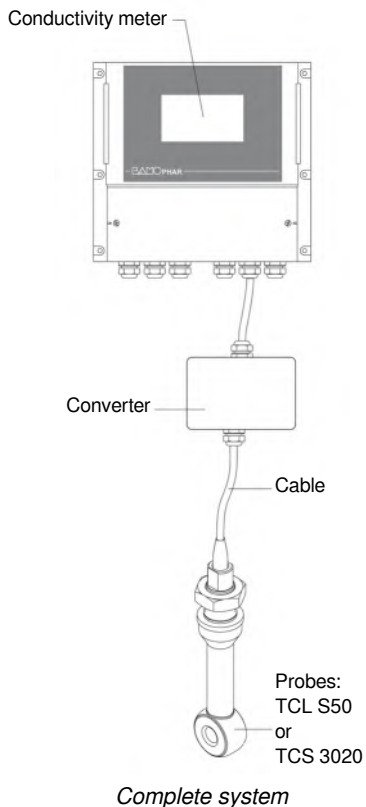
- Probe TCS 3020 in NORYL (data-sheet 364-01) is recommended for neutral liquids.
- Probe TCS S50 in PEEK (data-sheet 364-05) is recommended when application requires high chemical resistance or process is at high temperature.

A complete system includes:

- 1 Inductive probe, cable output
- 1 Probe holder for immersion or on-line application.
- 1 Converter, factory calibrated.
- 1 Monitor BAMOPHAR 364 (data-sheet 364-05)

### OPTION: Extension terminal for 2nd measuring parameter

- Allows a second measuring parameter (pH, flow-rate, turbidity, etc.) Data from this blind unit are displayed on the main unit
- Mounting: wall or panel versions
- Connected to main unit with 2 x2 wires shielded cable (Cable length between both devices: max. 500 m)
- RS422 and Data Logger of main unit are shared between both units



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Conductivity meter for  
inductive probe  
**BAMOPHAR 364**

01-03-2017

D-364.04-EN-AB

364-04/1

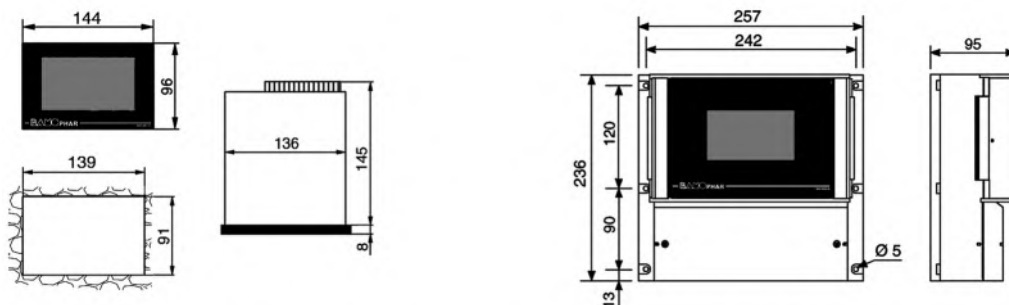
## TECHNICAL FEATURES

End-user interface	Color touch-sensitive screen 4.3", resolution 480x272 pixels Display of measurements, menus, temperature, relay status Configuration: Keyword protected
Measuring range	10 $\mu$ S/cm up to 2000 mS/cm
Measuring ranges	0 ... 2 mS/cm; 0 ...20 mS/cm; 0 ... 200 mS/cm; 0 ... 2000 mS/cm
Accuracy	$\pm 0.3 \%$ ; $\pm 0.3 \text{ }^\circ\text{C}$
Probe input	On screw connectors
Temperature compensation	Automatic with Pt 100 signal, sensor built-in the inductive probe. Manually between 0 and 100 $^\circ\text{C}$
Relay outputs	4 contacts, NO, potential free
Configurable thresholds	S1, independent threshold, to set up for measurement or temperature S2, independent threshold, to set up for measurement or temperature S3, independent threshold, to set up for measurement or temperature or external function S4, to set up for alarming function: out of range or broken cable
Hysteresis	To set up between 0 and 100 % on S1, S2 and S3
Contact Initial resistance	100 m $\Omega$ max. (voltage drop 6 V DC 1 A)
Switching power	831 VA AC / 3 A / 277 V AC 90 W / 3 A / 30 V DC
Switching capacity (min.)	100 mA, 5 V DC (depends of frequency, ambient conditions, accuracy).
Mechanical lifetime (min.)	5 x 10 <sup>6</sup> operations (180 op./min)
Electrical lifetime (min.)	2 x 10 <sup>5</sup> (at 20 op./min) for 3 A 125 V AC, 3 A 30 V DC - 10 <sup>5</sup> (estimated load) for 3 A 125 V AC
Measurement output	0/4 - 20 mA (max. 600 $\Omega$ ) proportional to measurement
Temperature output	0/4-20 mA (max. 600 $\Omega$ ), for all scales from 0 to 100 $^\circ\text{C}$
Main power supply	230 V AC / 50-60 Hz (others on request) - Consumption 10 VA
Models	Panel mounting, 96x144 mm, Front IP65, rear back screw terminal IP40 Wall mounting, IP65, cable glands, screw terminal
<b>OPTION (RS 422 + Logger)</b>	
Interface	RS422 output, J-BUS link - Binary slave mode - 2400 to 9600 bauds
Data Logger	Record of cycle average measurement, programmable cycle time 150 000 records max. on memory card.

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
364 520	BAMOPHAR 364 E	Panel mounting, box 96x144 mm, Front IP65, rear back connector IP40
364 521	BAMOPHAR 364 E/A	Panel mounting, box 96x144 mm - Extension, blind monitor; Front IP65, rear back connector IP40
364 522	BAMOPHAR 364 E LOG BUS	Panel mounting, box 96x144 mm/ RS422 + logger/ Front IP65, rear back connector IP40
364 523	BAMOPHAR 364 D/A	DIN Rail mounting/ Extension, blind monitor/ IP40
364 560	BAMOPHAR 364 M	Wall mounting, Box IP 65, screw connectors, cable glands
364 561	BAMOPHAR 364 M/A	Wall mounting, box IP 65/ Extension, blind monitor/ screw connectors, cable glands
364 562	BAMOPHAR 364 M LOG BUS	Wall mounting, box IP 65/ RS 422 + logger/ screw connectors, cable glands

## DIMENSIONS



BamoPHAR ... E, E/A, D/A, E LOG BUS

BamoPHAR ... M, M/A, M LOG BUS

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Conductivity meter for  
inductive probe  
**BAMOPHAR 364**

01-03-2017

D-364.04-EN-AB

364-04/2

# Inductive conductivity, PEEK probe TCL S50 series



- Measuring range from 10  $\mu\text{S/cm}$  up to 2000  $\text{mS/cm}$
- Construction: PEEK
- Wide chemical compatibility
- Temperature max. 125 °C
- Low fouling probe
- Built-in Pt100 sensor

## APPLICATIONS

TCL S50 probe is designed for applications where high chemical resistance or high operating temperature are necessary:

- WWTP survey
- Concentration monitoring of acid and base (e.g.: NaOH, HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub> ...)
- Quality survey of chemicals in tank or pipeline
- Phase separation of mixture liquid/liquid

## DESCRIPTION

TCL S50 probe is well adapted for measurement between 10  $\mu\text{S/cm}$  up to 2000  $\text{mS/cm}$ .

It uses inductive measurement that offers many advantages. There is a total galvanic insulation between measuring loop and the liquid for reliable measurements on numerous chemicals.

PEEK material allows a wide range of chemical compatibilities and a long lifetime. Probe may also work at high temperature up to 125 °C.

### Immersion measurement

The probe is fixed to end of probe holder for immersion, length from 500 to 2000 mm, with optional flange fitting.

### On-line measurement:

Probe is mounted on a Te, ND 50 mm.

Complete measuring system includes:

- Inductive probe TCL S50, cable output.
- Fitting for: or immersion or on-line application.
- Converter: factory calibrated.
- Monitor BAMOPHAR TOR 364 (doc 364-04)

### Monitors BAMOPHAR

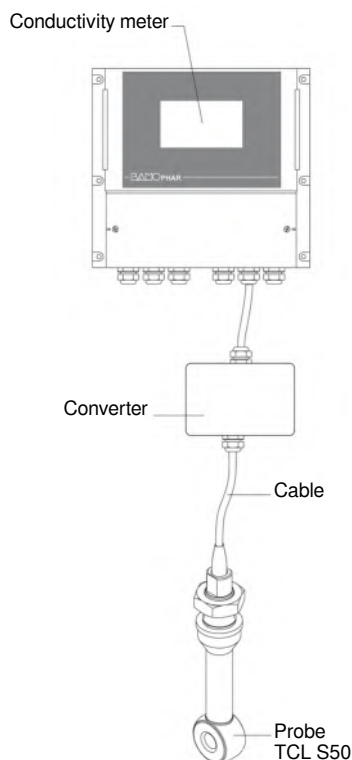
BAMOPHAR 364 is designed for use of inductive probes.

Available ranges:

- 0- 2  $\text{mS/cm}$
- 0- 20  $\text{mS/cm}$
- 0- 200  $\text{mS/cm}$
- 0- 2000  $\text{mS/cm}$

Temperature compensation is done by BAMOPHAR, offering also an output 4-20mA, copy of temperature measurement.

Factory calibrations are done on each measuring system for a quick and easy start up on site.



Complete system

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Inductive conductivity, PEEK  
probe  
**TCL S50 series**

03-07-2018

D-364.05-EN-AF

RES

364-05/1

## TECHNICAL FEATURES

Measuring range	Conductivity: 10 $\mu$ S/cm up to 2000 mS/cm
Cell constant	c = 1.98 cm <sup>-1</sup>
Probe material	PEEK
Seal	FPM
Fitting	3/4" BSP
Ambient temperature	-10 ... +70 °C
Liquid temperature	-20 ... +125 °C
Temperature sensor	Built-in Pt 100 sensor (Class A - acc. IEC 60751)
Pressure	20 bar max.
Protection	IP 67 (NEMA 6)
	IP 68 with immersion probe holder
Output cable version	5 m long cable

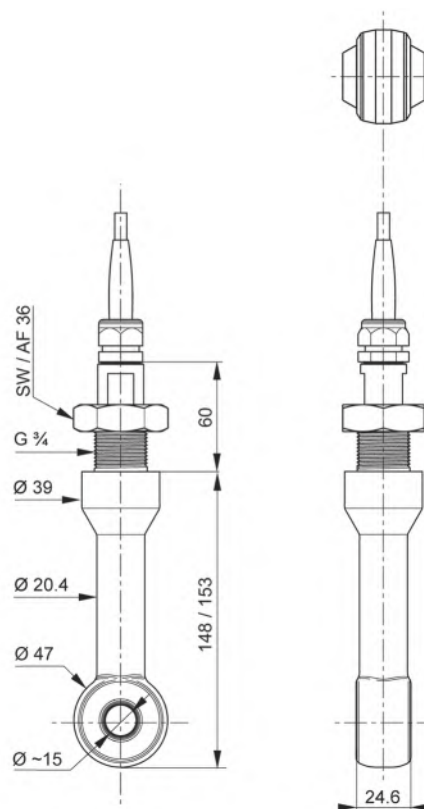
## CODE NUMBER AND REFERENCE

Code	Reference	Description
364 058	TCL S50	Inductive conductivity probe, PEEK, 3/4" BSP, 5 m cable output

### NOTE:

Complete system always integrates a box for converter between the probe and the monitor BAMOPHAR 364.  
The box will be fitted in factory on the top of probe holder (Immersion and Te holders).  
Between the box and the monitor a specific cable C8B must be used (code 368108)

## DIMENSIONS



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Inductive conductivity, PEEK  
probe  
**TCL S50 series**

03-07-2018

D-364.05-EN-AF

RES

364-05/2

# Turbidity controller TURBISWITCH GS4



- Low-cost turbidity limit detector
- 3 adjustable limit ranges (LOW / Medium / HIGH)
- Adjustable delay and hysteresis
- 2 Output relays (N.O. contact)
- 1 Output fault relay (N.O. contact)

## APPLICATIONS

In conjunction with the corresponding sensors TURBISWITCH CP2 or TURBISWITCH GA

Monitoring of:

- Filtering units
- Ultrafiltration
- Reverse osmosis

Monitoring from:

- Centrifuges - Separators
- Condensates
- Processed water - Wastewater

Phase control of:

- Product: raw and clear phase

Sludge level detection in:

- Settling tank
- Sedimentation tanks

And much more...

## DESCRIPTION

TURBISWITCH GS4 in use with a probe CP2 or a cell TURBISWITCH GA is an optical turbidity detector for determining the proportions of solids in a liquid. The output signal (On/Off) is triggered when the detection value is reached. The turbidity measurement is based on the optical attenuation of light beam : loss due to undissolved solids in the liquid.

Light beam in infrared wave lengths makes the measurement insensitive to extraneous light.

When exceeding or falling below the set turbidity value, the output relay of control unit GS4, switches.

**A complete system for turbidity control includes:**

- 1 Control unit TURBISWITCH GS4
- + 1 Immersion probe CP2 (data-sheet 425-02)

**Or**

- 1 Control unit TURBISWITCH GS4
- 1 Cell TURBISWITCH GA.. for in-line measurement (data-sheet 422-01)

The plastic or metallic measuring cells TURBISWITCH GA .. can be installed in pipping from DN15 to DN125.

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Turbidity controller  
**TURBISWITCH GS4**

09-07-2019

D-410.02-EN-AC

**TUR**

**410-02/1**

## TECHNICAL FEATURES

Main supply	GS4 G: Version 100 ... 255 V AC ; 50/60 Hz GS4 D: Version 10 ... 30 V DC and 12 ... 24 V AC
Consumption	1 ... 5 W
Operating temperature	-10 ... +45°C
Relay outputs	<b>2 Relay outputs, potential-free, N.O. contact</b> (Limit exceeded; Below the limit) <b>1 Relay output, fault of system, potential-free, N.O. contact</b>

**When the supply voltage is switched off, all contacts are open.**

Switching power: 250 V AC, 3 A / 30 V DC, 1 A

**Note: The contacts are not protected against overload; Provide an external protective device.**

Housing dimensions:	22.5 x 100 x 122 mm
DIN Rail:	35 x 7.5 mm (DIN EN 60715)
Protection:	IP 40
Terminals:	Screw connectors, max. 1.5 mm <sup>2</sup>
Limit setting:	0... 100% in 3 measuring ranges (depending on the solids content) LOW (by steps of 5%); Medium (by steps of 2%); HIGH (by steps of 1%)
Reset hysteresis:	Adjustable from 1 to 25 % of set limit
Cable length:	Max. 100 m between sensor and control unit
Display:	2-1 / 2-digit 5x7 LED dot matrix display
Settings:	Rotary/ pressure switch on front

**EC Conformity: The instrument meets the legal requirements of the current European Directives**

## CODE NUMBERS AND REFERENCES

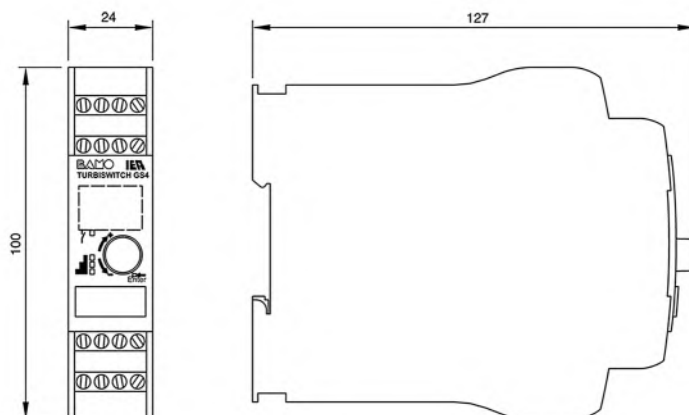
Code	Reference	Description
410 101	TURBISWITCH GS4 G	Control unit 100 ... 255 V AC ; 50/60 Hz
410 102	TURBISWITCH GS4 D	Control unit 10 ... 30 V DC and 12 ... 24 V AC

(Not suitable for previous models TT-GS, TR-GS and CP1)

### Accessories:

Code	Reference	Description
232 122	Cabinet	Wall-mount cabinet, IP 65
410 901	TT-HDR	Emitter for replacement on GA1, GA5, GA11
410 931	TR-HDR	Receiver for replacement on GA1, GA5, GA11

## DIMENSIONS



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Turbidity controller  
**TURBISWITCH GS4**

09-07-2019

D-410.02-EN-AC

**TUR**

**410-02/2**

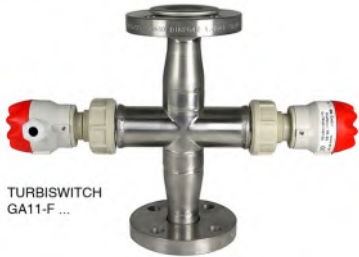


# Turbidity measuring cells

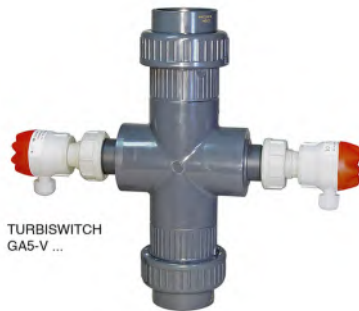
## TURBISWITCH GA1 / GA5 / GA11



TURBISWITCH  
GA1-F ...



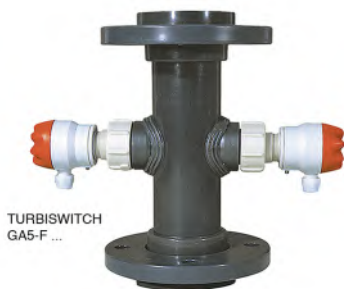
TURBISWITCH  
GA11-F ...



TURBISWITCH  
GA5-V ...



TURBISWITCH  
GA5-V ...



TURBISWITCH  
GA5-F ...

- Turbidity limit value detection
- From DN15 up to DN100
- For TURBISWITCH GS4 controller
- In-line or by-pass assembly
- PVC, PP or stainless steel versions

### APPLICATIONS

For monitoring process of:

- Filtration / Ultrafiltration
- Reverse osmosis
- Cooling units
- Centrifuges / Separators
- Condensates
- Wasted water / Industrial water

### DESCRIPTION

Turbidity is the result of existing particles in the liquid.

TURBISWITCH GA is designed for installation in pipeline; It measures optically the turbidity of the flowing liquid.

Transmitted light measurement is done between an emitter and a receiver, in front of each other. Attenuated light measurement is convert by the TURBISWITCH GS4, which compares the signal against the threshold set by the operator.

The limits of turbidity detection depend of the liquid's properties and nominal diameter of the measuring cell.

Measuring range is between 50 FAU min. (or above depending of liquid) and 10,000 FAU max.

Optical windows are of borosilicate glass with CLEANOSIL anti-fouling coating.

**A turbidity control system includes:**

- 1 Controller TURBISWITCH GS4 (data-sheet 410-02)
- 1 Measuring cell TURBISWITCH GA.. that includes fitted emitter (TT-HDR) and receiver (TR-HDR)

### TECHNICAL FEATURES

#### TURBISWITCH GA1

Material	AISI 316 L (1.4404)
Fittings	Flanges DIN 2633, PN10
Liquid temperature	-10 ... +100 °C
Pressure limit	10 bar
Seals	EPDM (others on request)

#### TURBISWITCH GA11

Material	AISI 304 (1.4301)
Fittings	Loose flanges, DIN 2642, PN 10, AISI 316Ti (1.4541)
Liquid temperature	-10 ... +100 °C
Pressure limit	10 bar
Seals	EPDM (others on request)

**NOTE:** Measuring cells design does not correspond to aseptic standards

Other versions on request

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Turbidity measuring cells  
TURBISWITCH GA1 / GA5 / GA11

01-08-2019

D-422.01-EN-AD

TUR

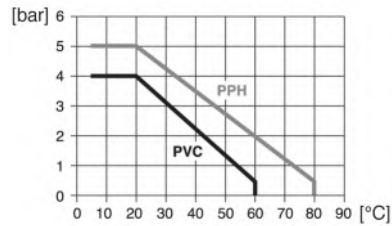
422-01 /1

## FEATURES (continued)

### TURBISWITCH GA5

Material	Or PVC, or PPH
Fittings	Solvent welding (PVC) or fusion welding (PPH)
Seals	Loose flanges DIN 2642 (with inserts and O-ring seals)
	EPDM (others on request)

Diagram: Operating pressure vs. Liquid temperature



Measuring cells GA1, GA5 and GA11 are supplied with one of each: emitter (TT-HDR) and receiver (TR-HDR).

EC Conformity: The instrument meets the legal requirements of the current European Directives

## REFERENCES FOR SPARE PARTS AND ACCESORIES

The TT-HDR transmitter and the TR-HDR receiver are compatible with all GA... measuring cells and are available as spare parts.

Code	Reference	Description
410 901	TT-HDR	Emitter to use with a turbidity controller TURBISWITCH GS4
410 931	TR-HDR	Receiver to use with a turbidity controller TURBISWITCH GS4
410 101	TURBISWITCH GS4 G	TURBISWITCH GS4, power 100 ... 255 V AC, 50/60 Hz
410 102	TURBISWITCH GS4 D	TURBISWITCH GS4, power 10 ... 30 V DC or 12 ... 24 V AC

Code	Reference	Description
444 907	M 55x10	Set of 2 optical windows (CLEANOSIL coating), Ø 55, 10 mm thick With EPDM O-ring seals; For measuring cells GA1
444 908	M 30x15	Set of 2 optical windows (CLEANOSIL coating), Ø 30, 15 mm thick With EPDM O-ring seals; For measuring cells GA11 and GA5
421 602	Seal kit	1 Set of 4 o-ring seals, in EPDM

Other versions on request.



A TURBISWITCH GS4 is necessary to operate the measuring cell

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**Turbidity measuring cells**  
**TURBISWITCH GA1 / GA5 / GA11**

01-08-2019

D-422.01-EN-AD

**TUR**

**422-01 /2**

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
<b>TURBISWITCH GA1-.. (Body: AISI 316L; Fittings: flanges, DIN 2633)</b>		
422 116	TURBISWITCH GA1-F3	TURBISWITCH GA1; AISI 316 L flanges, ND25, PN10
422 118	TURBISWITCH GA1-F4	TURBISWITCH GA1; AISI 316 L flanges, ND32, PN10
422 120	TURBISWITCH GA1-F5	TURBISWITCH GA1; AISI 316 L flanges, ND40, PN10
422 122	TURBISWITCH GA1-F6	TURBISWITCH GA1; AISI 316 L flanges, ND50, PN10
412 124	TURBISWITCH GA1-F7	TURBISWITCH GA1; AISI 316 L flanges, ND65, PN10
412 126	TURBISWITCH GA1-F8	TURBISWITCH GA1; AISI 316 L flanges, ND80, PN10
422 128	TURBISWITCH GA1-F9	TURBISWITCH GA1; AISI 316 L flanges, ND100, PN10
<b>TURBISWITCH GA11-.. (Body: AISI 304; Fittings: AISI 316 Ti loose flanges, DIN 2642)</b>		
422 144	TURBISWITCH GA11-F3D	TURBISWITCH GA11; AISI 316 Ti loose flanges ND25, PN10
422 145	TURBISWITCH GA11-F4D	TURBISWITCH GA11; AISI 316 Ti loose flanges ND32, PN10
<b>TURBISWITCH GA5-VV.. (Body: PVC; Fittings: PVC unions)</b>		
422 500	TURBISWITCH GA5-VV11	TURBISWITCH GA5; PVC unions ND15
422 502	TURBISWITCH GA5-VV12	TURBISWITCH GA5; PVC unions ND20
422 504	TURBISWITCH GA5-VV13	TURBISWITCH GA5; PVC unions ND25
422 506	TURBISWITCH GA5-VV14	TURBISWITCH GA5; PVC unions ND32
422 508	TURBISWITCH GA5-VV15	TURBISWITCH GA5; PVC unions ND40
422 510	TURBISWITCH GA5-VV16	TURBISWITCH GA5; PVC unions ND50
422 560	TURBISWITCH GA5-VV17	TURBISWITCH GA5; PVC unions ND65
422 565	TURBISWITCH GA5-VV18	TURBISWITCH GA5; PVC unions ND80
<b>TURBISWITCH GA5-VV.. (Body: PPH; Fittings: PPH unions)</b>		
422 501	TURBISWITCH GA5-VV21	TURBISWITCH GA5; PPH unions ND15
422 503	TURBISWITCH GA5-VV22	TURBISWITCH GA5; PPH unions ND20
422 505	TURBISWITCH GA5-VV23	TURBISWITCH GA5; PPH unions ND25
422 507	TURBISWITCH GA5-VV24	TURBISWITCH GA5; PPH unions ND32
422 509	TURBISWITCH GA5-VV25	TURBISWITCH GA5; PPH unions ND40
422 511	TURBISWITCH GA5-VV26	TURBISWITCH GA5; PPH unions ND50
<b>TURBISWITCH GA5-FF.. (Body: PVC; Fittings: PVC loose flanges DIN 2642)</b>		
422 541	TURBISWITCH GA5-FF11	TURBISWITCH GA5; PVC loose flanges ND15
422 543	TURBISWITCH GA5-FF12	TURBISWITCH GA5; PVC loose flanges ND20
422 545	TURBISWITCH GA5-FF13	TURBISWITCH GA5; PVC loose flanges ND25
422 547	TURBISWITCH GA5-FF14	TURBISWITCH GA5; PVC loose flanges ND32
422 549	TURBISWITCH GA5-FF15	TURBISWITCH GA5; PVC loose flanges ND40
422 561	TURBISWITCH GA5-FF16	TURBISWITCH GA5; PVC loose flanges ND50
422 540	TURBISWITCH GA5-FF17	TURBISWITCH GA5; PVC loose flanges ND65
422 542	TURBISWITCH GA5-FF18	TURBISWITCH GA5; PVC loose flanges ND80
422 544	TURBISWITCH GA5-FF19	TURBISWITCH GA5; PVC loose flanges ND100
<b>TURBISWITCH GA5-FF.. (Body: PPH; Fittings: PPH loose flanges, DIN 2642)</b>		
422 551	TURBISWITCH GA5-FF21	TURBISWITCH GA5; PPH loose flanges ND15
422 553	TURBISWITCH GA5-FF22	TURBISWITCH GA5; PPH loose flanges ND20
422 555	TURBISWITCH GA5-FF23	TURBISWITCH GA5; PPH loose flanges ND25
422 556	TURBISWITCH GA5-FF24	TURBISWITCH GA5; PPH loose flanges ND32
422 557	TURBISWITCH GA5-FF25	TURBISWITCH GA5; PPH loose flanges ND40
422 558	TURBISWITCH GA5-FF26	TURBISWITCH GA5; PPH loose flanges ND50
422 559	TURBISWITCH GA5-FF27	TURBISWITCH GA5; PPH loose flanges ND65
422 552	TURBISWITCH GA5-FF28	TURBISWITCH GA5; PPH loose flanges ND80
422 554	TURBISWITCH GA5-FF29	TURBISWITCH GA5; PPH loose flanges ND100

Other versions on request

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**Turbidity measuring cells**  
**TURBISWITCH GA1 / GA5 / GA11**

01-08-2019

D-422.01-EN-AD

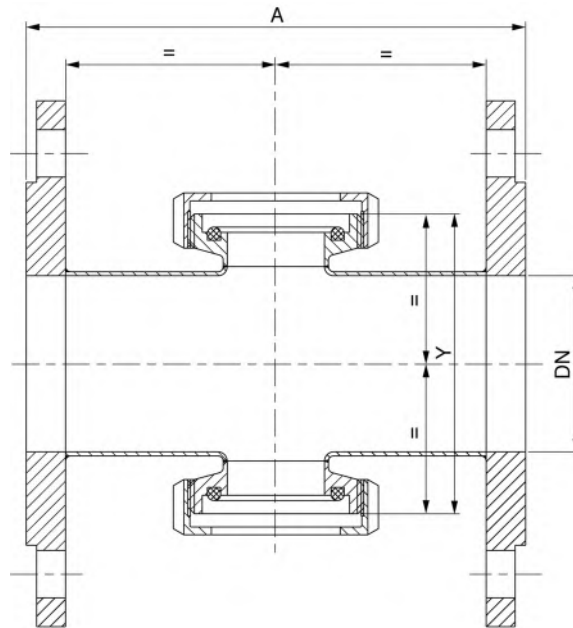
**TUR**

**422-01 /3**

## DIMENSIONS

### TURBISWITCH GA1-F...

DIN 2633



ND	A =	Y =
25	188	92
32	140	92
40	140	92
50	140	102
65	158	122
80	160	138
100	194	158

Other design (materials, fittings, etc.) on request

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**Turbidity measuring cells**  
**TURBISWITCH GA1 / GA5 / GA11**

01-08-2019

D-422.01-EN-AD

**TUR**

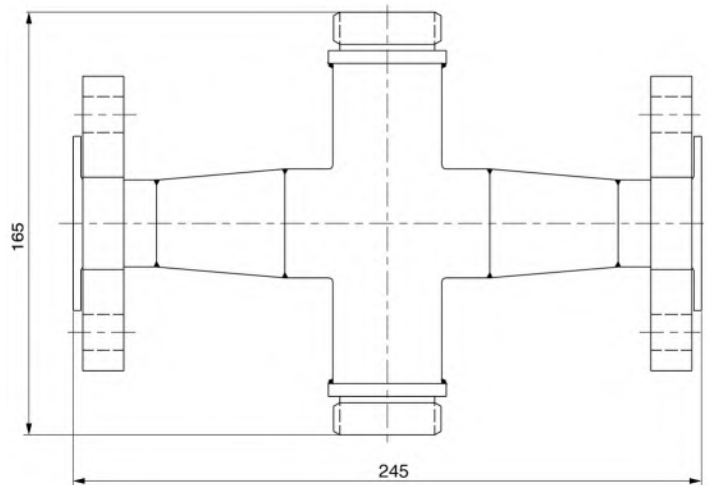
**422-01 /4**

## DIMENSIONS

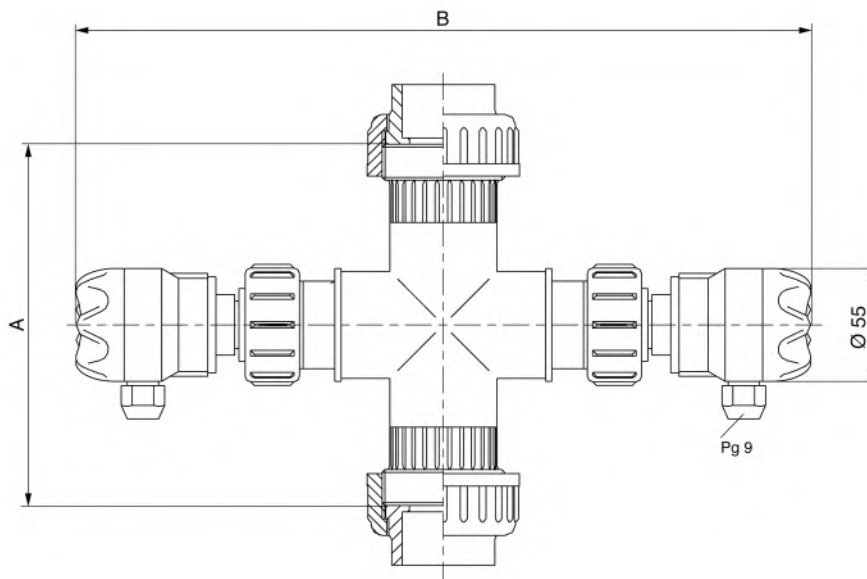
### TURBISWITCH GA11-F...

DIN 2642

(Same dimensions for both ND 25 and ND 32 models)



### TURBISWITCH GA5-VV...



TURBISWITCH GA5-VV 1.. (material: PVC)			TURBISWITCH GA5-VV 2.. (Material: PPH)	
ND	A (±2 mm)	B (±2 mm)	A (±2 mm)	B (±2 mm)
15	152	358	214	359
20	158	358	218	359
25	164	358	222	359
32	176	358	230	359
40	210	358	248	367
50	258	404	281	348
65	202	360	273	360
80	208	375	261	375
100	228	371	247	371

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Turbidity measuring cells  
TURBISWITCH GA1 / GA5 / GA11

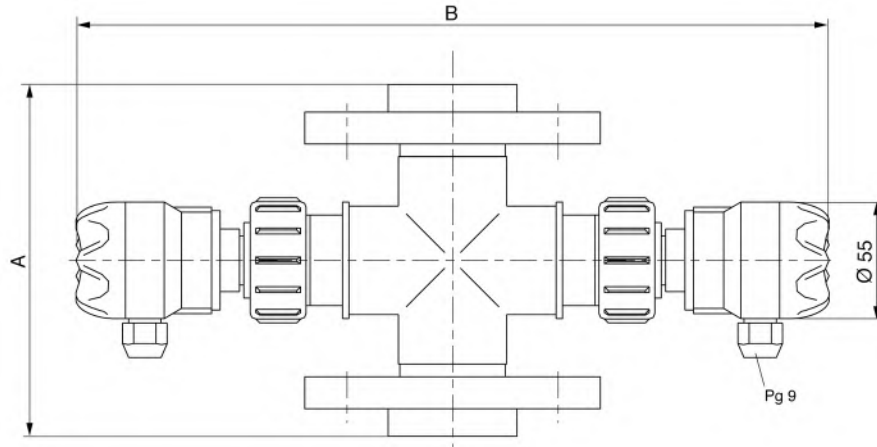
01-08-2019

D-422.01-EN-AD

TUR

422-01 /5

**DIMENSIONS (continued)**



ND	TURBISWITCH GA5-FF 1.. (Material: PVC)		TURBISWITCH GA5-FF 2.. (Material: PPH)	
	A (±2 mm)	B (±2 mm)	A (±2 mm)	B (±2 mm)
15	143	358	214	359
20	149	358	218	359
25	155	358	222	359
32	167	358	230	359
40	197	358	254	367
50	237	404	290	348
65	290	360	290	360
80	310	375	310	375
100	350	371	350	371
125	350	401	350	401
150	350	421	350	421
200	350	461	350	461



# Immersion probe TURBISWITCH CP2



TURBISWITCH CP2 Z0



TURBISWITCH CP2 ZR

- Turbidity control on adjustable threshold
- PVC probe, IP 68
- Detection range: within 100 ... 30 000 FAU
- Immersion depth: Max. 10 m
- To connect to a TURBISWITCH GS4

## APPLICATIONS

- Level detection of blanket sludge
- Phase separation detection
- Effluents monitoring
- Monitoring of turbidity limit of liquids

## DESCRIPTION

A complete system includes a CP2 probe connected to a TURBISWITCH GS4 controller. It provides a contact as soon as the turbidity reaches the preset value.

The emitter sends the infra-red light beam through the liquid to the receiver. The signal variations due to the turbidity changes are analysed by the TURBISWITCH GS4 to detect an override threshold and then to actuate the relay output.

To avoid false alarms due to air bubbles or accidental excess of turbidity, delays are adjustable between 0.1 and 9.9 s on both increasing and decreasing turbidity.

## TECHNICAL FEATURES

Construction	PVC
Protection	IP 68
Detection range	100 ... 30000 FAU
Immersion depth	Max.: 10 m
Liquid temperature	0... +60 °C
Cable	TPK Shielded cable, 2 x 0.5 mm <sup>2</sup> , resistant to acid and base liquids, standard length 6 m (other on request)
Mounting	Cable suspended With PVC extension tube, standard length 1 m or 1.5 m (other on request, max. 2 m) With mounting clamp Ø40mm

**EC Conformity: The instrument meets the legal requirements of the current European Directives**

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Immersion probe  
**TURBISWITCH CP2**

01-08-2018

D-425.02-EN-AD

**TUR**

**425-02/1**

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
425 011	TURBISWITCH CP2 Z0	CP2 100 ... 30000 FAU, cable length 6 m
425 021	TURBISWITCH CP2 ZK	CP2 100 ... 30000 FAU, cable length 6 m; With fastening angle bracket and cable gland
425 031	TURBISWITCH CP2 ZR1000	CP2 100 ... 30000 FAU, cable length 6 m; With extension tube 1000 mm long
425 041	TURBISWITCH CP2 ZR1500	CP2 100 ... 30000 FAU, cable length 6 m; With extension tube 1500 mm long

### Special types on request:

#### Detection probe

##### Type

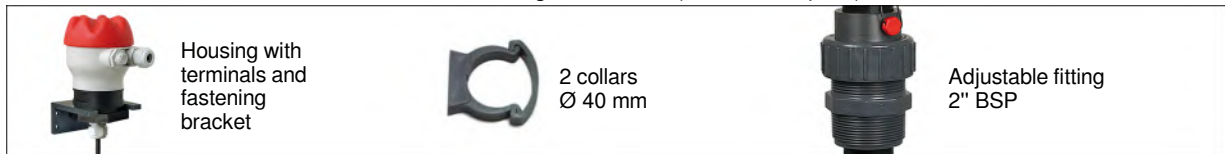
- Z0** Detection probe with 6 m long cable
- ZK** Detection probe with 6 m long cable  
+ Fastening angle bracket and cable gland
- ZR** Detection probe with 6 m long cable  
+ Extension tube (Standard length 1000 mm)

##### ZR version

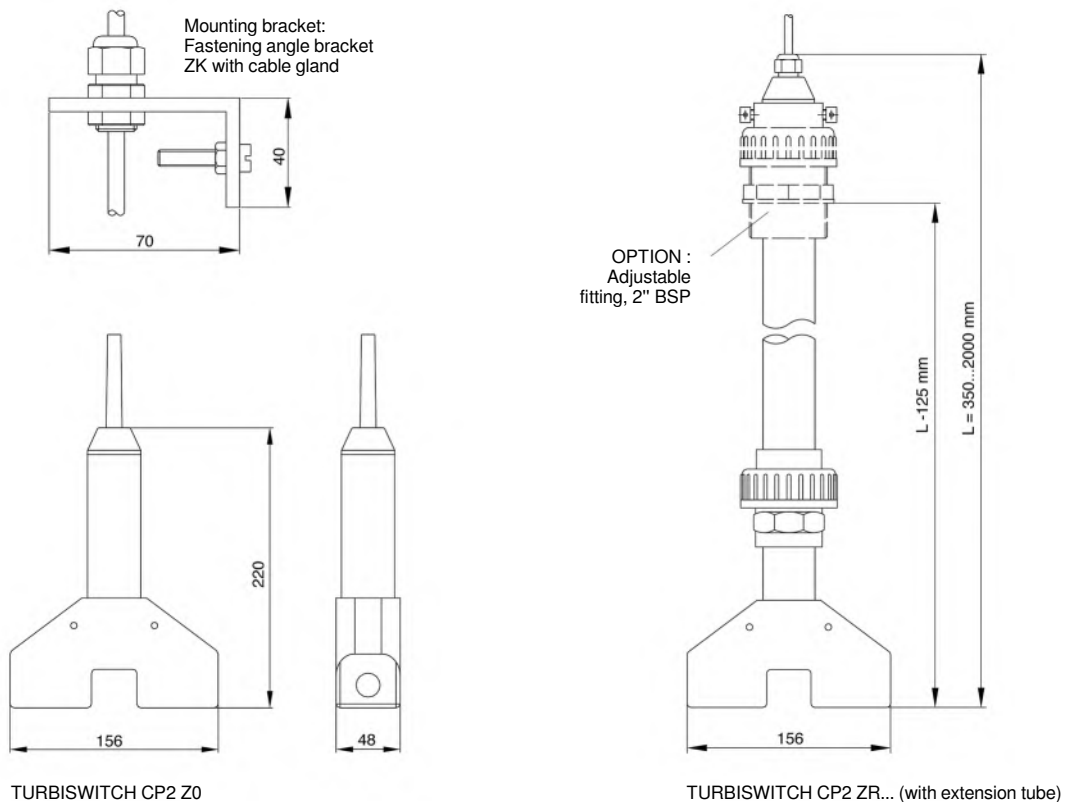
**Length L** (min. 350 mm; max. 2000 mm)

TURBISWITCH CP2      L ..... mm

OPTIONS: Fitting accessories (others on request)



## DIMENSIONS



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Immersion probe  
**TURBISWITCH CP2**

01-08-2018

D-425.02-EN-AD

**TUR**

**425-02/2**

# Battery operated sludge level controller MUDLine® TGS



- Portable equipment, battery operated
- Sludge level detection adjustable on site
- Display of depth up to 10 m
- Signaling: Buzzer and LED
- Including: Battery charger 230 V AC

## DESCRIPTION

Sludge level controller for:

- Sedimentation basins
- Primary and secondary clarifiers
- Septic tanks

## OPERATION

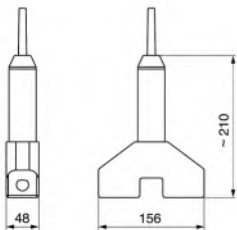
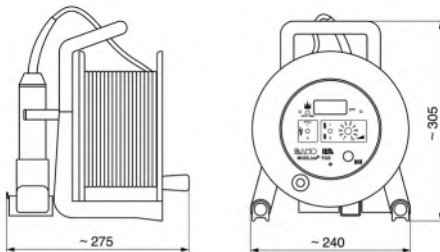
MUDLine consists of a control unit mounted on a cable-drum and a submersible probe with a 10 m long cable.

The probe is equipped with a turbidity sensor for detection of interface between water and sludge, as well as an hydrostatic level sensor to measure the depth of immersion. The depth is permanently displayed on the LCD screen of the control unit. Sensitivity of sensor is switchable between two ranges of sludge concentrations (Low and High).

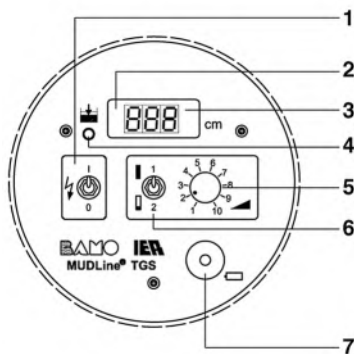
When sludge is detected, a buzzer sounds and light (red LED) is emitted. A self-hold function of display allows the reading of the depth.

## TECHNICAL FEATURES

Measuring range	0... 10 m
Measuring accuracy	About 1 cm
Automatic shutdown	After 7 min of non activity
Autonomy	More than 100 detections of 7 minutes each
Ambient temperature	0... +50 °C
Cable	TPE cable, 10 m long
Material	Probe in PVC
Protection	Probe: IP 68; Handheld housing: IP 44 - EN 60 529
Mass	3.5 kg
Battery charger supply	230 V AC



Control unit



1	On/Off switch
2	Low battery indicator
3	LCD Display, 3 digits
4	Red LED: sludge detected
5	Adjustment potentiometer for threshold of sludge concentration
6	Selector for concentration range
7	Connector for battery charger

EC Conformity: Guidelines, Low Voltages (2006/95/EC) and Electromagnetic Compatibility (2004/108/EG)

## CODE NUMBER AND REFERENCE

Code	Reference
426 100	MUDLine® portable and autonomous sludge level controller

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Battery operated sludge level controller  
**MUDLine® TGS**

02-07-2018

D-426.01-EN-AC

**TUR**

**426-01 /1**

# Underwater settled solids detector MUDSonic



MUDSonic MF

- Detection of settled solid particles in water
- Level monitoring with ultrasonic detector
- Output: 2 limit contacts, 1 fault contact
- Adjustable timer
- Adjustment along 3 measuring ranges (For sludge densities within 50 to 250 g/l )

## APPLICATIONS

- Iron filings detection
- Salt detection in brine tank
- Sludge height monitoring in:
  - Thickeners
  - Primary clarifiers
  - Industrial processes (sludges with iron hydroxide, high density slurry, etc.)

## DESCRIPTION

A complete system includes a MUDSonic TS immersion probe and a MUDSONIC MF operating unit. The detection is done between emitter and receiver of ultrasonic waves. The probe evaluates the concentration of solid particles by attenuation of the signal. The probe is immersed at a fixed height in the tank; It triggers a switch when the concentration (predefined) is reached (sludge level rising by settlement). The trigger point and timer are adjustable on site (real operating conditions).

## TECHNICAL FEATURES

### Operating unit MUDSonic MF

Power supply	100 to 255 V AC - 50/60 Hz (model MF G) or 10 to 30 V DC and 12 to 24 V AC (model MF D)
Consumption	1 ... 5 W
Ambient temperature	-10 ... +45 °C
Relay outputs	<b>2 contacts, 1 threshold, potential-free (N.O.)</b> (Limit exceeded, below the limit) <b>1 potential-free contact, fault alarm (N.O.)</b>

**When the supply voltage is off or in case of power failure, all contacts are open.**

Switching power	250 V AC, 3A / 30 V DC, 1 A
-----------------	-----------------------------

**Caution: The contacts are not protected against overload. Provide an external protective device.**

Housing dimensions:	22.5 x 100 x (h)122 mm
DIN Rail:	35 x 7.5 mm (DIN EN 60715)
Protection:	IP 40
Electrical connections:	Screw connectors; Cables 1.5 mm <sup>2</sup> max.



MUDSonic TS

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Underwater settled solids  
detector  
**MUDSonic**

02-07-2019

D-426.02-EN-AD

**TUR**

**426-02/1**

## FEATURES (continued)

Display:	2½ digit LED, 5x7 dot matrix display 1 Blue LED, relay energized 3 Yellow LEDs, measuring range (LOW / Medium / HIGH)
Settings:	Through a rotary switch on front
Delay:	Adjustable from 0.1 up to 9.9 s

### Probe MUDSonic TS

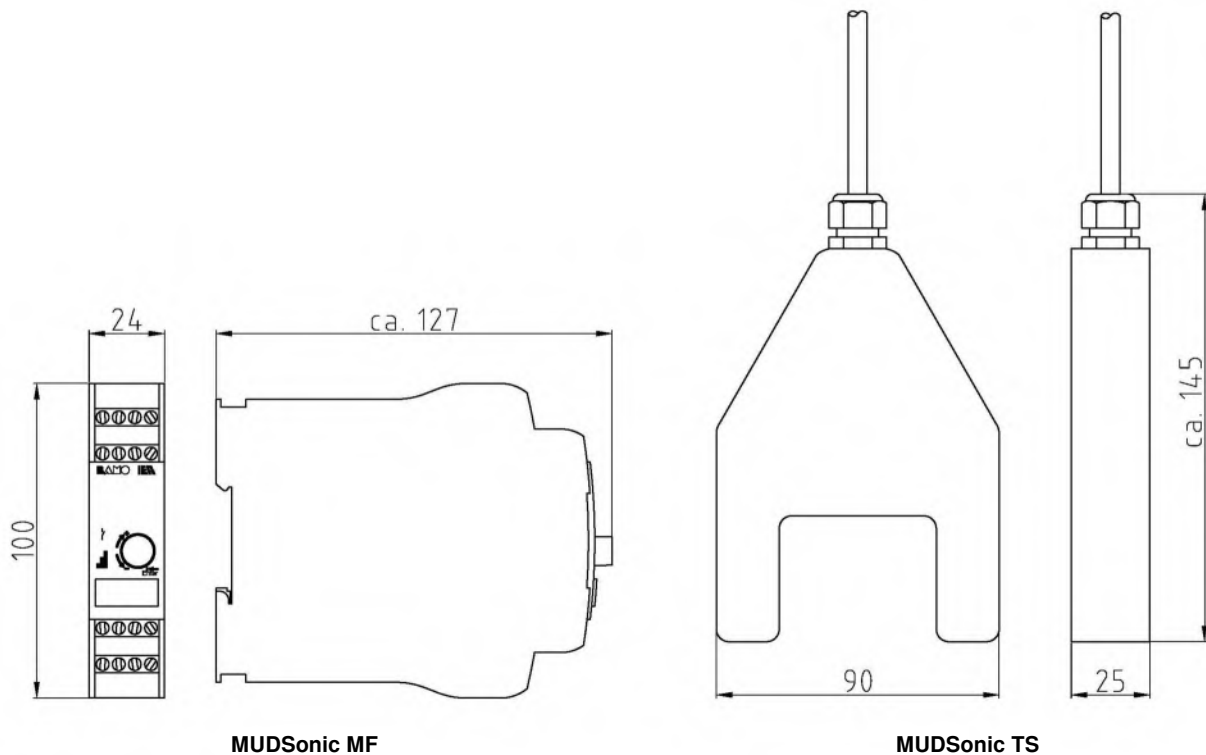
Detector material:	PVC
Cable:	TPK, 10 m long, shielded, 2 x1 mm <sup>2</sup> Other cable materials and lengths request ( PVC, oil and hydrocarbons-proof, etc.). (Max. length 50 m)
Dimensions	145 x 90 x 25 mm
Protection:	IP 68 acc. EN 60529
Measuring principle:	Ultrasonic signal attenuation
Operating temperature	-20 ... +45 °C

**EC Conformity: The instrument meets the legal requirements of the current European Directives**

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
426 200	MUDSonic TS	Probe MUDSonic TS , 10 m long cable
426 300	MUDSonic MF G	Operating unit MUDSonic 100 ... 255 V AC
426 305	MUDSonic MF D	Operating unit MUDSonic 10 ... 30 V DC & 12 ... 24 V AC
<i>Accessories</i>		
232 122	Cabinet	Wall mount cabinet, IP 65

## DIMENSIONS



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Underwater settled solids  
 detector  
**MUDSonic**

02-07-2019

D-426.02-EN-AD

**TUR**

**426-02/2**

# Turbidity monitor BAMOPHAR 436



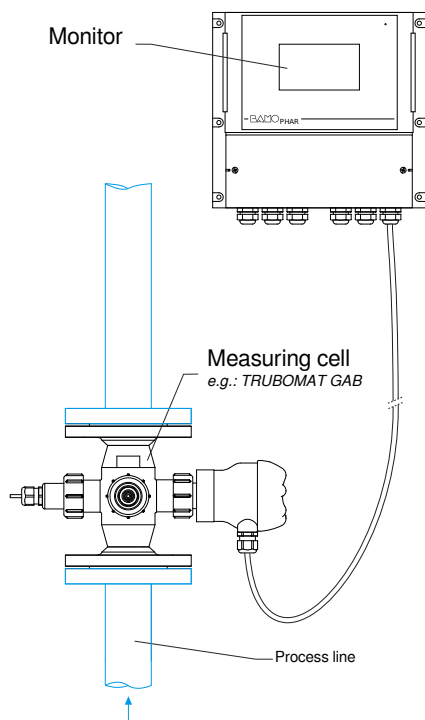
- Color touch screen
- Available scales:  
0.001 to 9999 FNU, FAU, NTU, mg/l, g/l
- 2 outputs 0/4-20mA (measurement & T. °C)
- 3 Independent relays
- 1 Relay for alarming function
- **OPTIONS:**  
RS 422 /J-BUS + LOGGER  
Extension terminal for a 2nd measurement parameter

## APPLICATIONS

Turbidity measurement for monitoring and processing water treatment:

- Monitoring of source or wells for drinkable water
- Monitoring of filtering diaphragms, ultra-pure water production units, reverse osmosis plants
- Measurements in basins, decanting process
- Monitoring of clogging and rinsing of filtering units
- Monitoring of cooling towers
- Control of wastewater before discharge

Complete system (example)



## DESCRIPTION

BAMOPHAR 436 is equipped with a color touch screen to set up the configuration and to display the turbidity, temperature and state of thresholds. Copies of measurement are available on 2 outputs 4-20 mA.

BAMOPHAR 436 displays the turbidity value measured by one of our transmitters, to respond to process requirements.

- TURBICUBE in PVC or PPH and TRUBOMAT GAB in stainless steel, are dedicated to in-line measurement (see data-sheet 444-01 & 446-01)
- TURBISENS in PVC is an immersion probe with transmitter for measurements in tanks, basins, channels (See data-sheet 443-01).

A complete measuring system includes:

- One monitor BAMOPHAR 436
- One turbidity transmitter

### OPTION: Extension terminal for a second parameter

- Allows a second measurement (pH, Flow rate, Conductivity, etc.) (Configuration and display on the main unit)
- Connected to main unit with 2 x 2-wire shielded cable (Cable length between both devices: max. 500 m)
- RS422 and Data Logger of main unit are shared between both units
- Wall or panel or DIN rail mounting: according to the model

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Turbidity monitor  
**BAMOPHAR 436**

12-07-2018

D-436.02-EN-AD

**TUR**

**436-02/1**



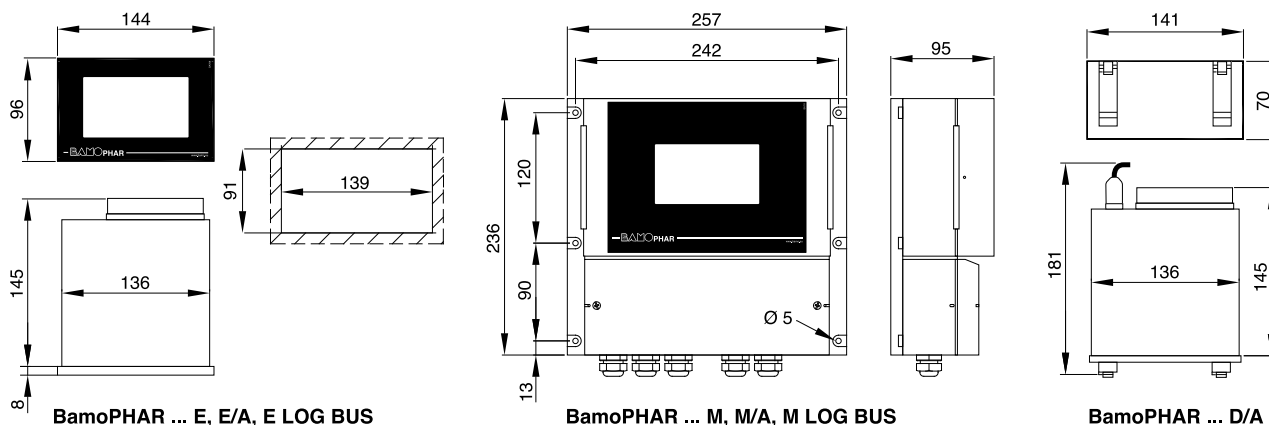
## TECHNICAL FEATURES

End-user interface	Color touch screen 4.3", resolution 480x272 pixels Display of measurements, menus, temperature, relay status Configuration - Keyword protected
Measuring scales	To set up according the turbidity transmitter in use (from 0.001 to 9999 FNU, FAU, NTU, mg/l, g/l)
Sensor signal input	For Turbidity transmitter 4-20 mA, 2-wire or 4-wire technique
Temperature display	Input signal for Pt 100 $\Omega$ 3-wire sensor, within the range 0 to 100 °C Or manually set up of operating temperature.
Relay outputs	4 contacts N.O., potential free
Configurable thresholds	2 Independent thresholds, for measurement or temperature 1 Independent threshold, for measurement or temperature or to external function 1 threshold for alarming function (Temperature sensor fault) or measurement out of range
Contact Initial resistance	100 m $\Omega$ max. (voltage drop 6 V DC 1 A)
Switching power	831 VA AC / 3 A / 277 V AC 90 W / 3 A / 30 V DC
Switching capacity (min.)	100 mA, 5 V DC (variable according to switching frequency, environmental conditions and accuracy).
Measurement output	0/4-20 mA (max. 600 $\Omega$ ) proportional to measurement
Temperature output	0/4-20 mA (max. 600 $\Omega$ ) within the range 0 to 100 °C
Main power supply	230 V - 50/60 Hz (others on request) - Consumption 10 VA
Models	Panel mounting, 96x144 mm; Front IP65; Rear IP4, screw terminals Wall mounting, IP65, cable glands
Storage	-10 ... +70 °C
Operating temperature	-5 ... +50 °C

### OPTION (RS 422 + Logger)

Interface	RS422 output, J-BUS link - Binary slave mode - 2400 to 9600 bauds Data Logger; Record of cycle average measurement - 150 000 records max. on memory card.
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## DIMENSIONS



## CODE NUMBERS AND REFERENCES

Code	Reference	Description
436 400	BAMOPHAR 436 E	Panel mounting 96x144 mm - Front IP 65; Rear IP 40
436 401	BAMOPHAR 436 E/A	Panel mounting 96x144 m- Extension, blind monitor
436 403	BAMOPHAR 436 D/A	Rail mounting - Extension, blind monitor / IP40
436 450	BAMOPHAR 436 E LOG BUS	Panel mounting 96x144 m - RS422 + LOGGER - Front IP 65; Rear IP 40
436 500	BAMOPHAR 436 M	Wall mounting, IP 65, cable glands
436 501	BAMOPHAR 436 M/A	Wall mounting - Extension, blind monitor - IP 65, cable glands
436 520	BAMOPHAR 436 M LOG BUS	Wall mounting - RS 422 + LOGGER - IP 65, cable glands

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Turbidity monitor  
**BAMOPHAR 436**

12-07-2018

D-436.02-EN-AD

**TUR**

**436-02/2**

# Turbidity transmitter, immersion probe

## TURBISENS



- Compact transmitter, 4-20 mA output
- In conformity with EN ISO 7027, infrared light (860 nm), 90° scattered light
- Selectable ranges:  
0 to 50 / 100 / 200 / 500 / 1000 / 2000 FNU
- High resolution from 0.01 FNU
- Integrated 4 digits display
- Anti-fouling coating on optical windows
- Beam windows fouling compensation
- Alarm for defective compensation
- Max. immersion depth: 10 m
- Testing unit for equipment monitoring

### MEASURING PRINCIPLE

TURBISENS applies recommendations of Standard ISO 7027 to measure the turbidity of a liquid with scattered light (90° of angle) and infra-red light source (860 nm).

### DESCRIPTION

The measuring cell, integrated in the probe, includes 2 emitters and 1 receiver. The electronic calculator (in the probe head) provides a 4-20 mA signal, proportional to the measured turbidity.

### APPLICATIONS

#### Monitoring

- WWTP
- Sedimentation process

#### Survey

- Wells
- Water storage tanks

### CODE NUMBERS AND REFERENCES

Code	Reference	Description
443 100	TURBISENS	Turbidity transmitter with immersion probe
OPTIONS		
443 099		Control kit
436 ___	BAMOPHAR 436	Turbidity controller, touch sensitive screen (option RS 422 + LOGGER)

Complete information on BAMOPHAR 436: data-sheet 436-02.

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Turbidity transmitter,  
immersion probe  
**TURBISENS**

02-07-2018

D-443.01-EN-AB

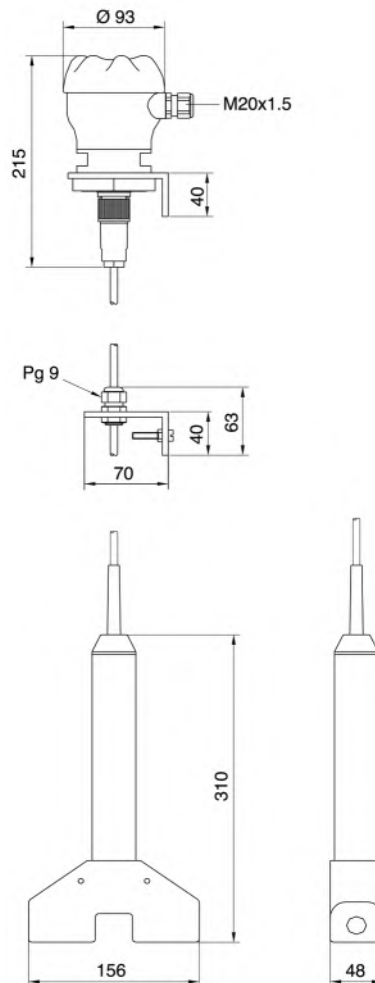
**TUR**

**443-01 /1**

## TECHNICAL FEATURES

Output signal	4-20 mA
Power supply	10 ... 30 V DC
Consumption	1.2 W 0.7 W when measuring loop is powered separately
Selectable Ranges	0 to 50 / 100 / 200 / 500 / 1000 / 2000 FNU
Color compensation	Light compensation on low ranges: 50 and 100 FNU
Resolution	Or 0.01 FNU, or 1 FNU, according to measuring range
Accuracy	±5 % of reading ±1 % F.S. in use
Head	PBT Housing
Protection	IP65 (EN 60 529)
Ambient temperature	0... +45 °C
Display	4 digits for measurement, programming and settings
LED status	On function and alarms
Settings	Rotating potentiometer and push button
Fitting	2" BSP male, counter-nut and Angle bracket
Sensor	PVC immersion probe
Protection	IP 68 (EN 60 529)
Immersion depth	Max. 10 m
Temperature	0... 60 °C
Cable	TPK, Length 6 m (other length on request) Terminal connector: IP 67

**CE Mark** The instrument meets the legal requirements of the current European Directives



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Turbidity transmitter,  
immersion probe  
**TURBISENS**

02-07-2018

D-443.01-EN-AB

**TUR**

**443-01 /2**

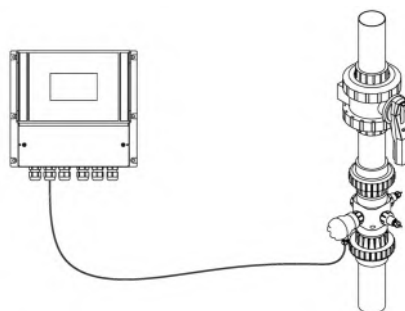
# In-line turbidity system TURBICUBE



TURBICUBE 20 or 1000, PVC version



TURBICUBE 20 or 1000, PPH version



Remote signal to monitor BAMOPHAR  
(option)

- Continuous turbidity measurement according to ISO 7027:  
90° scattered light measurement and 180° attenuated light measurement
- Smooth cell surfaces - no settling of particles
- Measurement ranges:  
0.01 ... 20 FNU  
0.1 ... 500 FNU & 100 ... 1000 FAU
- Output signal: 4-20 mA
- Process connections:  
Flanges or unions

## APPLICATIONS

- Well water monitoring
- Monitoring of filtering or reverse osmosis units.
- Control of the sewage plant outlet
- Cooling water monitoring
- Filter clogging monitoring

## DESCRIPTION

TURBICUBE measures the turbidity of the liquid using attenuated light beam (at 180°) and a scattered light beam (at 90°) with a 860 nm wavelength light, according to european standard ISO 7027  
The measurement system integrates an assembly with 2 emitters and 1 receiver with a micro-processor in the main housing.  
The 4-20 mA output signal corresponds to the selected scale in use.

### TURBICUBE 20:

5 scale ranges to select by DIP switches from 0.01 ... 1 up to 0.01 ... 20 FNU

### TURBICUBE 1000:

5 ranges to select by DIP from 0.1 ... 500 FNU and 100 ... 1000 FAU

### MOUNTING

Only for vertical fully loaded pipe, with ascending flow.  
Slow down sections: 600 mm before device and 400 mm after device.

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In-line turbidity system  
**TURBICUBE**

10-06-2020

D-444.01-EN-AI

**TUR**

**444-01 /1**

## TECHNICAL FEATURES

Power supply	24 V DC stabilized (10 ... 30 V DC)
Consumption	0.5 ... 1 W
Output signal	4-20 mA
Ambient temperature	+5 ... +45 °C
Liquid temperature	PVC: +5 ... +60 °C PPH: +5 ... +80 °C
Pressure limits	Max. 6 bar at 20 °C (PVC and PPH) and 1 bar at 60 °C (PVC and PPH)

### MATERIALS

Measuring cell	PVC or PP
Connection head	PBT housing (glass fiber reinforced); IP 65 according to EN 60529
Sealings	EPDM (others on request)
Optical windows	Borosilicate glass, Cleanosil coating

### MEASURING SCALES

TURBICUBE 20					
ND 20 to ND 100	0.01 ... 1 FNU	0.01 ... 2 FNU	0.01 ... 5 FNU	0.01 ... 10 FNU	0.01 ... 20 FNU

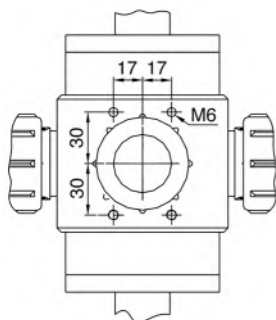
TURBICUBE 1000					
ND 20 ... ND 65	0.1 ... 50 FNU	0.1 ... 100 FNU	0.1 ... 200 FNU	0.1 ... 500 FNU	100 ... 1000 FAU
ND 80 & ND 100	0.1 ... 50 FNU	0.1 ... 100 FNU	0.1 ... 200 FNU	0.1 ... 300 FNU	100 ... 1000 FAU

Accuracy	±5 % of reading, ±1 % of full scale in use
Resolution	0.001 ... 0.2 FNU depending of scale in use
Colour/ Fouling compensation	With TURBICUBE 20 up to ND 65
Configuration	DIP switches, calibration potentiometer
Displayed information	Status: Green LED; Fault: Red LED
Process connections	PVC unions, solvent welding - ND 20 ... ND 100 PPH unions, for welding - ND 20 ... ND 100 Loose flanges ISO 7005, EN 1092, DIN 2501; PVC or PPH - ND 20 ... ND 100

**EC Conformity: The instrument meets the legal requirements of the current European Directives**

## FASTENING

On the measuring cell there are 4x M6 thread tap holes, which can be used for additional support. A bracket (PVC) is also available to fit the TURBICUBE on a wall (option).



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In-line turbidity system  
**TURBICUBE**

10-06-2020

D-444.01-EN-AI

**TUR**

**444-01 /2**

## CODE NUMBERS AND REFERENCES

ND	Range	Fittings	PVC version		PP version	
			Code	Reference	Code	Reference
20	0.1 ... 1000	Threaded Unions	444 112	TURBICUBE VV 1000 1 2 M	444 322	TURBICUBE VV 1000 2 2 M
25			444 113	TURBICUBE VV 1000 1 3 M	444 323	TURBICUBE VV 1000 2 3 M
32			444 114	TURBICUBE VV 1000 1 4 M	444 324	TURBICUBE VV 1000 2 4 M
40			444 115	TURBICUBE VV 1000 1 5 M	444 325	TURBICUBE VV 1000 2 5 M
50			444 116	TURBICUBE VV 1000 1 6 M	444 326	TURBICUBE VV 1000 2 6 M
65			444 117	TURBICUBE VV 1000 1 7 M	444 327	TURBICUBE VV 1000 2 7 M
80			444 118	TURBICUBE VV 1000 1 8 M	444 328	TURBICUBE VV 1000 2 8 M
100			444 119	TURBICUBE VV 1000 1 9 M	444 329	TURBICUBE VV 1000 2 9 M
20	0.01 ... 20	Threaded Unions	444 212	TURBICUBE VV 20 1 2 M	444 222	TURBICUBE VV 20 2 2 M
25			444 213	TURBICUBE VV 20 1 3 M	444 223	TURBICUBE VV 20 2 3 M
32			444 214	TURBICUBE VV 20 1 4 M	444 224	TURBICUBE VV 20 2 4 M
40			444 215	TURBICUBE VV 20 1 5 M	444 225	TURBICUBE VV 20 2 5 M
50			444 216	TURBICUBE VV 20 1 6 M	444 226	TURBICUBE VV 20 2 6 M
65			444 217	TURBICUBE VV 20 1 7 M	444 227	TURBICUBE VV 20 2 7 M
80			444 218	TURBICUBE VV 20 1 8 M	444 228	TURBICUBE VV 20 2 8 M
100			444 219	TURBICUBE VV 20 1 9 M	444 229	TURBICUBE VV 20 2 9 M
20	0.1 ... 1000	Flanges	444 122	TURBICUBE FF 1000 1 2 M	444 332	TURBICUBE FF 1000 2 2 M
25			444 123	TURBICUBE FF 1000 1 3 M	444 333	TURBICUBE FF 1000 2 3 M
32			444 124	TURBICUBE FF 1000 1 4 M	444 334	TURBICUBE FF 1000 2 4 M
40			444 125	TURBICUBE FF 1000 1 5 M	444 335	TURBICUBE FF 1000 2 5 M
50			444 126	TURBICUBE FF 1000 1 6 M	444 336	TURBICUBE FF 1000 2 6 M
65			444 127	TURBICUBE FF 1000 1 7 M	444 337	TURBICUBE FF 1000 2 7 M
80			444 128	TURBICUBE FF 1000 1 8 M	444 338	TURBICUBE FF 1000 2 8 M
100			444 129	TURBICUBE FF 1000 1 9 M	444 339	TURBICUBE FF 1000 2 9 M
20	0.01 ... 20	Flanges	444 222	TURBICUBE FF 20 1 2 M	444 432	TURBICUBE FF 20 2 2 M
25			444 223	TURBICUBE FF 20 1 3 M	444 433	TURBICUBE FF 20 2 3 M
32			444 224	TURBICUBE FF 20 1 4 M	444 434	TURBICUBE FF 20 2 4 M
40			444 225	TURBICUBE FF 20 1 5 M	444 435	TURBICUBE FF 20 2 5 M
50			444 226	TURBICUBE FF 20 1 6 M	444 436	TURBICUBE FF 20 2 6 M
65			444 227	TURBICUBE FF 20 1 7 M	444 437	TURBICUBE FF 20 2 7 M
80			444 228	TURBICUBE FF 20 1 8 M	444 438	TURBICUBE FF 20 2 8 M
100			444 229	TURBICUBE FF 20 1 9 M	444 439	TURBICUBE FF 20 2 9 M

### Accessories:

Code	Description	Description
444 910	TURBICLICK 5.7	Torque wrench for tight mounting of optical windows.
444 903	O-rings for TURBICUBE	Set of EPDM O-rings for TURBICUBE (10 pieces)
444 900	ETR optical windows for TURBICUBE (PVC model)	4 windows, with fittings (PVC) and O-rings
444 901	ETR optical windows for TURBICUBE (PP model)	4 windows, with fittings (PP) and O-rings
444 905	Control kit for TURBICUBE 20	Control kit for TURBICUBE 20 with dry standard rod
444 906	Control kit for TURBICUBE 1000	Control kit for TURBICUBE 1000 with dry standard rod

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In-line turbidity system  
**TURBICUBE**

10-06-2020

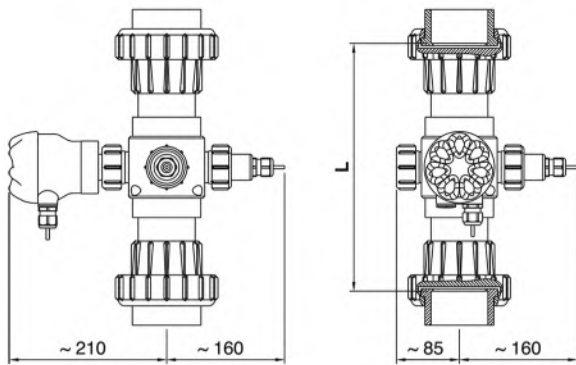
D-444.01-EN-AI

**TUR**

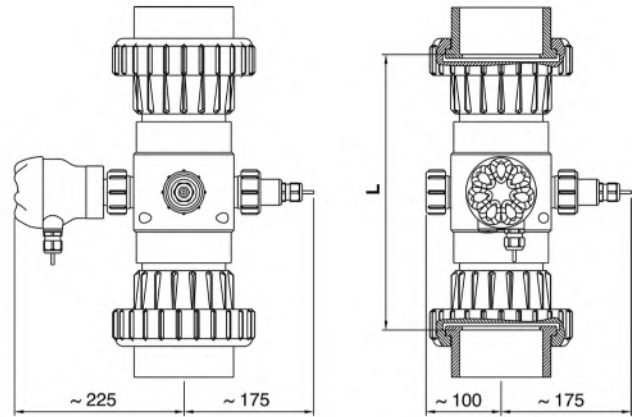
**444-01/3**



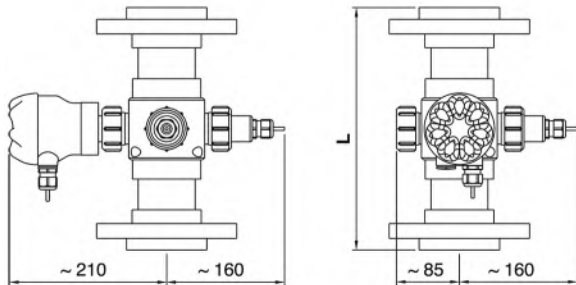
## DIMENSIONS



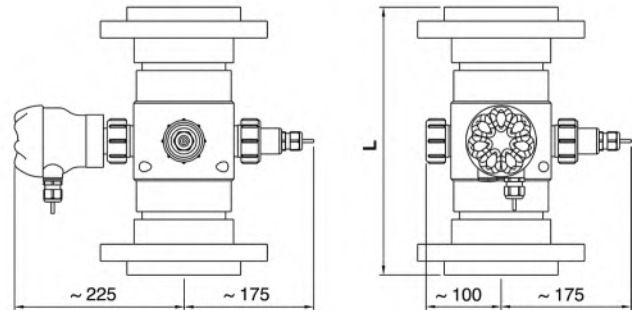
TURBICUBE VV... DN 20 - DN 65



TURBICUBE VV... DN 80, DN 100



TURBICUBE FF... DN 20 - DN 65



TURBICUBE FF... DN 80, DN 100

Dimensions (tolerance:  $\pm 2\text{mm}$ )

ND	Ø D	L → PVC; Unions	L → PVC; Flanges	L → PP; Unions	L → PP; Flanges
20	25	240	240	300	300
25	32	240	240	300	300
32	40	240	240	300	300
40	50	240	240	300	300
50	63	262	262	342	300
65	75	314	314	342	300
80	90	347	347	394	400
100	110	347	347	394	400

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In-line turbidity system  
**TURBICUBE**

10-06-2020

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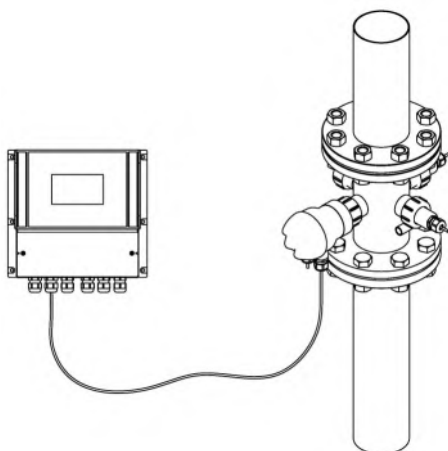
**TUR**

**444-01 /4**

# In-line turbidity system TRUBOMAT GAB



- Continuous turbidity measurement according to ISO 7027  
90 ° scattered light measurement and 180 ° transmitted light measurement
- Measuring cell: AISI 316 L
- Measuring ranges:  
0.01 ... 20 FNU  
0.1 ... 500 FNU & 100 ... 1000 FAU
- Output signal: 4-20 mA (4-wire)
- Process connections:  
DIN flanges or Triclamp



Remote signal to a monitor BAMOPHAR (option)

## APPLICATIONS

- Well water monitoring
- Monitoring of membranes for filtration or reverse osmosis
- Wastewater control in outlet of WWTP
- Cooling plant monitoring
- Filter monitoring

## DESCRIPTION

TRUBOMAT GAB measures the turbidity of liquid applying nephelometric method. For this purpose, a combined transmitted & scattered beams measurements are used, in which a transmitter and a receiver face each other and another transmitter is arranged orthogonally (at an angle of 90 °). The attenuated and scattered lights are recorded by the electronic module (in the connection head) and process the results to transmit a linear output signal. TRUBOMAT GAB delivers a 4-20 mA signal, according to the set measuring range.

### TRUBOMAT GAB 20:

5 scales to select by DIP switches from 0.01 ... 1 up to 0.01 ... 20 FNU

### TRUBOMAT GAB 1000:

5 scales to select by DIP switches from 0.1 ... 500 FNU up to 100 ... 1000 FAU

## INSTALLATION

Installation only in vertical piping and rising flow.

Optimal condition: tranquilization distances of 600 mm before and 400 mm after, the TRUBOMAT.

## TECHNICAL FEATURES

Power supply	24 V DC nominal (10 ... 30 V DC)
Consumption	0.5 ... 1 W
Output signal	4-20 mA
Ambient temperature	+5 ... +45 °C
Liquid temperature	+5 ... +100 °C
Pressure limit	10 bar at 60 °C

### Materials:

Measuring cell	AISI 316 L (1.4404)
Connection heads	PBT housing, glass fiber reinforced; IP65 according to EN 60529
Seals	EPDM (others on request)
Optical windows	Borosilicate glass with Cleanosil nanocoating

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In-line turbidity system  
**TRUBOMAT GAB**

10-06-2020

D-446.01-EN-AC

**TUR**

**446-01 /1**

## TECHNICAL FEATURES (continued)

Measuring ranges

TRUBOMAT GAB 20					
ND 25 to ND 100	0.01 ... 1 FNU	0.01 ... 2 FNU	0.01 ... 5 FNU	0.01 ... 10 FNU	0.01 ... 20 FNU
TRUBOMAT GAB 1000					
ND 20 to ND 65	0.1 ... 50 FNU	0.1 ... 100 FNU	0.1 ... 200 FNU	0.1 ... 500 FNU	100 ... 1000 FAU
ND 80 to ND 100	0.1 ... 50 FNU	0.1 ... 100 FNU	0.1 ... 200 FNU	0.1 ... 300 FNU	100 ... 1000 FAU

Accuracy	±5 % of reading, ±1 % of full scale in use
Resolution	From 0.001 to 0.2 FNU according the scale in use
Color / contamination compensation	Only for TRUBOMAT GAB 20 up to ND 65
Set up	Through DIP switches (6)
Displayed information	Operating: Green LED; Fault: Red LED
Process connections	Flanges DIN 2633 - ND 25 to ND 100 / PN 10 On request: Triclamp DIN 32676 (specific) from ND 25 to ND 100 others on request

EC Conformity: The instrument meets the legal requirements of the current European Directives

## CODE NUMBERS AND REFERENCES

Standard models with flanges DIN 2633:

ND	Measuring range: 0.01 ... 20 FNU			Measuring range: 0.1 ... 500 FNU - 100 ... 1000 FAU	
	Code	Reference		Code	Reference
25	446 223	GAB FF 20 3		446 123	GAB FF 1000 3
32	446 224	GAB FF 20 4		446 124	GAB FF 1000 4
40	446 225	GAB FF 20 5		446 125	GAB FF 1000 5
50	446 226	GAB FF 20 6		446 126	GAB FF 1000 6
65	446 227	GAB FF 20 7		446 127	GAB FF 1000 7
80	446 228	GAB FF 20 8		446 128	GAB FF 1000 8
100	446 229	GAB FF 20 9		446 129	GAB FF 1000 9

Other versions: on request.

Code	Reference	Description
444 910	TURBICLICK 5.7	Torque wrench for optical windows assembly
444 911	O-ring seals for TRUBOMAT GAB	Set of 10 o-ring seals for TRUBOMAT GAB
444 902	Optical windows for TRUBOMAT GAB	Set of optical windows for TRUBOMAT GAB
444 920	Test equipment for GAB 20	Control kit, dry rod, for TRUBOMAT GAB 20
444 921	Test equipment for GAB 1000	Control kit, dry rod, for TRUBOMAT GAB 1000



Torque wrench  
TURBICLICK 5.7 for optical  
windows assembly (option)

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In-line turbidity system  
**TRUBOMAT GAB**

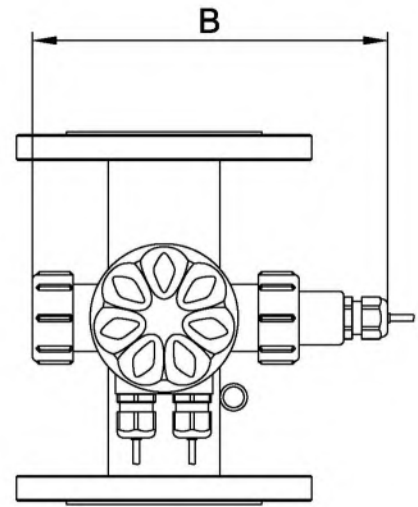
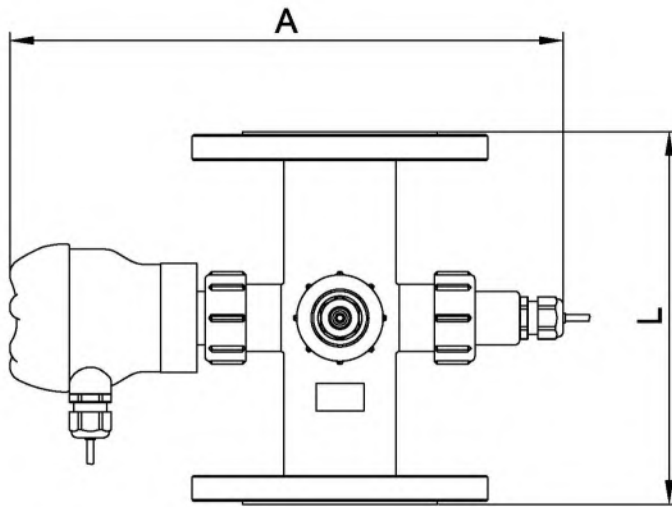
10-06-2020

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**TUR**

**446-01 /2**

## DIMENSIONS



ND	A ± 1 mm	B ± 1 mm	L ± 1 mm Flanged fittings	L ± 1 mm Triclamp fittings	Measuring cell Inner Ø
25	346	222	274	287	65
32			252	265	
40			230	243	
50			190	199	
65			233	255	
80	384	260	208	224	100
100			240	256	

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In-line turbidity system  
**TRUBOMAT GAB**

10-06-2020

D-446.01-EN-AC

**TUR**

**446-01 /3**

# Dissolved oxygen monitor BAMOWIZ 452



- Graphic color touch-sensitive screen
- Dissolved oxygen monitoring:  
0... 20 mg/l ; 0 ... 500 %
- 1 Input for BAMOX 453 probe
- 1 Analogue output 0/4-20 mA
- 3 Relays (Trigger points, Alarm)
- 2 Analogue inputs 4-20 mA

## APPLICATIONS

The BAMOWIZ 452 offers a reliable and accurate measurement solution for the dissolved oxygen concentration (ODO) in the fields of water treatments:

- Water treatment station (e.g.: Aeration basin)
- Rivers, lakes
- Fish farming and aquaculture

## DESCRIPTION

Associated with the BAMOX 453 probe (data-sheet 453-01), the BAMOWIZ 452 allows the measurement, continuously, of oxygen dissolved concentration in the water. With this set, the atmospheric pressure, water temperature and conductivity, are considered to display a reliable and accurate measurement (compensated).

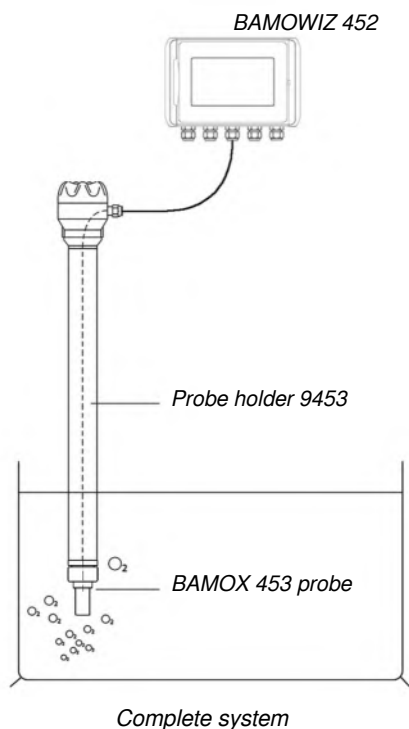
BAMOWIZ has a colour touch-sensitive screen to navigate through an intuitive and multilingual menu; It procures a large display for easy readings of measurements and operating status. To facilitate commissioning, a menu acting on the analog output and the thresholds is used to simulate the measurement.

The BAMOWIZ 452 has two more inputs; Both as 4-20 mA analogue signal (power supplied to sensors).

One of the 3 measurements can be transmitted through the 4-20mA output.

A complete system includes:

- A dissolved oxygen monitor BAMOWIZ 452
- A dissolved oxygen optical probe BAMOX 453 (data-sheet 453-01)
- A probe holder 9453 (data-sheet 453-01)
- An extension cable (between probe holder and monitor) type C8B



## CODE NUMBERS AND REFERENCES

Code	Reference	Description
452 001	BAMOWIZ 452	Dissolved oxygen monitor for BAMOX 453 probe

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Dissolved oxygen monitor  
**BAMOWIZ 452**

04-02-2021

D-452.01-EN-AB

OXY

452-01 /1

## TECHNICAL FEATURES

### Interface

Screen	Graphic color touch-sensitive; size 4/3 480 x 272 pixels
Languages	English; French; German; Polish; Portuguese; Spanish Alphanumeric touch keyboard dedicated for each language

### Inputs:

Digital signal	1 Input for probe BAMOX 453
Analogue signals	2 Inputs of 4–20 mA; 2-wire; 12 V DC / 0 ... 20 mA (Load: 50 Ω)

### Parameters of measurement compensation:

Temperature	Automatic: Built-in NTC (inside the probe BAMOX 453)
Atmospheric pressure	Manually between 500 and 1100 hPa
Salinity	Manually between 0 to 60 g/kg

### Outputs:

Output signal	1 Analogue output 4–20 mA (with or without linearization)
Relays	3 N.O. contacts, potential free
Adjustable trigger points	1 to 8 trigger points, to assign at 2 or 3 relays
Switching power	3 A / 250 V AC
Hysteresis	Adjustable from 0 to 100 %
Delay	Adjustable from 0 to 9999 s

### Other operations:

- Linearization (20 points) on 1 input signal 4-20 mA
- Bargraph display of each measurement signal
- Display of Minima and Maxima values

### Electrical specifications

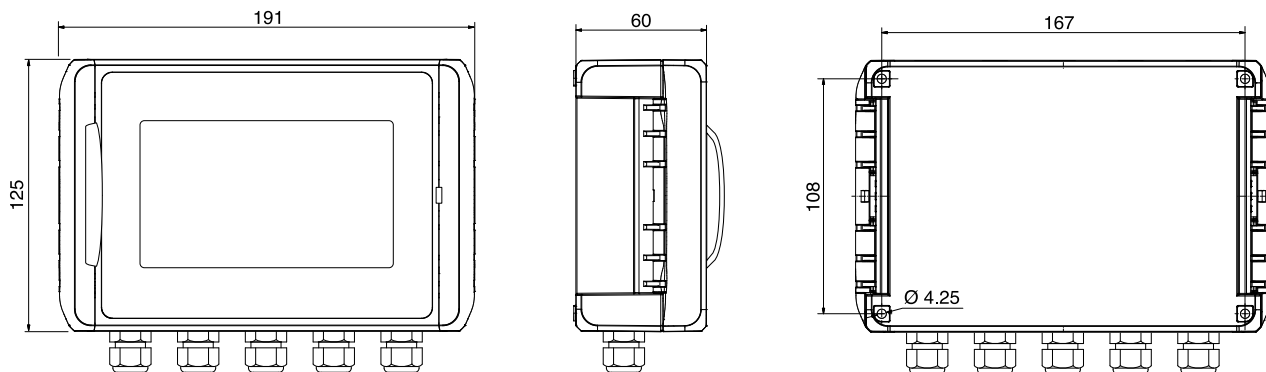
Main power	100 ... 240 V AC 50/60 Hz
Consumption	Max. 5 VA
Cable connections	Screw terminals
Cable inlets	5 Cable glands, PG 9

### Environnement

Mounting	Wall mount cabinet, in ABS; IP 65
Ambient temperature	-10 ... +50 °C

**EC Conformity:** The instrument meets the legal requirements of the current European Directives.

## DIMENSIONS



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Dissolved oxygen monitor  
**BAMOWIZ 452**

04-02-2021

D-452.01-EN-AB

**OXY**

**452-01 /2**



# Dissolved oxygen optical probe BAMOX 453



- Optic-luminescent measurement
- Range: 0 to 20 mg/l
- Easy and reduced maintenance
- Temperature compensated signal
- Body: Or stainless steel, or titanium

## APPLICATIONS

- Urban wastewater treatments (nitrifying / denitrifying process)
- Treatment of industrial effluents
- Monitoring of surface waters, coastal waters, aquariums
- Fish farming and aquaculture (fresh water, sea water)
- Drinkable water

## DESCRIPTION

The BAMOX 453, dissolved oxygen sensor, applies the optical luminescence measurement technology approved by ASTM International Method D888-05.

This method confers many advantages:

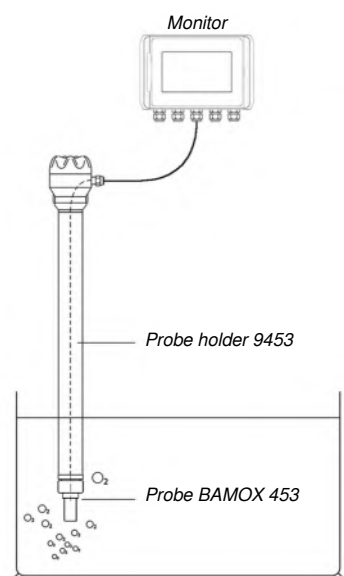
- High accuracy even for a low concentration of oxygen
- Reduced operating cost: Interchangeable sensor-end
- Optimized maintenance: No signal drift
- Easy commissioning: No necessary calibration
- Suitable for all environments: No consumption of oxygen
- Simplified installation: Direct immersion (no flow-cell)

With the integrated pre-amplifier and digital signal, the sensor is highly resistant to electrical noise. The measured value of dissolved oxygen is automatically compensated of variations of temperature, pressure and salinity, then transmitted to the monitor BAMOWIZ 452 (data-sheet 452-01)

The sensor-end is easy to replace for an easier maintenance task. The compact and robust probe is available or in passivated 316 L stainless steel, or in titanium for applications in seawater and corrosive environments.



BAMOWIZ 452



Complete system

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
453 001	BAMOX 453 I	AISI 316 L probe
453 002	BAMOX 453 Ti	Titanium probe
<b>Accessories</b>		
453 010	9453	Probe holder, PVC Ø50 (L = 0.5 to 2 m)
130 112	9358 PE	PE adjustable flange for probe holder Ø 50
453 110	C4B	Extension cable (4 wires)
453 100	CM12	M12 female connector
453 120	C4B-20/ CM12	Extension cable: 20 m with connector M12
453 130	C4B-30/ CM12	Extension cable: 30 m with connector M12
<b>Spare parts</b>		
453 911	BAMOX 453 I/SP	Sensor end for AISI 316 L probe
453 912	BAMOX 453 Ti/Sp	Sensor end for titanium probe

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Dissolved oxygen optical  
probe  
**BAMOX 453**

02-06-2021

D-453.01-EN-AC

OXY

453-01 /1

# Alarm unit for oil-water separators NivOil® / 230 V AC



- Synoptic board of alarms on the front
- Automatic sensor recognition:  
Hydrocarbons, sludge, overflow
- 3 Output relays, change-over contacts
- Audible alarm (buzzer)
- Intrinsic safety Ex II (1) G [Ex ia] IIB

## APPLICATIONS

- Oil-water separator monitoring: Meets the requirements of EN 858-1 and 2, for light liquid separators, sewage treatment.

## DESCRIPTION

The alarm unit NivOil-CU (BVS 07 ATEX E 090) monitors levels in oil/water separators, up to three detection probes.

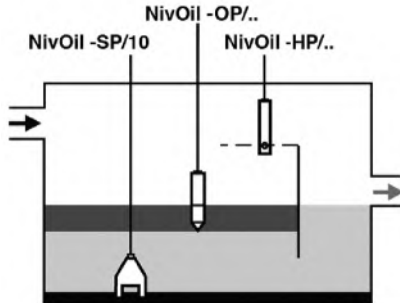
The oil layer thickness probe NivOil-OP/.. (BVS 07 ATEX E 091 X) detects the thickness of hydrocarbons fluids layer floating over the water.

The overflow probe NivOil-HP/.. (BVS 07 ATEX E 092 X) detects the overflow level in the separator.  
This alarm can inform that drainage is blocked.

The sludge level probe NivOil-SP/.. (BVS 09 ATEX E 021 X) detects the highest permissible level of sludge layer.  
As soon as the sludge level has reached the too high level an alarm signal is triggered.

### All detection loops are automatically set up (self recognition).

Therefore it is possible to connect any of the three intrinsically safe NivOil probes to any of the three intrinsically safe channels of the NivOil alarm unit.  
The alarm unit NivOil-CU detects for each channel which probe is connected and indicates the corresponding LED on the front panel.  
If a channel is not assigned, its LEDs remain dark during operation.  
The unit has a built-in audible alarm (piezo); If necessary, it can be disabled through a DIP switch.



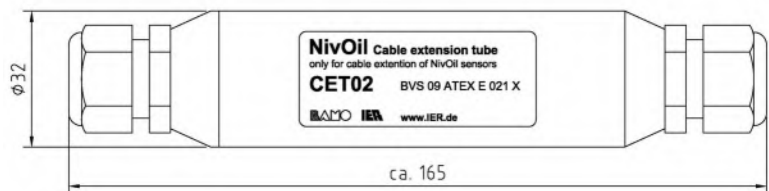
## CABLE EXTENSION

### Coupler CET02 for cable extension

The cable between the probe and the alarm unit can be extended up to 300m (Total length depends of cable capacitance and inductance).  
For this purpose, the use of our Ex-approved cable coupler CET02 is recommended.



520 917



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Alarm unit for oil-water  
separators  
**NivOil® / 230 V AC**

16-04-2021

D-531.01-EN-AD

NIV

531-01 /1

531

531

## TECHNICAL FEATURES

### NivOil-CU/220 – Alarm unit

Main power supply	230 V AC – 50 Hz
Consumption:	About 9 VA (with 3 probes connected)
Probe inputs	3 inputs with automatic probe recognition, indifferently: Probe NivOil-OP for hydrocarbons layer thickness detection Probe NivOil-HP for overflow detection Probe NivOil-SP for settled sludge level detection
Monitoring	Alarm unit NivOil-CU is equipped with a broken or short circuit control on each detection loop
Outputs	3 Relay outputs, 230 V AC, 3A; Potential free changeover contact
Display and signals	1 Operating channel LED (green) on each channel 1 alarm LED (red) on each channel Built-in audible alarm, disabled by DIP switch
Temperature limits	-20 ... +60 °C
Intrinsically safe unit	Ex II (1) G [Ex ia] IIB
Ex loop impedance	The maximum permissible values (U <sub>o</sub> , I <sub>o</sub> , P <sub>o</sub> and C <sub>o</sub> , L <sub>o</sub> ) of the intrinsically safe input circuits can be found in Annex 1 to the BTA (BVS 07 ATEX E 090 / § 15.3.2) per channel and in conjunction with the NivOil probes.
EC-Type Examination Certificate	BVS 07 ATEX E 090 (The alarm unit must be installed in a non-hazardous area)
Protection	IP 65 according EN 60529
Front panel, interface	2 push buttons for diagnostic test and alarm clearance

### Probe NivOil-OP/10 or OP/15 for hydrocarbons layer thickness detection

(Only for use with our alarm units NivOil and RAC531)

Probe body	Antistatic PE
Sensor end	Stainless steel 316 L
Cable	Resistant to hydrocarbon fluids, 2x 1 mm <sup>2</sup> ; blue colour; standard length: 10 m, Other lengths on request; Extension: up to 300 m, [C] line ≤ 200 nF/km and [L] line ≤ 1 mH/km
Dimensions	About O.D. 32 mm; Height: 230 mm; With marks each 5 cm for height adjustment
Protection	IP 68 according EN 60529
Detection principle	Capacitive detection, high frequency
Temperature limits	-20 ... +60 °C
EC-Type Examination Certificate	BVS 07 ATEX E 091 X (For zone 0)
Ex loop impedance	The maximum permissible values (U <sub>o</sub> , I <sub>o</sub> , P <sub>o</sub> and C <sub>o</sub> , L <sub>o</sub> ) of the intrinsically safe detection loop are given in Annex 2 to the BTA (BVS 07 ATEX E 091 / item 15.3.1).
Intrinsic safety	Ex II 1 G Ex ia IIB T4

### Probe NivOil-HP/10 or 15 for overflow detection

(Only for use with our alarm units NivOil)

Probe body	Antistatic PE
Sensor	Stainless steel 316 L
Cable	Resistant to hydrocarbon fluids, 2x 1 mm <sup>2</sup> ; blue colour; standard length: 10 m, Other lengths on request; Extension: up to 300 m, [C] line ≤ 200 nF/km and [L] line ≤ 1 mH/km
Dimensions	About O.D. 32 mm; Height: 195 mm
Protection	IP 68 according EN 60529
Detection principle	PTC sensor, heated
Temperature limits	-20 ... +60 °C
EC-Type Examination Certificate	BVS 07 ATEX E 092 X (For zone 0)
Ex loop impedance	The maximum permissible values (U <sub>o</sub> , I <sub>o</sub> , P <sub>o</sub> and C <sub>o</sub> , L <sub>o</sub> ) of the intrinsically safe detection loop are given in Annex 3 to the BTA (BVS 07 ATEX E 092 § 15.3.1).
Intrinsic safety	Ex II 1 G Ex ia IIB T3

### Probe NivOil-SP/10 for settled sludge level detection

(For use only with our alarm unit NivOil CU/220)

Probe body	PVC
Cable	Resistant to hydrocarbon fluids, 2x 1 mm <sup>2</sup> ; blue colour; standard length: 10 m, Other lengths on request; Extension: up to 300 m, [C] line ≤ 200 nF/km and [L] line ≤ 1 mH/km
Dimensions	About 145 x 90 x 25 mm
Protection	IP 68 according EN 60529
Detection principle	Ultrasonic sensor
Temperature limits	-20 ... +60 °C
EC-Type Examination Certificate	BVS 09 ATEX E 021 X (For zone 0)
Ex loop impedance	The maximum permissible values (U <sub>o</sub> , I <sub>o</sub> , P <sub>o</sub> and C <sub>o</sub> , L <sub>o</sub> ) of the intrinsically safe detection loop are given in Annex to the BTA (BVS 07 ATEX E 021 X § 15.3.1).
Intrinsic safety	Ex II 1 G Ex ia IIB T4

**EC Conformity: The instruments meet the legal requirements of the current European Directives**

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**Alarm unit for oil-water  
separators**

**NivOil® / 230 V AC**

16-04-2021

D-531.01-EN-AD

**NIV**

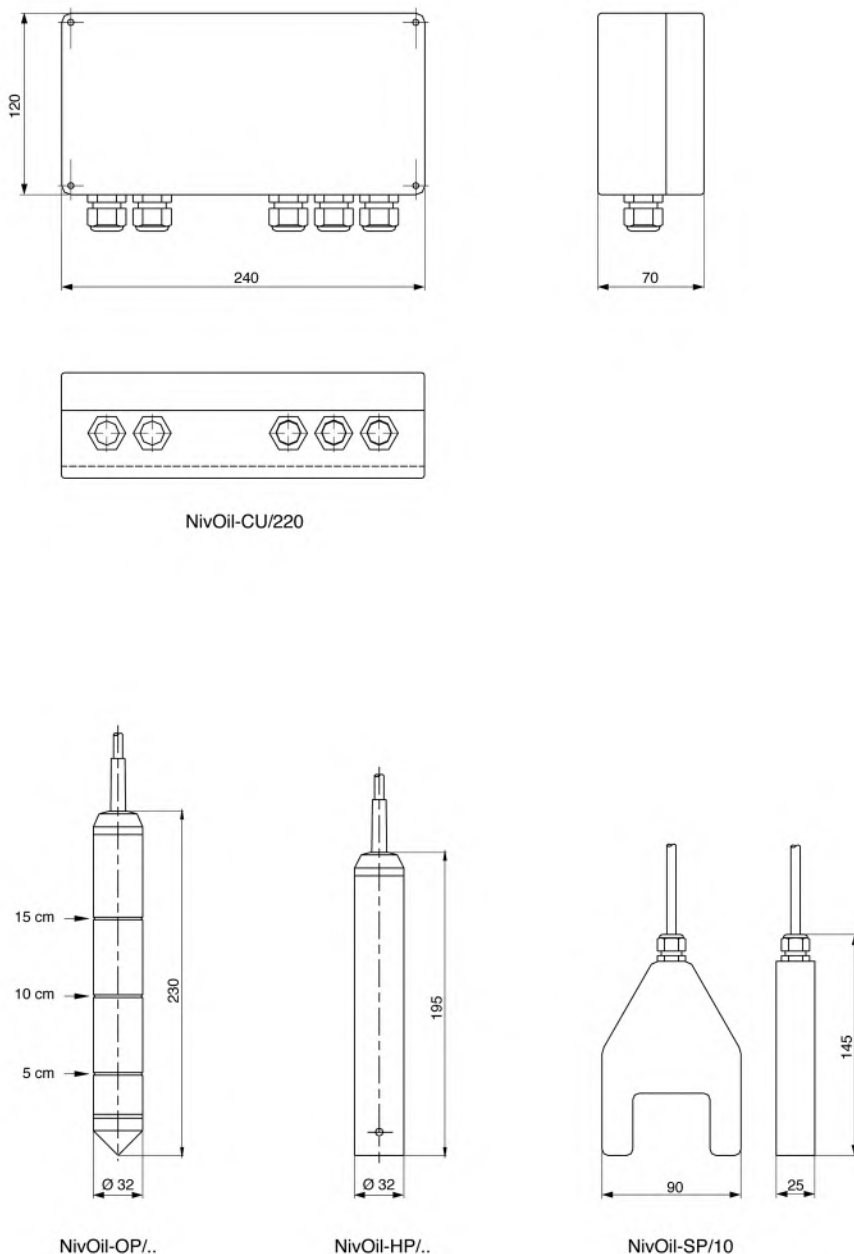
**531-01 /2**

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
531 050	NivOil-CU/220	Alarm unit, 220 V AC; IP65
531 102	NivOil-OP/10	Layer thickness probe, 10 m long cable
531 200	NivOil-HP/10	Overfill probe, 10 m long cable
531 301	NivOil-SP/10	Settled sludge probe, 10 m long cable
531 550	NivOil-CET-02	IP65 Coupler for cable extension (cable $\leq 4 \text{ mm}^2$ )
532 502	SK-PVC-2x1	Extension cable, 2-wire, for 1 detection ATEX probe

Other versions: on request

## DIMENSIONS



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Alarm unit for oil-water  
separators

**NivOil® / 230 V AC**

16-04-2021

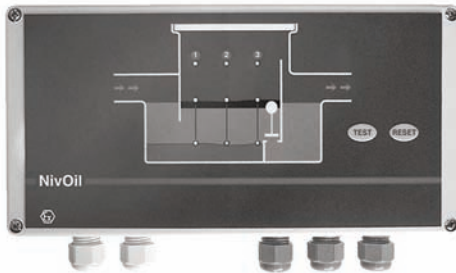
D-531.01-EN-AD

**NIV**

**531-01/3**

# Alarm system for oil-water separator

## NivOil® / 12 V DC



- Low power consumption
- 10...27 V DC power supply input
- Zone 0 ATEX certified  
(Zone 2 for the alarm device location)
- Solar powered or standard electric battery
- Energy saving mode adjustable (*control frequency adjustable from 6 min up to 9 days*)
- 3 inputs, for any NIVOIL probes
- Automatic recognition of type probe
- 3 relay outputs with audible alarm

### DESCRIPTION

Designed for the monitoring of hydrocarbon fluids separators, the alarm device NIVOIL may be connected to 1, 2 or 3 sensors.

- Hydrocarbon layer thickness sensor to detect when the maximum thickness is reached.
- Overfill sensor to detect when the fluids are on the highest level.
- Sludge layer sensor for alarming when maintenance is necessary.

The 3 sensors may be connected to any input of the alarm device NIVOIL. Any combination of the sensors can be wired. The instrument recognizes automatically the sensor type. A LED indicates the sensor type on the diagram on the front board. The alarm device NIVOIL has a built-in buzzer; it is possible to disable its function.

#### Low power consumption

This model working with a 10 to 27 V DC power supply has low energy consumption. It is designed for the use of a solar powered battery or any standard electric battery (*consumption is 0.1 W – 12 V DC – with 3 sensors connected with one complete control cycle per hour*).

#### Sleep mode

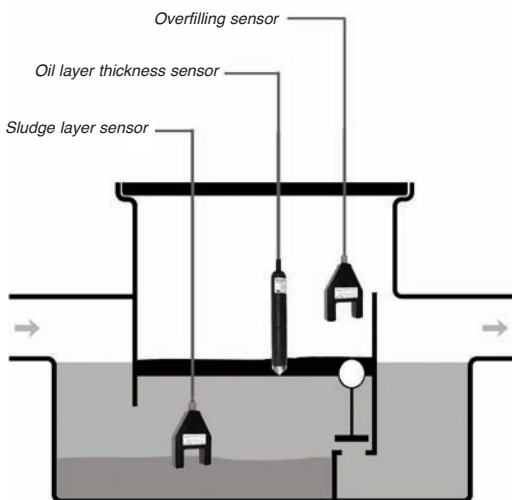
This mode is adjustable by modifying the frequency of control cycle (*from 6 minutes up to 9 days*). A continuous control mode could be switched on when there is no limit on consumption.

#### ATEX certified

All the components are ATEX certified. The sensors are for a location in zone 0 and the alarm device corresponds to a zone 2.

### CODE NUMBERS AND REFERENCES

Code	Reference	Designation
531 040	NIVOIL-CU/12	Alarm device, 12 V DC, Housing IP 65
531 102	NIVOIL-OP/10	Hydrocarbon fluid layer thickness sensor, 10 m long cable
531 205	NIVOIL-HPS/10	Overfilling sensor U-S, 10 m long cable
531 301	NIVOIL-SP/10	Sludge layer sensor, 10 m long cable
531 550	NIVOIL-JT	Cable coupling, IP 65 for cable $\leq 4 \text{ mm}^2$
532 502	SK-PVC-2x1	Extension cable 2 wires, for 1 ATEX sensor



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 Fax : (+33) 01 34 10 16 05 - E-mail : [info@bamo.fr](mailto:info@bamo.fr)

Alarm system for  
oil-water separator  
**NivOil® / 12 V DC**

23-04-2010

531 I1 02 B

**NIV**

**531-02/1**

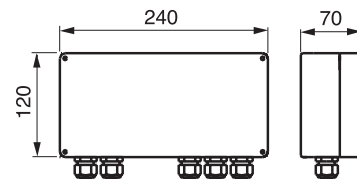
531



## TECHNICAL FEATURES

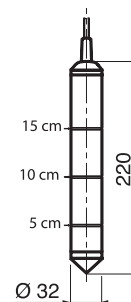
### NivOil® CU/12 – Alarm device

Main power supply:	10...27 V DC
Power consumption:	0.1 W / 12 V DC (3 sensors connected and 1 control cycle per hour)
Housing protection:	IP65, according EN 60529
Temperature limits:	-20...+60°C
Sensor inputs:	3 inputs with automatic sensor type detection
Monitoring:	for hydrocarbon fluids layer thickness, overflow level, sludge layer level The alarm device NIVOIL has an auto-diagnostic of measuring loop An alarm signal occurs in case of dysfunction due to a short circuit or a broken cable.
Display and signals:	1 function signal LED (green) on each channel 1 alarm signal LED (red) on each channel Built-in audible alarm, disabled by DIP switch configuration
Front panel:	2 push buttons for diagnostic test and alarm clearance
Outputs:	3 relay outputs, Power switch 250 V AC as a maximum / 3A, Potential free change over contacts
ATEX Certificate:	<b>BVS 10 ATEX E 011</b> / The alarm device may be mounted in Ex area, zone 2
Ex protection class:	<b>Ex II 3 (1) G Ex nAC [ia Ga] IIB / IIA T4 Gc (Intrinsic safety)</b>
CE Marks	According to <b>EC</b> directives (72/23/EEC), Low Voltage Guidelines: <b>RL 2006/95/EG &amp; RL93/68/EWG</b> , EMV Guidelines: <b>RL 89/336/EWG</b> (EN 61326)
ATEX	RL 94/9/EG (ATEX 95) <b>EN 60079-0</b> (General requirements) - <b>EN 60079-11</b> (Intrinsic safety) - <b>EN 60079-26</b> (Group II; category 1G)



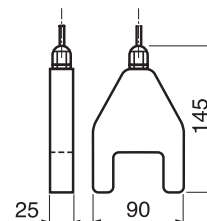
### NivOil® -OP/10 – Hydrocarbon fluid layer thickness sensor (Only for use with an alarm device NIVOIL)

Sensor type:	Capacitive, high frequency
Wetted parts:	Antistatic PE stem; Stainless steel end probe
Cable:	Elastomer resistant to oils and hydrocarbon fluids, blue colour; wires 2x 1mm <sup>2</sup> , connections to the alarm device NIVOIL on screw connectors; 10 m long cable (other lengths on request - maximal length is 300 m)
Protection:	IP68 acc. EN 60529
Temperature limits:	-20...+60°C
ATEX certificate:	<b>BVS 07 ATEX E 091 X</b> / This sensor is suitable for location in zone 0
Ex protection class:	<b>Ex II 1 G Ex ia IIB T4 (Intrinsic safety)</b>



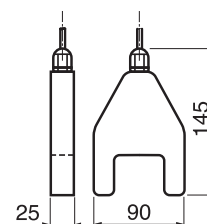
### NivOil® -HPS/10 – Overflowing sensor (Only for use with an alarm device NIVOIL)

Sensor type:	Ultrasonic detection type
Wetted parts:	PVC; Elastomer cable
Cable:	Elastomer resistant to oils and hydrocarbon fluids, blue colour; wires 2x 1mm <sup>2</sup> , wiring on screw connectors; 10 m long cable (other lengths on request - maximal length is 300 m)
Protection:	IP68 acc. EN 60529
Temperature limits:	-20...+60°C
ATEX certificate:	<b>BVS 09 ATEX E 021 X</b> / This sensor is suitable for location in zone 0
Ex protection class:	<b>Ex II 1 G Ex ia IIB T4 (Intrinsic safety)</b>



### NivOil® -SP/10 – Sludge layer sensor (Only for use with an alarm device NIVOIL)

Sensor type:	Ultrasonic detection type
Wetted parts:	PVC; Elastomer cable
Cable:	Elastomer resistant to oils and hydrocarbon fluids, blue colour; wires 2x 1mm <sup>2</sup> , wiring on screw connectors; 10 m long cable (other lengths on request - maximal length is 300 m)
Protection:	IP68 acc. EN 60529
Temperature limits:	-20...+60°C
ATEX certificate:	<b>BVS 09 ATEX E 021 X</b> / This sensor is suitable for location in zone 0
Ex protection class:	<b>Ex II 1 G Ex ia IIB T4 (Intrinsic safety)</b>



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Alarm system for  
oil-water separator  
**NivOil® / 12 V DC**

23-04-2010

531 I1 02 B

**NIV**

**531-02/2**



# Solar powered alarm unit for oil-water separators BAMOBX SOLAR (BBS)



- Monitoring of oil-water separators
- Autonomous complete system
- Field installation
- Alarm signal: or flashing light or GSM
- Battery protection against discharge and overload

## APPLICATIONS

Autonomous alarm unit for monitoring oil-water separators according to EN 858.

## DESCRIPTION

A BBS system includes alarm unit NivOil CU/12 and a Solar panel to charge a battery, protected against excessive discharge or overload.

NivOil is powered hourly, for 3 minutes, to check for a fault and alarm condition. In case of occurring an alarm, signal is emitted or through a flashing light or through a GSM module.

The working time without sunlight is about 12 days at any period of the year for a reliable monitoring even without sun shining days (referring to Greenwich latitude).

### • Option: Flashing light

With the option flashing light, an alarm corresponds to an intermittent light emission (of a Xenon bulb) on the outside of the cabinet. This option is recommended to avoid connecting the NivOIL contact outputs far-away minimizing the cost of installation.

### • Option: GSM

With the option GSM, the alarm is transmitted on long distance through a SMS message: idoneous when the system is installed in a remote location. The message SMS sent, indicates the BBS identification, the alarming channel (probe) and a pre-recorded message.

### Installation:

The cabinet may be mounted on a wall or on a poll (Yoke U-Bolt Kit provided). The solar panel, with its own fixing system, is adjustable regardless of the position of the cabinet.

The BBS must always be mounted outside the hazardous area. Only NivOil probes can be installed in the hazardous area.

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
531 600	BBS-STD	Standard BBS
531 620	BBS-GYR	BBS with flashing light device
531 640	BBS-GSM	BBS with GSM module
<b>Associated probes:</b>		
531 102	NIVOIL-OP/10	Hydrocarbon thickness sensor, 10 m long cable
531 205	NIVOIL-HPS/10	Overfill sensor, 10 m long cable
531 301	NIVOIL-SP/10	Sludge layer sensor 10 m long cable

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Solar powered alarm unit for  
oil-water separators  
**BAMOBX SOLAR (BBS)**

03-08-2018

D-531.03-EN-AA

NIV

531-03/1

## Details of supply for each version

### BBS-STD includes :

- A wall mount cabinet, 300 x 380 x 130 mm
- A yoke U-Bolt Kit for pole mounting
- An alarm unit NivOil
- A battery, 7 Ah
- A controller module to protect the battery against excessive discharge or overload.
- A solar panel, 5 Wc, on adjustable holder

### BBS-GYR includes:

- A complete system BBS-STD
- A flashing light device on the front of the cabinet

### BBS-GSM includes:

- A complete system BBS-STD
- A GSM module, inside the cabinet

## TECHNICAL FEATURES

### CABINET

Operating temperature	-25 ... +60 °C
Dimensions	300 x 380 x 130 mm
Protection	IP 56
Mass	5.8 kg

### SOLAR PANEL

Power	5 Wc
Technology	Polycrystalline multi panel
Dimensions	365 x 195 mm
Mass	1.8 kg

### BATTERY

Power	7 Ah
Dimensions	150 x 100 x 65 mm

### FLASHING LIGHT DEVICE

Dimensions	Ø 75 x 45 mm
------------	--------------

### GSM MODULE

Dimensions	75 x 45 x 25 mm
	Refer to data-sheet 248-02

**EC Conformity: The instrument meets the legal requirements of the current European Directives**

*NivOil sensors: All features on data-sheet 531-02*

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Solar powered alarm unit for  
oil-water separators

**BAMOBX SOLAR (BBS)**

03-08-2018

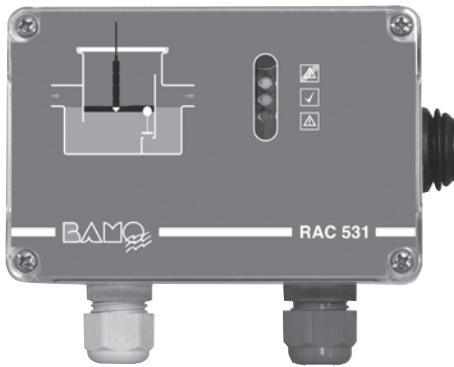
D-531.03-EN-AA

**NIV**

**531-03/2**

# Level detection for oil-water separators

## RAC 531



- Survey of oil-water separator
- Wall mounting cabinet, IP 65
- Easy fitting, intuitive configuration
- Detection of highest hydrocarbon layer thickness
- Relay output, changeover contact
- Audible and lighting alarm
- OEM version on request
- Certification: ATEX certified




### APPLICATION

- Monitoring of hydrocarbon level in oil-water separators.

### PRINCIPLE

**RAC 531** is designed for the monitoring of hydrocarbon fluids separators. With sensor, OP/10 (OP/5) the alarm device detects when the maximum thickness is reached.

Status display, from LED, on front panel:

- Yellow LED  -> Alarm occurred, not yet reset
- Green LED  -> Normal monitoring status
- Red LED  -> Alarming status

*Pictograms  
(front panel)*

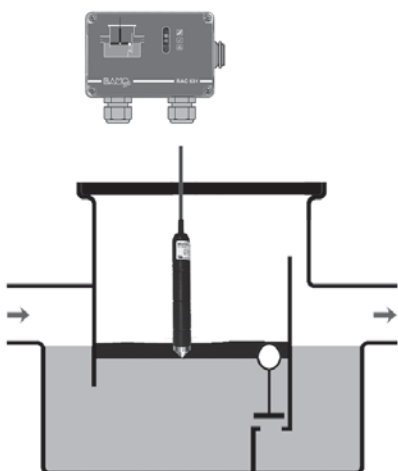
The alarm device has a built-in buzzer. A jumper may disable its function; in this configuration, the lighting alarm and relay output inform the current ALARM status to operator.

The alarm device has an auto-diagnostic of measuring loop and of device integrity. An alarm signal occurs in case of dysfunction.

There are three marks on the sensor for an easy fitting according to highest hydrocarbon layer thickness.

### CODE NUMBERS AND REFERENCES

Code	Reference	Designation
531 950	RAC 531	Alarming unit, 230 V AC, Wall mounting, IP 65, 120x80x55 mm
531 101	OP/5	Hydrocarbon fluid layer thickness sensor, 5 m long cable
531 102	OP/10	Hydrocarbon fluid layer thickness sensor, 10 m long cable



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Level detection  
for oil-water separators

## RAC 531

17-03-2014

531 I1 04 A

## NIV

### 531-04/1

531

## TECHNICAL FEATURES

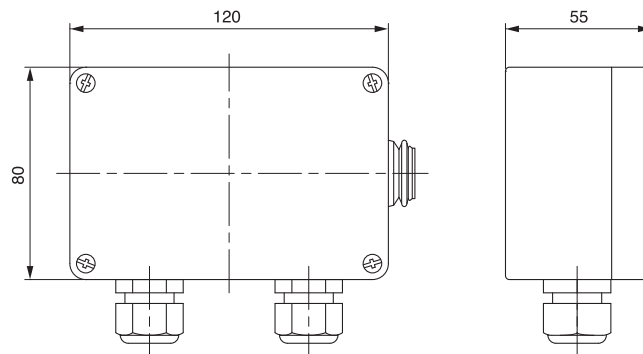
### RAC 531 – Alarming unit

Main power supply:	230 V – 50/60 Hz ±10 %
Power consumption:	~ 2 W
Housing protection:	IP65, according EN 60529
Temperature limits:	-20...+60°C
Housing material:	Polycarbonate cabinet; 120x80x55 mm
Sensor input:	For 1 sensor, detection for hydrocarbon fluids layer thickness
Monitoring:	The alarm device NIVOIL has an auto-diagnostic of measuring loop and system integrity.
Display and signals:	Green LED for normal status Yellow LED when alarm occurred and not yet reset Red LED for alarming status Built-in audible alarm, disabled with a jumper
Operating:	Through 1 push button for diagnostic test and alarm clearance
Output:	1 relay output, 230 V AC, 3A, potential free change over contact

**Ex protection class:**  **II (1) G [Ex ia Ga] IIB/IIA**  
**ATEX Certificate:** **BVS 12 ATEX E 019** / *This cabinet must be fitted in the safe area*

**CE Marks:** According to Low Voltage Guidelines: 2006/95/CEE) and EMV Guidelines: 89/336/CEE

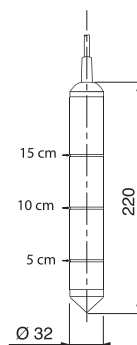
**To use, only, with OP/5 or OP/10 sensor (BVS 07 ATEX E 091 X)**



### OP/5 – Hydrocarbon layer thickness sensors

Sensor type:	Capacitive, high frequency
Wetted parts:	Antistatic PE stem; Stainless steel end
Cable:	Elastomer resistant to oils and hydrocarbon fluids, blue colour; wires 2x1 mm <sup>2</sup> , connections on screw connectors; 5 or 10 m long cable (other lengths on request - maximal length is 300 m)
Protection:	IP68 acc. EN 60529
Temperature limits:	-20...+60°C

**Ex protection class:**  **II 1 G Ex ia IIB T4**  
**ATEX certificate:** **BVS 07 ATEX E 091 X** / *This sensor may be fitted in zone 0*



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Level detection  
for oil-water separators

**RAC 531**

17-03-2014

531 I1 04 A

**NIV**

**531-04/2**

# Level detection for grease-water separators GAD 531



GAD 531

- Monitoring of grease-water separators
- Compact and economical model
- Detection of grease layer thickness overpassed
- Relay output; Changeover contact
- LEDs signals and audible alarm

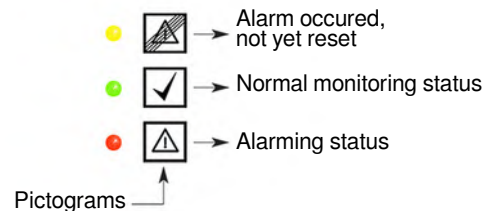
## APPLICATION

- Alarm unit for monitoring of grease separators in conformity with EN 1825

## DESCRIPTION

GAD 531 and probe GP/10 are designed for monitoring grease-water separators. The probe GP/10 detects when the thickness of floating greases over water, is greater than the permitted max. thickness.

GAD 531 displays the system status through 3 LEDs:



The alarm unit has an auto-diagnostic of system integrity.

A relay output and an audible alarm inform the operator. The buzzer may be deactivated with a simple jumper if necessary.

Components of one system:

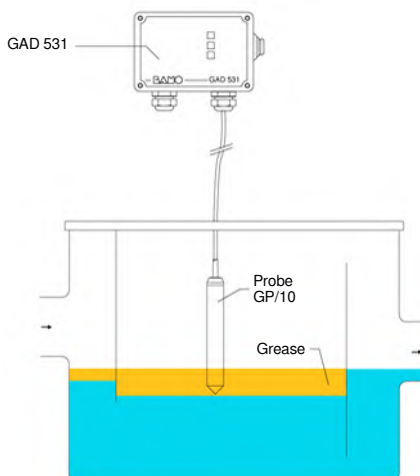
- Alarm unit GAD 531
- Detector: Probe GP/10 (cable output, 10 m long)

### Caution:

Not suitable for the detection of greases in emulsion, or greases cured in aggregate!

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
531 960	GAD 531	Alarm unit, 230 V AC - 50/60 Hz; Wall mounting; IP65
531 980	GP/10	Probe for grease layer detection; 10 m long cable



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Level detection for  
grease-water separators  
**GAD 531**

31-05-2018

D-531.05-EN-AC

NIV

531-05/1

## TECHNICAL FEATURES

### GAD 531 – Alarm unit

Main power supply	230 V AC +/- 10 % ; 50/60Hz
Power consumption	~2 W
Housing protection	IP65, according EN 60529
Operating temperature	-20 ... +60 °C
Monitoring	The device has an auto-diagnostic of measuring loop integrity (broken cable, short-circuit)
Signals and alarm	Audible alarm (Buzzer) Green LED for normal status Yellow LED when alarm occurred and not yet reset Red LED for alarming status
Control	Through 1 push button for diagnostic test and alarm acknowledgement
Relay output	1 Relay, 230 V AC, 3 A Changeover contact; Potential free
Cabinet	Housing: Polycarbonate; 120x80x55 mm; IP 65; Wall mounting

### GP/10 – Grease layer probe

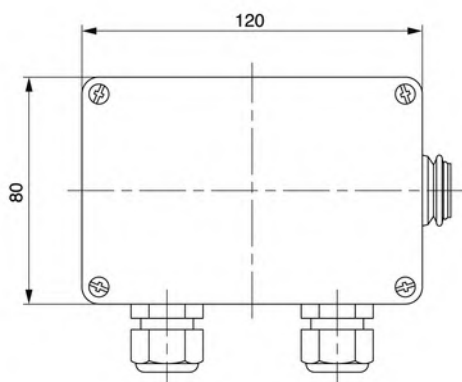
Only for use with an alarm unit GAD 531

Materials	PP, PE and stainless steel
Cable	10 m long; Elastomer resistant to oils; 2-wire cable (2 x 1 mm <sup>2</sup> )
Max. length	300 m (adding an extension with a junction connector)
Dimensions	Ø 32 mm; Stem length: 200 mm
Protection	IP 68 acc. EN 60529
Measuring principle	Capacitive, high frequency
Operating temperature	-20 °C ... +60 °C

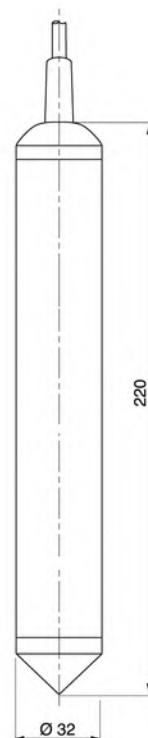
### CE Conformity

The instruments meet the legal requirements of the current European Directives.

## DIMENSIONS



GAD 531



GP/10

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Level detection for  
grease-water separators  
**GAD 531**

31-05-2018

D-531.05-EN-AC

NIV

531-05/2



## TECHNICAL FEATURES

### Measurement

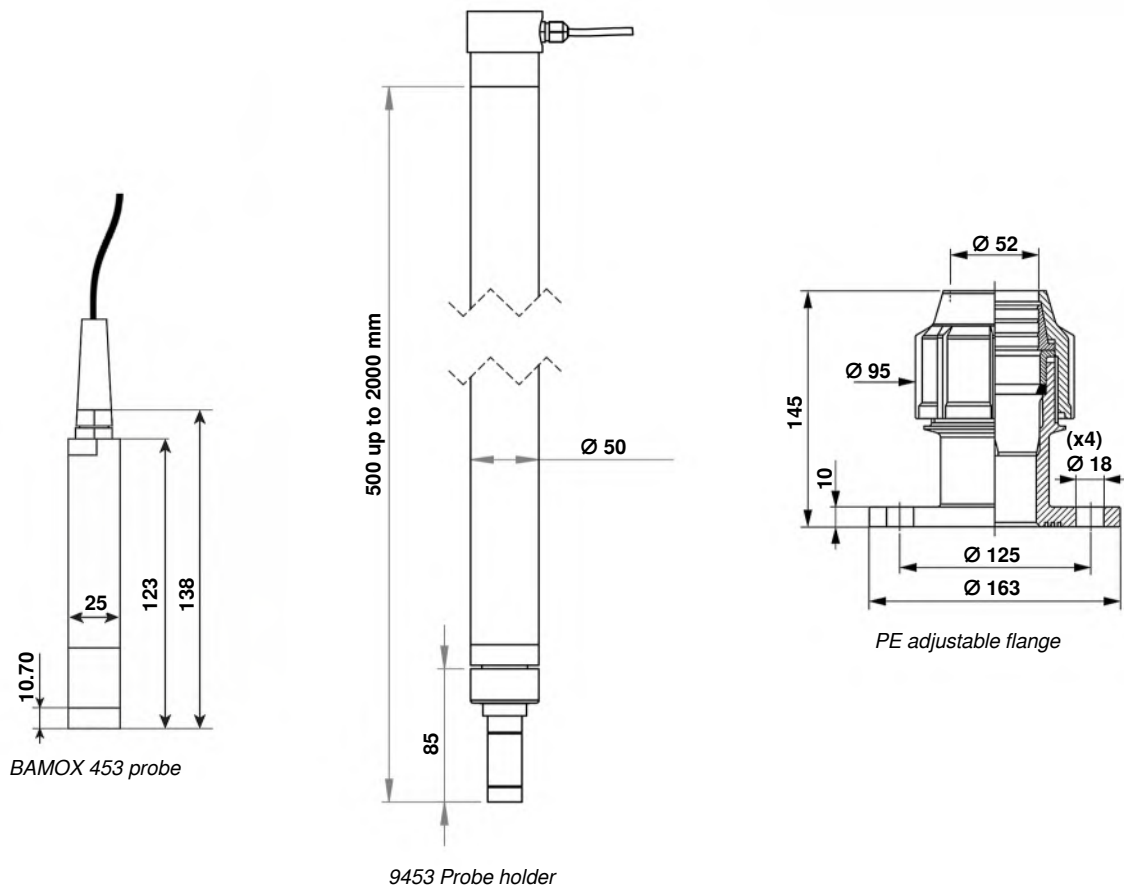
Principle	Optic-luminescent technology
Measurement range	From 0.00 up to 20.00 mg/l 0.00 ... 20.00 ppm 0... 200 %
Resolution	0.01
Accuracy	± 0.1 mg/l ± 0.1 ppm ± 1 %
Response time	60 seconds for 90 % of the final value
Fluid environment	Not necessary circulation
Operating temperature	0... +50 °C
Temperature compensation	Through a built-in NTC sensor <i>Temperature compensation in the range 0 to 40 °C</i>
Accuracy	± 0.5 °C
Interface	For connection to BAMOWIZ 452
Voltage supply	5 ... 12 V

### Probe

Mass	AISI 316 version: 450g (including cable) Titanium version: 300 g (including the cable)
Materials	Wet parts: AISI 316 L passivated, or, Titanium
Pressure limit	5 bar
Cable	6-wire shielded cable; External PUR sheath
Protection	IP 68

**EC Conformity:** The instrument meets the legal requirements of the current European Directives.

## DIMENSIONS



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Dissolved oxygen optical  
 probe  
**BAMOX 453**

02-06-2021

D-453.01-EN-AC

**OXY**

**453-01 /2**

# Float switches NIVOSTOP SS2

- Mercury-free
- Fair cost
- Easy to install
- Compatible with chemicals
- Switching current 1 mA ... 3 A

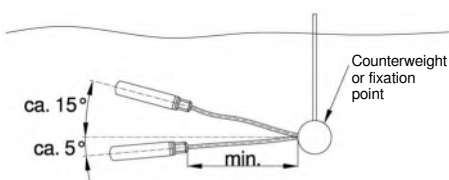


SS2 WA



SS2 KW

Operating (example)



**CAUTION:**  
Fixed point minimum distance: PVC Cable = 100 mm  
Other cables = 80 mm

## APPLICATIONS

- Limit switch
- Sewage lifting plants
- Filling / draining control of tank
- Liquid level control in all industries

## DESCRIPTION

NIVOSTOP SS2 float switches are designed for level control in tanks and basins. The cigar-shaped type is for insertion in tank with hole of diameter 30 mm, for instance through the wall or the top of the tank. The float switch rotates on one fixed point on its cable. The float follows the level of the liquid. The built-in contact switches at about 5 to 15° of angle below or above the fixed point. The height of switching point depends on the length of the cable between fixed point and float.

## TECHNICAL FEATURES

Switching power:	4 V - 250 V AC; 4 - 30 V DC
Switching current:	1 mA ... 3A
Switch:	Microswitch (gold contacts), changeover contact, potential-free
Temperature limits:	+1 ... +60 °C
Operating pressure:	0.5 bar as a maximum
Mounting, switching angle:	The float switch is fixed with its cable at one point. The float follows the level and tilts around the fixed point.
Liquid density	
TPK and PES cables:	$\rho \geq 1.0 \text{ kg/dm}^3$
PVC cable (for lubricating oil):	$\rho \geq 0.9 \text{ kg/dm}^3$
Materials	
Float:	Polyethylene (PE-HD)
Cable:	TPK, PVC, PVC oil-resistant, acid-resistant sheathed (PES)
Protection:	IP 68
Chemical resistance of cables	
TPK:	Water; Alkalis and acids of low concentration
PES:	Acid-resistant
PVC:	Lubricating oil

**EC Conformity: The instrument meets the legal requirements of the current European Directives**

### NOTE

At a voltages > 50 V, the liquid must be connected to earth.

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Float switches  
**NIVOSTOP SS2**

12-06-2020

D-520.01-EN-AD

LEV

520-01 /1

## CODE NUMBERS AND REFERENCES

### Cigar-shaped float switches ( NIVOSTOP SS2/ W..):

Code	Reference	Specificity
520 802	SS2 / W2	TPK cable, 2 m
520 805	SS2 / W5	TPK cable, 5 m
520 808	SS2 / W10	TPK cable, 10 m
520 830	SS2 / WA2	TPK cable with PES sheath, acid-resistant, 2 m
520 834	SS2 / WA5	TPK cable with PES sheath, acid-resistant, 5 m
520 837	SS2 / WA10	TPK cable with PES sheath, acid-resistant, 10 m
520 840	SS2 / WH2	PVC cable for lubricating oil, 2 m
520 845	SS2 / WH5	PVC cable for lubricating oil, 5 m
520 846	SS2 / WH10	PVC cable for lubricating oil, 10 m

Other cable lengths: on request.

### Pear-shaped float switches ( NIVOSTOP SS2/ KW..):

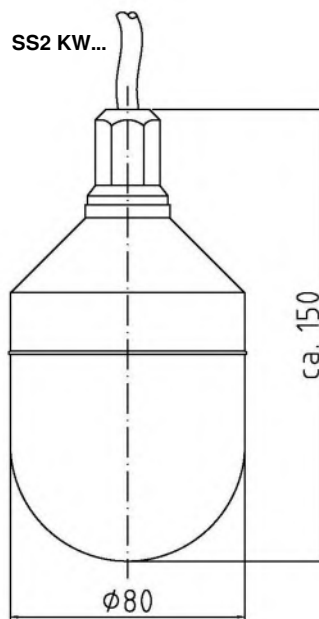
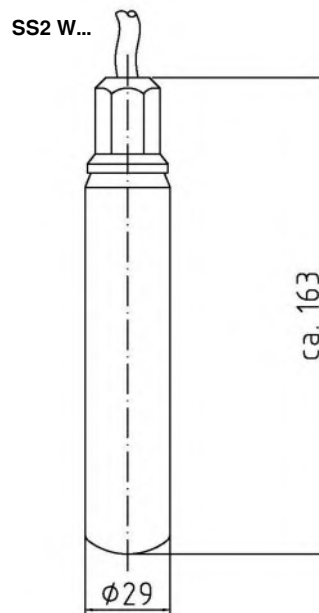
Code	Reference	Specificity
520 810	SS2 / KW5	TPK cable, 5 m
520 815	SS2 / KW10	TPK cable, 10 m
520 832	SS2 / KWA2	TPK cable with PES sheath, acid-resistant, 2 m
520 835	SS2 / KWA5	TPK cable with PES sheath, acid-resistant, 5 m
520 838	SS2 / KWA10	TPK cable with PES sheath, acid-resistant, 10 m
520 844	SS2 / KWH5	PVC cable for lubricating oil, 5 m
520 847	SS2 / KWH10	PVC cable for lubricating oil, 10 m

Other cable lengths: on request.

### Accessories:

Code	Reference	Description
520 500	Cable gland BSP 1"	PVC, PG 9
520 512	Cable gland BSP ½"	PE, PG 9
520 531	Cable gland BSP 1"	PE, PG 9
520 600	CE 100	PP, Blocking nut, BSP 1"
520 610	CE 12	PP, Blocking nut, BSP ½"
520 901	Adjustable counterweight 175 g	For cable types W and WH
520 902	Adjustable counterweight 250 g	For cable type WA
520 917	Ring cable fastener	
520 919	Clamp cable fastener	

### DIMENSIONS



520 917 Ring cable fastener



520 919 Clamp cable fastener



Cable glands

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Float switches  
**NIVOSTOP SS2**

12-06-2020

D-520.01-EN-AD

LEV

520-01/2

# Float level detector NIVOSTOP® / C

- For aggressive liquids
- Cable in FEP, seal in FPM, body in PP
- Temperature max. 100 °C
- Built-in counterweight
- Standard cable lengths: 5, 10 & 20 m



## APPLICATIONS

The float level detector NIVOSTOP® / C is designed for use in aggressive liquids such as acid, base solutions compatible with PP, FEP and FPM.

## DESCRIPTION

Operation of NIVOSTOP® / C is identical to other detectors NIVOSTOP® with a built-in counterweight.

When the level is rising up, the tilting of the float actuates an integrated switch (connected to a controller in a control cabinet). The built-in counterweight allows the float not to rise to the surface nor to wrap around objects. The detector therefore remains immersed and switches in a small space.

## TECHNICAL FEATURES

Operation	Multidirectional
Pressure max.	2 bar
Protection	IP 68
Temperature max.	100 °C
S.G. limits	0.95 ... 1.05
Switching angle	10°
Switch, change-over	Gold plated contacts
Switching power	1 mA / 4 V – 5 A / 250 V
Cable	FEP, seal in FPM, 3 x 0.5 mm <sup>2</sup>
Body	PP Ø 100 mm, height 180 mm

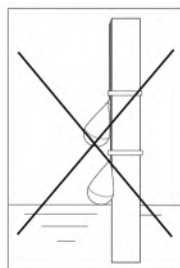
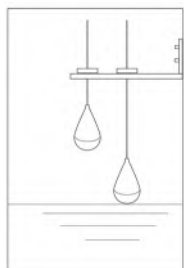
**EC Conformity:** The device meets the legal requirements of the current European Directives.

## CODE NUMBERS AND REFERENCES

Code	Reference	Description	Mass (kg)
520 705	NIVOSTOP C-5	5 m long cable	1.4
520 710	NIVOSTOP C-10	10 m long cable	1.9
520 720	NIVOSTOP C-20	20 m long cable	2.8

### Mounting accessories

Code	Reference	Description	Mass (kg)
520 917	Cable tie	For 1 cable	-
520 919	Cable double clamp	For 2 cables	-



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Float level detector  
**NIVOSTOP® / C**

19-09-2019

D-520.04-EN-AD

**NIV**

**520-04/1**

# ATEX certified float level detector NIVOSTOP® PR2 / Ex



- For liquids in hazardous area, Ex
- Built-in counterweight
- Heavy duty controller
- High quality neoprene cable
- Cable lengths: 10 or 20 m

## APPLICATIONS

- Pump automation and remote alarming signal in lifting stations, or wastewater pumping stations, in hazardous area (Ex)

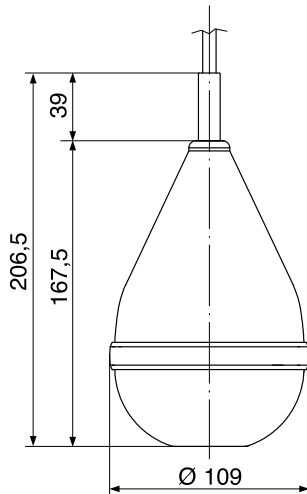
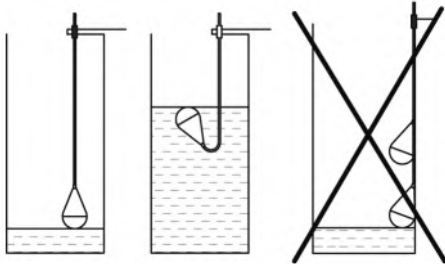
## DESCRIPTION

When level is rising the float tilts and actuates a contact connected via the cable to the control room. Its integrated counterweight prevents it from rising to the surface and wrapping around nearby objects. The NIVOSTOP® PR2-Ex remains immersed and switches in a small space.

The NIVOSTOP® PR2-Ex has a large diameter cable and a reinforced sealing with 3 envelopes, which give it durability and reliability under severe environmental conditions.

With the carbon black incorporated to the material, the electrostatic charges that could be created are evacuated to the outside through the ground wire of the cable.

Important: The use of an intrinsic safety relay type RDN 11 is mandatory for installation in hazardous area, Ex. See data-sheet 251-01



## TECHNICAL FEATURES

Pressure limit	2 bar
Protection	IP 68
Class	I
Temperature limits	-20 °C ... +80 °C
Density limits	0.95 ... 1.05 kg/dm³
Tilting angle	20°
Switch type	Micro-switch, changeover
Power supply	4 ... 40 V AC / 100 mA
Cable	H05RN-F 4 G0,75 - Ø 8.8 mm (2 functions)
	Available lengths: 10 m and 20 m
Cable sealing	EPDM
Body	Anti-static PP
	Insulated body: 3 sealed envelopes
Depth limit	20 m
Ex Certificate	0425 ATEX 003942-00
Agreement	Ex II 1 G Ex ia II C T6

**EC Conformity:** The instrument meets the legal requirements of the current European Directives

## CODE NUMBERS AND REFERENCES

Code	Reference	Cable length	Mass [kg]
521 510	NIVOSTOP PR2-Ex - 10	10 m	1.9
521 520	NIVOSTOP PR2-Ex - 20	20 m	2.5
<b>Accessories: Intrinsic safety relays</b>			
251 011C	RDN11 / 230 V AC	Power supply: 230 V AC	
251 012	RDN11 / 24 ... 48 V DC	Power supply: 24 ... 48 V DC	

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ATEX certified float level  
 detector  
**NIVOSTOP® PR2 / Ex**

01-02-2021

D-521.04-EN-AF

NIV

521-04/1

# Float level regulator NIVOSTOP® - MEZZO



- Regulation between two trigger points
- Change-over microswitch
- High switching power
- Switching angle 120°
- Cable lengths: 5, 10 and 20 m

## APPLICATIONS

Level regulation between two points for drain or fill function:

- Clear water, clean water, rainwater
- Liquids slightly aggressives (oils, sludge, paints)

## DESCRIPTION

NIVOSTOP® MEZZO are designed for level regulation of liquids between two levels.

A large differential between trigger points allows automation of a pump with only one regulator. With the large differential, switches on and off are smooth for the pump or the automation devices.

The differential between low and high levels depends on the distance between the float and the attachment point of the cable. When NIVOSTOP® MEZZO is used with an adjustable counterweight along the cable, it is the distance between the counterweight and the float that determines the differential.

**Caution: The regulator must float on the varying surface of the liquid.**

## TECHNICAL FEATURES

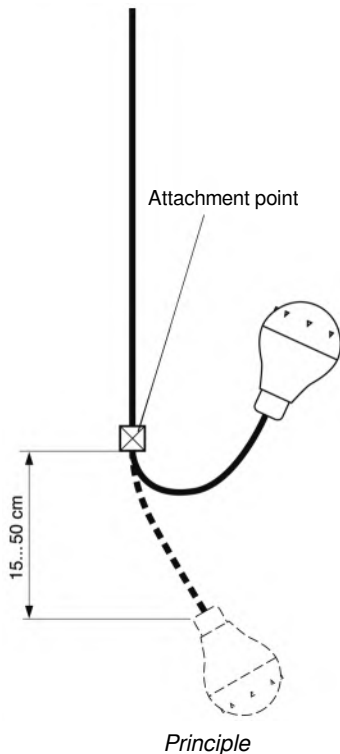
Operation	Multidirectional
Pressure max.	Atmospheric
Protection	IP 67
Temperature max.	+ 40 °C
S.G. limits	0.95 ... 1.10
Switching angle	120°
Switch type	Change-over microswitch
Switching power	16 (6) A / 250 V
Cable	PBS; O.D. 9 mm; 3 x 1 mm <sup>2</sup>
Body	PP
	Ø 85 mm; height 125 mm
Counterweight	0.230 kg
Cable lengths	10, 15 or 20 m

**CE Conformity: The device meets the legal requirements of the current European Directives.**

## REGULATION BETWEEN 2 LEVELS

The correct operation of NIVOSTOP® MEZZO regulator, between low and high levels, depends on the distance between the rotation axis fixed point and the float. This distance must be between 15 cm (as a minimum) and 50 cm (as a maximum).

Depending on this distance, as well as the agitation of the liquid, the difference between the low and high trigger points level will be 30 to 60 cm.



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Float level regulator  
**NIVOSTOP® - MEZZO**

12-07-2018

D-522.06-EN-AC

**NIV**

**522-06/1**



## CODE NUMBERS AND REFERENCES

Code	Reference	Description	Mass (kg)
522 122	NIVOSTOP® MEZZO L120 / PBS5	NIVOSTOP® MEZZO 120° - Câble PBS, longueur 5 m	0.6
522 123	NIVOSTOP® MEZZO L120 / PBS10	NIVOSTOP® MEZZO 120° - PBS cable, 10 m long	1.0
522 124	NIVOSTOP® MEZZO L120 / PBS20	NIVOSTOP® MEZZO 120° - PBS cable, 20 m long	1,6
Mounting accessories			
520 906	Counterweight	Counterweight for NIVOSTOP MEZZO	0.230
520 917	Cable tie	For 1 cable	-
520 919	Cable double clamp	For 2 cables	-

## INSTALLATION, RECOMMENDATIONS

The adjustable counterweight on the cable is mandatory for a correct operation of the regulator. It allows the cable to remain tight and insure a right point of rotation.

Positioned about 30 cm from the floats, it can be moved away or closer to the float depending on the more or less agitated liquid in which it is installed.

The cable tie or cable double clamp, inexpensive and often neglected accessories, are strongly recommended for all suspended devices to avoid deterioration of electrical cables.



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Float level regulator  
**NIVOSTOP® - MEZZO**

12-07-2018

D-522.06-EN-AC

**NIV**

**522-06/2**

# Float level regulator NIVOSTOP® ECO



- For clear, non-aggressive liquids
- Economic model, easy to install
- Switching angle: 45°
- Regulation between 2 levels
- PVC cable, 10 m long

## APPLICATIONS

Level control of non-aggressive liquids:

- Automatic start and stop of a pump
- High and low level alarms
- Opening and closing a valve

## DESCRIPTION

NIVOSTOP® ECO is suitable for neutral environment conditions (clear water, rain water, etc.)

Against the movement of the liquid, tilting of the float actuates a contact (output cable to connect to a control cabinet).



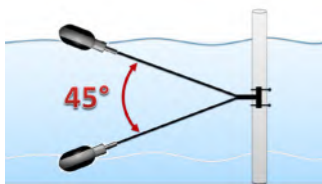
Counterweight  
(supplied)

## TECHNICAL FEATURES

Pressure limit	1 bar max.
Protection	IP68
Body	PP (Polypropylene)
Cable	PVC, 10 m long; 3x1 mm <sup>2</sup> (Ø 8.8 mm)
Temperature	+5 ... +60 °C
S.G. Limits	0.95 ... 1.05
Switching angle	45°
Switch	Change-over microswitch
Switching power	10 A resistive load; 8 A inductive load; 250 V AC
Counterweight	230 g (included)

### Caution

The tank (in fact the liquid) must be connected to earth, otherwise the detection loop must be in low voltage, safe low current.

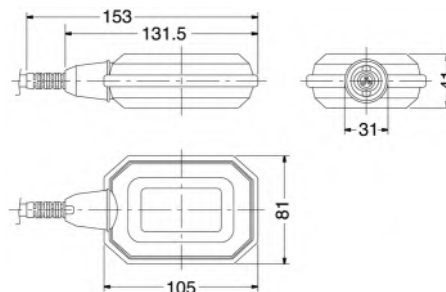


Installation

## CODE NUMBER AND REFERENCE

Code	Reference	Description
522 700	NIVOSTOP ECO 10	NIVOSTOP ECO; Cable 10 m; Counterweight

## DIMENSIONS



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## Float level regulator NIVOSTOP® ECO

17-03-2021

D-522.07-EN-AE

NIV

522-07/1

# Float level detector NIVOSTOP® PR2-H05



- For wastewater
- Built-in counterweight
- Robust design
- High grade Neoprene cable
- Cable lengths: 6, 10, 15 or 20 m

## APPLICATIONS

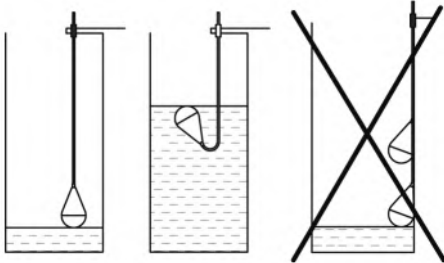
Automation of pump or alarm level for sewage pumping and lifting stations of wastewater.

## DESCRIPTION

Operation of NIVOSTOP® PR2-H05 is identical to other detectors NIVOSTOP® with a built-in counterweight.

When the level is rising up, the tilting of the float actuates an integrated switch (output cable to connect to a control cabinet). The built-in counterweight allows the float not to rise to the surface nor to wrap around objects. The detector therefore remains immersed and it switches in a small space.

The cable PR2-H05 is of a large diameter, sealing system is reinforced (3 envelopes) which gives to the detector a great reliability and durability under severe operating conditions



## TECHNICAL FEATURES

Pressure max.	2 bar
Protection	IP 68
Temperature limits	-15 ... +50 °C
S.G. limits	0.95 ... 1.05
Switching angle	20°
Switch	Change-over micro-switch
Switching power	10 A (resistive load) 8 A (inductive load) – 250 V AC
Cable	Neoprene; Ø 7.7 mm; 3x1 mm <sup>2</sup>
Seal	EPDM
Enveloppe	PP; Ø 110 mm; Height 180 mm

**EC Conformity:** The instrument meets the legal requirements of the current European Directives.

## CODE NUMBERS AND REFERENCES

Code	Reference	Description	Mass [kg]
522 307	NIVOSTOP PR2-6-H05	NIVOSTOP PR2-H05 cable length: 6 m	1.5
522 311	NIVOSTOP PR2-10-H05	NIVOSTOP PR2-H05 cable length: 10 m	1.9
522 316	NIVOSTOP PR2-15-H05	NIVOSTOP PR2-H05 cable length: 15 m	2.5
522 321	NIVOSTOP PR2-20-H05	NIVOSTOP PR2-H05 cable length: 20 m	3.0
Accessories, fittings			
520 917	Fastening cable	For 1 cable	-
520 919	Strength clamp	For up to 2 cables	-

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Float level detector  
**NIVOSTOP® PR2-H05**

19-09-2019

D-522.08-EN-AA

**NIV**

**522-08/1**

# Level controller SNR 4



- PVC or stainless steel versions
- Hydrostatic level detection
- Output: 1 contact
- For liquids (chemically compatible)
- Independent of conductivity, viscosity

## APPLICATIONS

- Level control for open tanks or without pressure.

## DESCRIPTION

The liquid, as it rises in the open tube at the bottom, increases the pressure of the trapped atmosphere. The pressure variation acts on a diaphragm that directly activates a contact. The level controller SNR 4, affords a dirt liquid as far as this one does not clog the measuring tube. Threshold is adjustable.

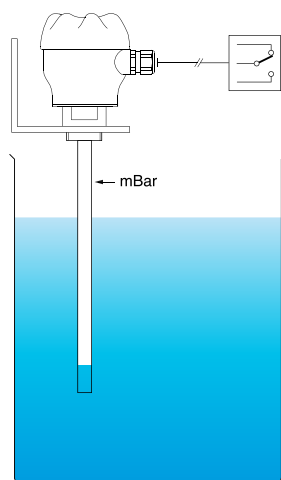
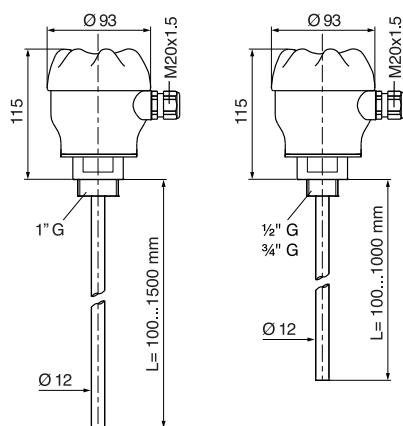
**NOTE: The inner atmosphere can diffuse through the diaphragm; It is necessary to renew the atmosphere (fresh air) every three months.**

## TECHNICAL FEATURES

Measuring tube	PVC, Ø 12 mm (length ≤ 1500 mm) AISI 316 L, Ø 12 mm (length ≤ 1000 mm)
Housing head	PBT - IP 65
Fitting	PVC: BSP 1" AISI 316 L: BSP 1/2" or 3/4"
Diaphragm	FPM
Hysteresis	60 mm
Tolerance	±8 mm
Level switch	Changeover contact
Repeatability	± 5 % trigger point distance (minimum ± 0.3 mbar)
Contact lifetime	10 <sup>6</sup> cycles
Switching power	250 V / 1 A, resistive load
Ambient temperature	Max. 60 °C
Adjustment range	From 100 to 750 mm (For liquid at SG = 1)

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
528 100	SNR4-C /PVC	PVC stem, Ø 12 mm, BSP 1"
528 200	SNR4-C /Inox	AISI 316 L stem, Ø 12 mm, BSP 1/2"
528 210	SNR4-C /Inox	AISI 316 L stem, Ø 12 mm, BSP 3/4"



Operating principle

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Level controller  
**SNR 4**

14-10-2020

D-528.01-EN-AC

NIV

528-01 /1

# Resistive level detector ES 2001



- For all electrically conductive liquids
- Adjustable sensitivity, timer; selectable operating mode

## Functions:

- On /Off level controller between 2 rods
- Level regulation (filling/draining) between 2 thresholds (3 rods)
- Compatible with all our electrodes

## APPLICATIONS

- Control of the level height of electrically conductive liquids
- Fill or drain automated operation

## DESCRIPTION

Probes and electrodes are specially designed for different type of applications. ES2001 is used as a limit value detector on conductive liquids; Probes and rods are chosen according to the application. Detection sensitivity to different type of liquids is set through the built-in potentiometer from 1 to 150 k $\Omega$ . The hysteresis between on/off switchings of output relay is about 20% of sensibility. Such a narrow hysteresis limits false detections by a leakage current due to presence of mist, foam or condensed vapors. With both timers, it is easy to adjust the level detection or level regulation to prevent false triggering due to wave effects.

For level detection, 1 relay ES2001 is necessary for each independant trigger point.

## TECHNICAL FEATURES

Power supply	230, 115, 48, 24 V AC – 50/60 hz 24, 12 V DC
Consumption	$\leq$ 2 VA
Outputs	2 Change-over contacts Max. 250 V AC; 5 A; 500 VA Max. 125 V DC; 1 A; 40 W
Powered detection loop	Galvanic insulation < 6 V AC / < 2 mA
Hysteresis	About 20 % of sensitivity
Sensitivity	Adjustable on 2 ranges 1 ... 70 k $\Omega$ m (Low range) 5 ... 150 k $\Omega$ m (High range)
Operating status	N.O. or N.C through DIP switch
Timer	Delay "ON" and "OFF" from 0.5 to 3 s Adjustable through a potentiometer
Ambient temperature	-15 ... +45 °C
Mounting	Rail DIN 46277
Protection	IP 40 (tropicalization on request)

**EC Conformity:** The instrument meets the legal requirements of the current European Directives

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Resistive level detector  
**ES 2001**

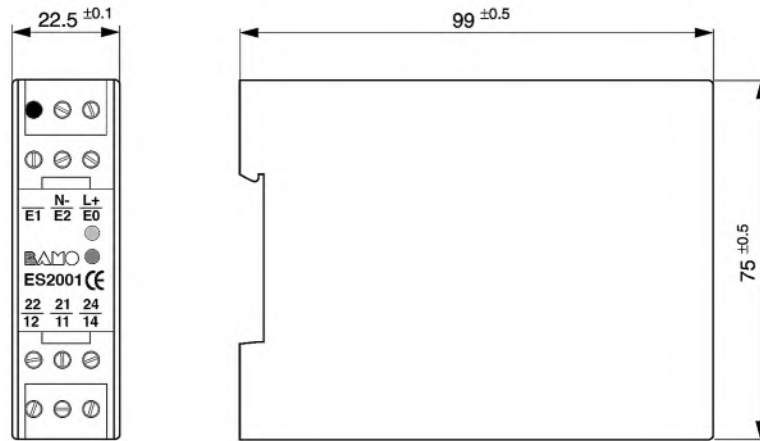
28-05-2019

D-530.01-EN-AB

NIV

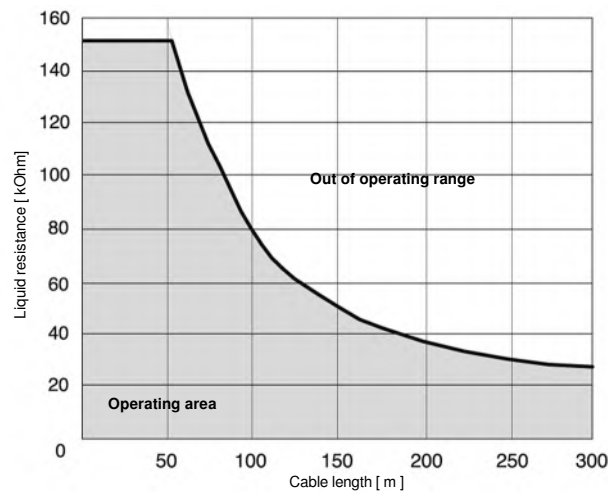
530-01 /1

## DIMENSIONS



## WORKING LIMITS

The capacitance of the cable on the detection loop, may reduce the sensitivity resulting of total cable length. A standard cable, PVC, 3-wire, has a capacitance of 100 pF/m. Working limits are against the liquid resistance and detection loop capacitance (diagram below).



(This diagram concerns a relay with alternative current supply)

## CONNECTIONS OF DETECTION LOOP

- Use a multi-conductor cable of 0.5 mm<sup>2</sup>
- This cable must be away from power cables.
- Over 25 meters, it is necessary to use a shielded cable (Max. 300 m).

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Resistive level detector  
**ES 2001**

28-05-2019

D-530.01-EN-AB

NIV

530-01 /2



## CODE NUMBERS AND REFERENCES

Code	Reference	Description
530 200	ES 2001 / 230 V AC	Resistive level relay, power 230 V AC - 50/60 Hz
530 210	ES 2001 / 115 V AC	Resistive level relay, power 115 V AC - 50/60 Hz
530 220	ES 2001 / 48 V AC	Resistive level relay, power 48 V AC - 50/60 Hz
530 230	ES 2001 / 24 V AC	Resistive level relay, power 24 V AC - 50/60 Hz
530 252	ES 2001 / 12 V DC	Resistive level relay, power 12 V DC
530 254	ES 2001 / 24 V DC	Resistive level relay, power 24 V DC

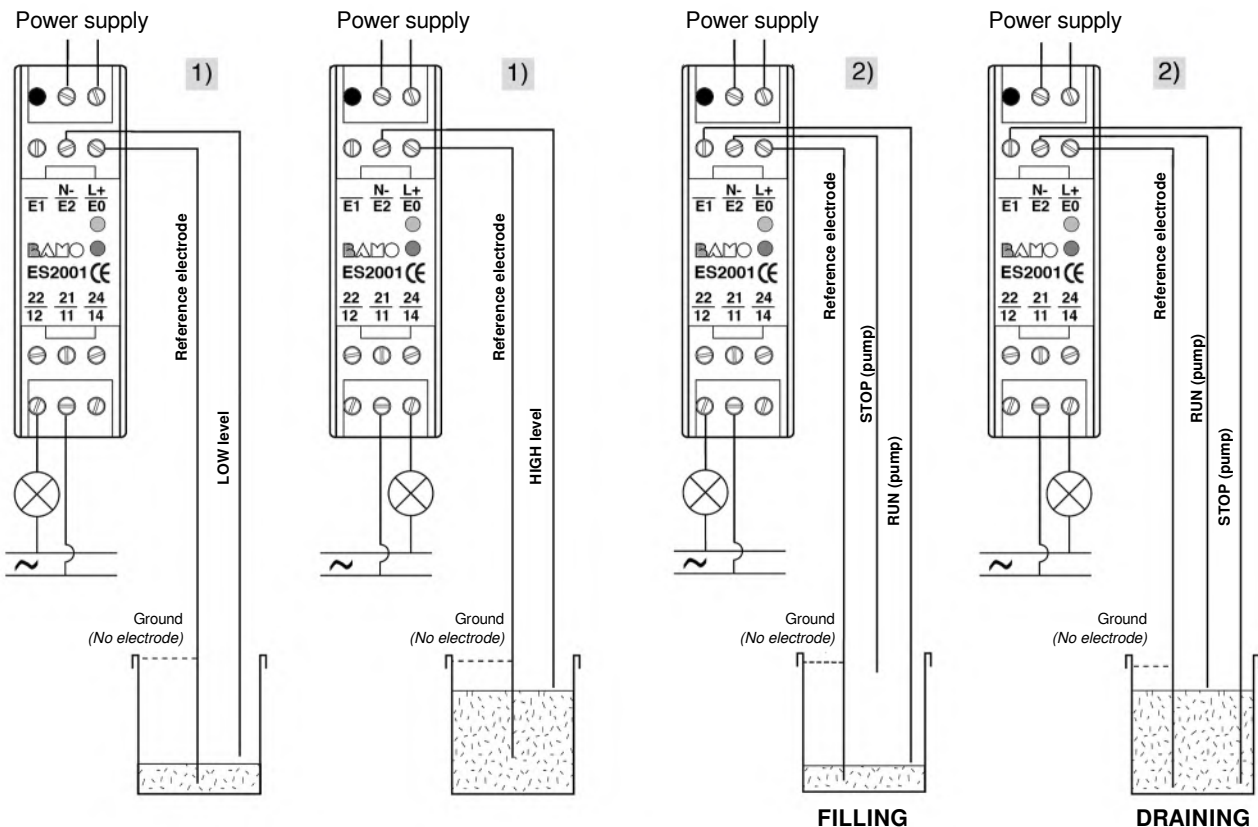
## OPERATING FUNCTIONS

### 1) LEVEL DETECTION: 2 electrodes

The output relay is actuated when the liquid creates an electrical bridge between the metal tank body or a reference electrode and the level electrode.

### 2) FILL OR DRAIN AUTOMATION: 3 electrodes

The third electrode allows an automation between high and low level. A LED on the front shows the status of the relay. This one is lit when the relay is energized.



### To test the relay:

- Disconnect the electrodes
- Shunt between E0 & E2: relay is actuated (alarm function)
- Shunt between E0, E2 & E1. Disconnect E2, then E1 (pump automation)

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Resistive level detector  
**ES 2001**

28-05-2019

D-530.01-EN-AB

NIV

530-01/3

# Resistive level probe STE



- For level control
- Applications with conductive liquids
- 1 to 5 Detection electrodes
- Level regulation with relays ES2001

## APPLICATIONS

- Level control in open or closed vessels
- Alarm for excess or lack of liquid (leak detection, empty piping, dry-pump prevention, etc.)
- Fill or drain function with ES 2001 relay

## DESCRIPTION

The STE level probe in combination with a relay ES2001 detect the level of electrically conductive liquids. According to the model, up to 5 levels may be triggered (using the tank as the reference electrode)  
Provide a reference electrode if the tank is made of insulating material. These STE probes are not suitable for liquids with hydrocarbons or grease or for any other application where an insulating layer may deposit on the electrodes.

## TECHNICAL FEATURES

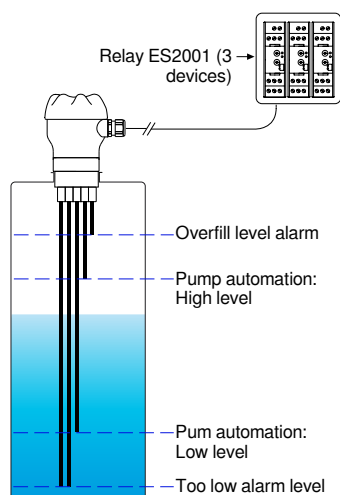
Electrodes	Up to 5 rods, AISI 316 L (Titanium in option)
Fitting	PP or AISI 316
Head housing	PBT glass fiber reinforced, IP 65 (EN 60 529), cable gland M20 x 1
Option: Partial insulation	Polyolefin (heat shrinkable) <i>To avoid false alarms by conductive bridge through the medium between electrodes or if the electrodes are long and can touch each others.</i>
Temperature limits	Ambient: -20 ... +60 °C Liquid: -5 ... +100 °C (restrictions apply according the chemical)
Pressure limits	6 bar at +20 °C 1 bar at 100 °C Other pressure limits: On request
Min. L1 & L2	45 mm
Max. L1 ... L5	2000 mm
Installation	Vertical on top of tank; Never install horizontally

### CAUTION:

STE with relays ES2001 are designed for liquids with a conductivity > 6.6 µS/cm or a lower resistance than 150 kΩ.cm  
Use only in liquids compatible with stainless steel 316 L and insulation when provided.  
Do not use on liquids that may create an insulating layer.

**Accessories** Relay ES2001 (data-sheet 530-01)

**EC Conformity:** The instrument meets the legal requirements of the current European Directives



Example: In operation

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Resistive level probe  
**STE**

02-03-2020

D-540.01-EN-AC

LEV

540-01 /1

## CODE NUMBERS AND REFERENCES

Code	PPH fitting	Code	AISI 316 L fitting	Description
540 110	STE A 2 X	540 210	STE A C3 X	STE for 1 rod (not included), BSP 1/2"
540 120	STE Z 2 X	540 220	STE Z C6 X	STE for 2 rods (not included), BSP 1 1/4"
540 130	STE D 2 X	540 230	STE D C6 X	STE for 3 rods (not included), BSP 1 1/4"
540 140	STE V 2 X	540 240	STE V C8 X	STE for 4 rods (not included), BSP 2"
540 150	STE F 2 X	540 250	STE F C8 X	STE for 5 rods (not included), BSP 2"

### Electrodes for STE:

Code	Reference	Description
540 010	500 mm long rod	AISI 316 L electrode, Ø 4 mm, length: 500mm
540 011	1000 mm long rod	AISI 316 L electrode, Ø 4 mm, length: 1000mm
540 012	1500 mm long rod	AISI 316 L electrode, Ø 4 mm, length: 1500mm
540 013	2000 mm long rod	AISI 316 L electrode, Ø 4 mm, length: 2000mm

### Level detection

#### Number of electrodes and fitting type

- S** 1 rod - BSP 1/2" without head housing
- A** 1 rod - BSP 1/2"; IP 65 housing
- Z** 2 rods - BSP 1 1/4"; IP 65 housing
- D** 3 rods - BSP 1 1/4"; IP 65 housing
- V** 4 rods - BSP 2"; IP 65 housing
- F** 5 rods - BSP 2"; IP 65 housing

#### Fitting material

- 2** PP (Standard)
- C3** 316 Ti; BSP 1/2"
- C6** 316 Ti; BSP 1 1/4"
- C8** 316 Ti; BSP 2"

#### Rods insulation

- X** None (Standard)
- T** With polyolefin sheath

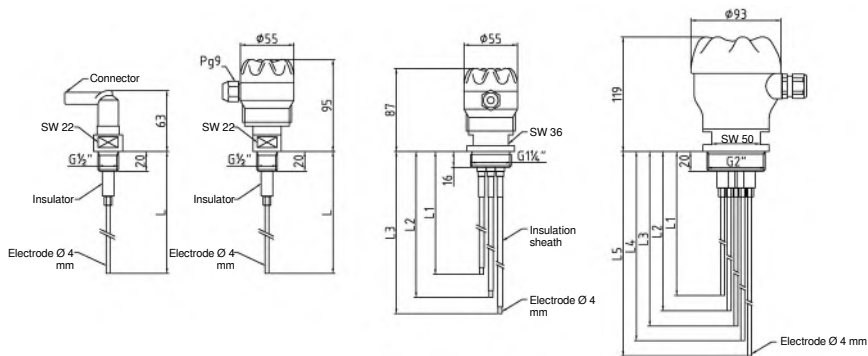
#### Rod length from sealing surface

- L1** ... mm
- L2** ... mm
- L3** ... mm
- L4** ... mm
- L5** ... mm

STE

Option: Paint-free design (Silicone cleaned with restrictions: on request)

## DIMENSIONS



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Resistive level probe  
**STE**

LEV

540-01/2

02-03-2020

D-540.01-EN-AC

# Floor leak detection BES 680



BES 680



Bottom view



ES5000

- Static floor water detector
- Integrated resistor for detection loop monitoring, with ES5000 relay

## APPLICATIONS

- Control of presence or not of conductive liquid on the floor
- Monitoring in technical room, computer room, etc.
- Detection in retention basins, underground cable trays, etc.

## DESCRIPTION

The resistive level detector, associated to a resistive relay, detects the variation of resistor value caused by the presence of a conductive liquid between two electrodes. This variation generates an alarm signal via a resistive relay. With the integrated resistor (680 kOhm), the ES5000 relay secures the detection loop by detecting any cable break or short circuit.

## TECHNICAL FEATURES

Materials	Housing head: PBT Electrodes: AISI 316 L Cable: PVC; 2x 0.34 mm <sup>2</sup> (LiYY type)
Protection	IP 67 (not suitable for permanent immersion)
Cable length	5m (standard)
Liquid height detection	Min. about 1mm
Electrical connection	Terminals E0, E2, on relay ES 2001/5000 (any polarity)
Ambient temperature	-20 ... +60 °C

### Detection loop monitoring

This function is available with the ES5000 relay.

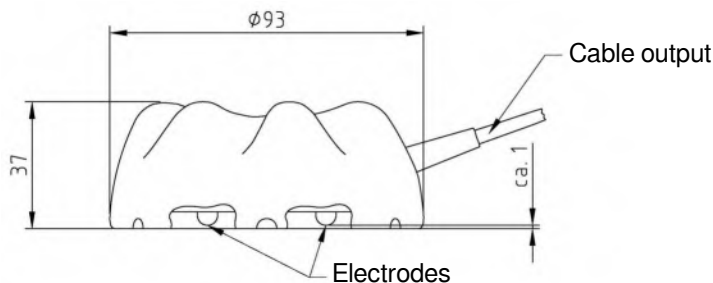
**EC Conformity:** The instrument meets the legal requirements of the current European Directives.

## CODE NUMBERS AND REFERENCES

**BES 680** Floor leak detector, 5 m long PVC cable, AISI 316 L electrodes, with integrated resistor for loop monitoring.

Code	Reference	Description
540 901	BES 680	Floor leak detector, 5 m long PVC cable

## DIMENSIONS



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Floor leak detection  
**BES 680**

17-12-2019

D-540.02-EN-AE

LEV

540-02/1

# Resistive level probes TVI & MINITEV



TVI 1E / TVI 3 E



MINITEV



ES 2001

- For all electrically conductive liquids
- 1 to 4 electrodes
- Materials: Metals - PTFE
- Pressure up to 200 bar
- Temperature up to 220 °C
- Fittings or BSP or NPT
- Connection head in aluminum

## PRINCIPLE

Electrical resistance variation, caused by the presence of a liquid between two electrodes, converted by level relay as ON/OFF signal (see data-sheets relay ES 2001, 530-01 and 233-01 for RXM).

Electrode length is adjusted according to distance of trigger point.

## APPLICATIONS

- Level control or regulation, on open tanks or closed tanks, piping, open channels, etc.
- Detection of presence or lack of liquid (leaks, empty piping, dry run detection for pumps).

## DESCRIPTION

Each probe has three parts:

- Cast aluminum head (IP 55) with screw terminals and cable gland (Excepted on MINITEV)
- Fitting: AISI 316 L with PTFE insulator(s).
- Electrodes: AISI 316 L, 1 to 4 electrodes (according the model) at necessary length.

Electrical connection: with end tip to the terminal.

A ground connection is available inside the housing IP55.

## TERMINOLOGY

The term "Bougie", very often used at CIEMA (1998), refers to an electrode or a single-electrode probe.

The "Probe" or "Holder" is a set, electrode and connection head.

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Resistive level probes  
TVI & MINITEV

27-05-2020

D-541.01-EN-AB

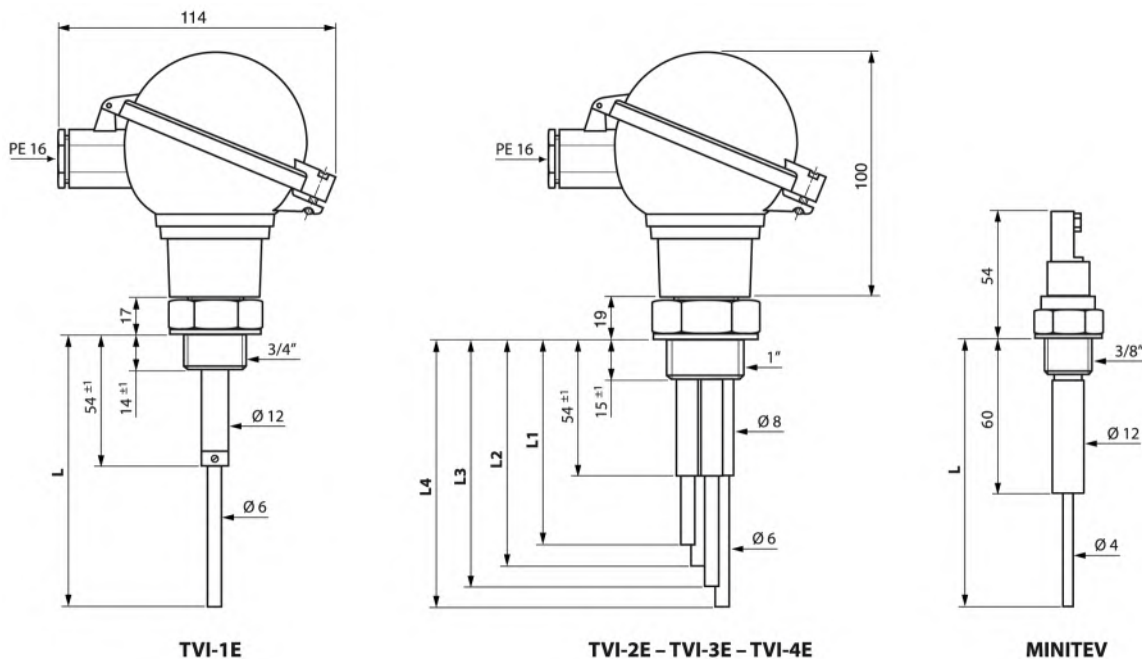
NIV

541-01 /1



## CODE NUMBERS AND FEATURES

Reference	TVI-1E	TVI-2E	TVI-3E	TVI-4E	MINITEV
Code	541 310	541 420	541 430	541 440	541 330
Number of electrodes	1	2	3	4	1
Fitting	3/4" G (Option : 1/2" G)		1" G		3/8" G
Insulator	Insulator PTFE				
Length Min.	54 mm	-			60 mm
Length Max.	3000 mm			1000 mm	
Temperature Max.	220 °C	80 °C		220 °C	
Pressure Max. (at T° Max.)	25 bar (at 220 °C)	25 bar (at 80 °C)		25 bar (at 220 °C)	
Pressure Max. at 20 °C	200 bar	50 bar		200 bar	
<b>MATERIALS</b>					
Head housing	Cast aluminum			<i>(Without head housing)</i>	
Fitting	AISI 316 L			AISI 316 L	
Electrode(s)	AISI 316 L			AISI 3016 L	



## PRECAUTIONS FOR COMMISSIONING

- Provide the correct number of electrodes: 1 per level point + 1 as a reference (if tank is not used as reference).
- Mount the probe on the top of the tank, in vertical position.
- If it is not possible, use a lateral position with an angle of 45° downwards (always think of conductive liquid bridges that create false alarms).
- Check the limits of temperature vs. pressure and the chemical resistance of wet part materials in contact with the fluid.
- **Beware of vapors, it is recommended to coat the connectors after wiring or use a pierced lid to avoid possible condensation.**
- In case of agitated liquid, make sure that rods cannot touch each other by using spacers, or using coated rods, or by isolating them from turbulences inside a transquilization tube.
- For clogging liquids or with vapours, be sure not to have any electrically conductive bridge between two electrodes.

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Resistive level probes  
**TVI & MINITEV**

27-05-2020

D-541.01-EN-AB

NIV

541-01 /2



# Resistive level with flexible probes HE - HS

- For electrically conductive liquids
- Immersion up to 5 m; cables: up to 25 m
- From 1 to 5 probes



## APPLICATIONS

- HE version: Level detection on neutral liquids
- HS version: Level detection on aggressives liquids

## DESCRIPTION

Probes HE and HS, hanged electrodes, are to be in use with relays ES2001 for detection of liquid levels in storage tank.  
Depending on the model, up to 5 levels can be detected using the wall tank as a reference electrode; Provide a reference electrode if the tank is made of insulating material (i.e. up to 4 level detection + 1 reference).  
This technical solution is not suitable for liquids with hydrocarbons or grease or for any other application where an insulating layer is liable to deposit on the electrodes. Flexible probes are recommended for tanks with a height greater than 1000 mm.

## TECHNICAL FEATURES

Fitting material	HE: PP HS: PVC
Cable	HE: Flexible PVC HS: Special cable coated with PES
Housing	PBT, glass fiber reinforced
HS probe body	PVC
Ambient temperature	-20 ... +60 °C
Liquid temperature	HE version: 0 ... +60 °C, HS version: Depends of chemical resistance of PVC and PES
Pressure	0.5 bar (Immersion depth Max. 5 m with SG = 1)
Protection	IP 65 according EN 60 529
Minimum for cable lengths L1 & L2:	HE: 0.3 m HS: 0.2 m
Maximum for cable lengths L1 ... L5:	25 m

**EC Conformity: The instrument meets the legal requirements of the current European Directives.**

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Resistive level with flexible  
probes  
**HE - HS**

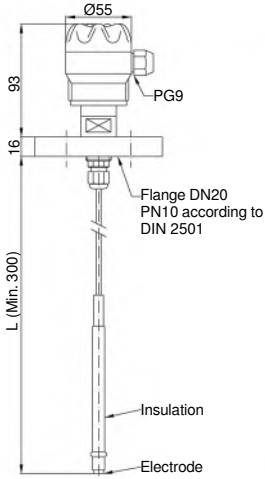
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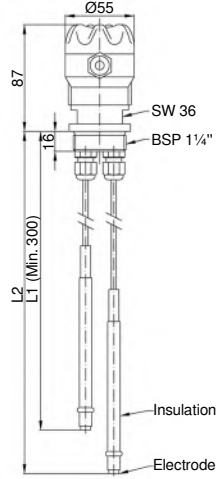
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542-01 /1

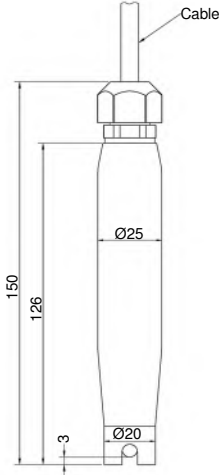
**DIMENSIONS**



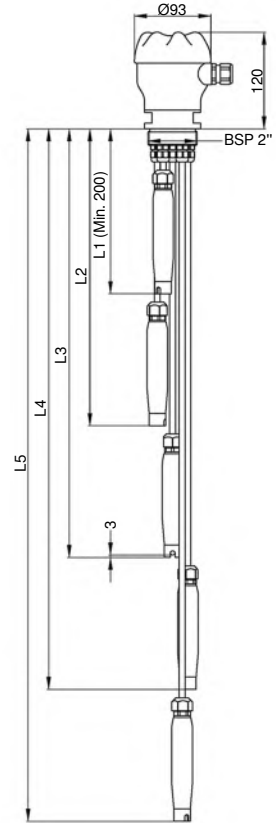
**HE-AF2**



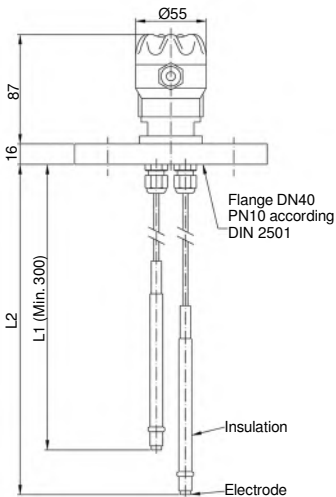
**HE-Z**



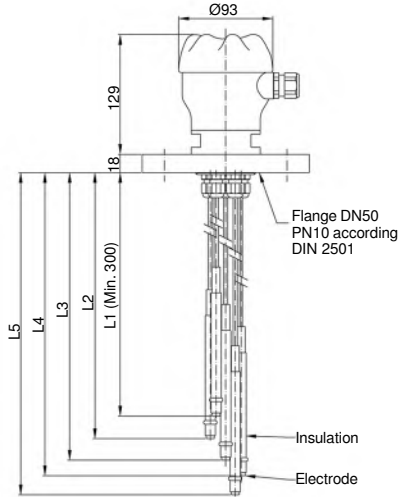
**HS-X**



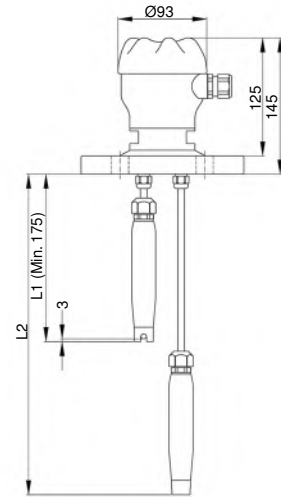
**HS-F 5 electrodes, BSP 2"**



**HE-ZF2**



**HE-VF2**



**HS-ZF 2 electrodes, with flange**

542

542



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**Resistive level with flexible probes**  
**HE - HS**

15-04-2021

D-542.01-EN-AC

**LEV**

**542-01/2**

**HE version: References**

**Hanged electrodes**

Level detection for electrically conductive liquids (with the use of a relay ES 2001).

HE...

**Number of probes and fitting type**

- X** 1 probe; no fitting
- A** 1 probe, BSP 1/2"; IP65
- Z** 2 probes, BSP 1 1/4"; IP65
- D** 3 probes, BSP 1 1/4"; IP65
- V** 4 probes, BSP 2"; IP65
- F** 5 probes, BSP 2"; IP65

**Total length from sealing surface**

- L1** ..... mm
- L2** ..... mm
- L3** ..... mm
- L4** ..... mm
- L5** ..... mm

HE- L1

**Accessories:**

- G2Z3 = counter nut, PP, BSP 1/2"
- G2Z6 = counter nut, PP, BSP 1 1/4"
- G2Z8 = counter nut, PP, BSP 2"
- F2 = Flange DN20, BSP-F 1/2" for HE A version
- F6 = Flange DN50, BSP-F 1 1/4" for HE Z and HE D versions
- F7 = Flange DN65, BSP-F G2" for HE V and HE F versions
- F8 = Flange DN80, BSP-F 2" for HE V and HE F versions

**HS version: References**

**Hanged electrodes**

Level detection for electrically conductive and aggressive liquids (with the use of a relay ES 2001).

HS...

**Number of probes and fitting type**

- X** 1 probe; no fitting
- A** 1 probe, BSP 1"; IP65
- Z** 2 probe, BSP 2"; IP65
- D** 3 probes, BSP 2"; IP65
- V** 4 probes, BSP 2"; IP65
- F** 5 probes, BSP 2"; IP65
- AF2** 1 probe, flange DN25 PN10, PVC; IP65
- ZF6** 2 probes, flange DN50 PN10, PVC; IP65
- DF6** 3 probes, flange DN50 PN10, PVC; IP65
- VF7** 4 probes, flange DN65 PN10, PVC; IP65
- FF8** 5 probes, flange DN80 PN10, PVC; IP65

**Total length from sealing surface**

- L1** mm
- L2** mm
- L3** mm
- L4** mm
- L5** mm

HS- L1



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Resistive level with flexible probes  
**HE - HS**

LEV

542-01 /3

15-04-2021

D-542.01-EN-AC

542

542

# Level electrodes for wells EF / EFC

- Compact electrodes
- All stainless steel
- For conductive liquids
- Supplied with or without cable



## APPLICATIONS

Due to their designs and small dimensions, these electrodes are suitable for the control of the presence of fluid in wells (pump protection) as well as for level control in large reservoirs, barrages, etc.

## DESCRIPTION

A low current is sent into a so-called reference electrode. When the liquid is in contact with the reference and the level electrode (trigger point), the current passes through the conductive liquid. This short circuit is detected by a relay ES 2001 that activates a contact to trigger an alarm (remote signal).

EF 16 electrode is a single contact electrode.

EFC 16 electrode is a dual-contact electrode, the outer body is used as the reference. No needs to provide a special ground connection. Measuring current returns through the shield of the coaxial cable connected to the outer body.

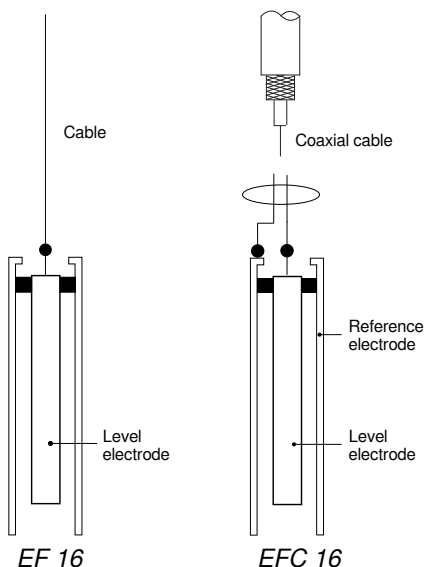
## TECHNICAL FEATURES

Outer body	AISI 316 L
Electrode	AISI 316 L
Insulation	Delrin (Polyacetal)
Temperature limit	100 °C
Fixture	Cable suspended
Dimensions	EF: Ø 16 x 130 mm (overall) EFC: Ø 16 x 157 mm (overall)
Mass	70 g



## CODE NUMBERS AND REFERENCES

Code	Reference	Description
542 016	EF 16	Electrode Ø 16
542 018	EFC 16	Coaxial electrode Ø 16
542 112	CNEF	Cable for EF 16 electrode
542 118	CVEFC	Coaxial cable for EFC 16 electrode



ES 2001

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## Level electrodes for wells EF / EFC

26-06-2020

D-542.02-EN-AC

NIV

542-02/1

# Water detector in diesel tank DETECTO SR18



DETECTO SR18

- Water detection
- Small dimensions
- Cable, 5 m long
- To use with a relay ES 2001:  
1 relay output (alarm)

## APPLICATIONS

- Water detection at the bottom of diesel storage tanks

## DESCRIPTION

The detection is based on the variation of electrical resistance caused by the presence of water between the two electrodes of the probe.  
This variation is converted into a signal On/Off by the relay ES 2001 (see data-sheet 530-01).

The probe must be placed inside, at the bottom of the tank and connected to the ES 2001 relay.

## TECHNICAL FEATURES

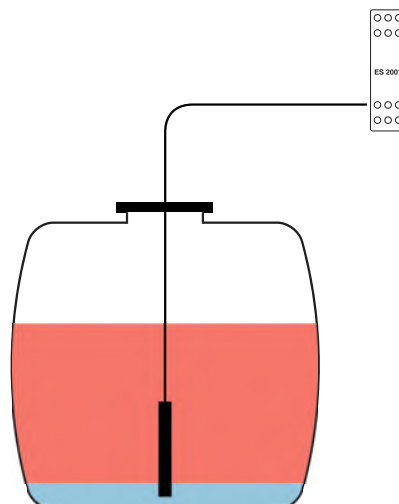
Electrodes	AISI 316 L
Body	PVC, polyamide cable gland O.D.: 20 mm; Height: 120 mm (including PG)
Cable	NEOPRENE, 3x1 mm <sup>2</sup> (O.D. 8.8 mm) Length 5 m

## CODENUMBERS AND REFERENCES

Code	Reference	Description
542 300	DETECTO SR18	Probe for detection of settled water in diesel
530 200	ES 2001 / 230 V AC	Relay, power supply 230 V AC
530 254C	ES 2001 / 24 V DC	Relay, power supply 24 V DC
590 860	Mount fitting	



ES 2001



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## Water detector in diesel tank DETECTO SR18

14-10-2020

D-542.03-EN-AB

NIV

542-03/1

# Resistive level detectors STS



- For aggressives and conductive chemicals
- PVC or PVDF
- Up to 5 electrodes
- Custom manufacturing
- Fixed alarming level

## APPLICATIONS

Level control of electrically conductive and corrosive liquids:

- Metal finishing industry
- Control of presence or absence of liquid (leak detection, empty piping etc.)
- Pump automation (fill or drain) with ES 2001 relay

## DESCRIPTION

The STS level probe with a relay ES 2001, detects a level of a conductive liquid.

The longest electrode is used as the reference. The electrical contact occurs when the reference electrode and another electrode are both in contact with the liquid. Then, the current in detection loop provokes through the relay ES2001, an amplified ON/OFF signal (see data-sheet 530-01).

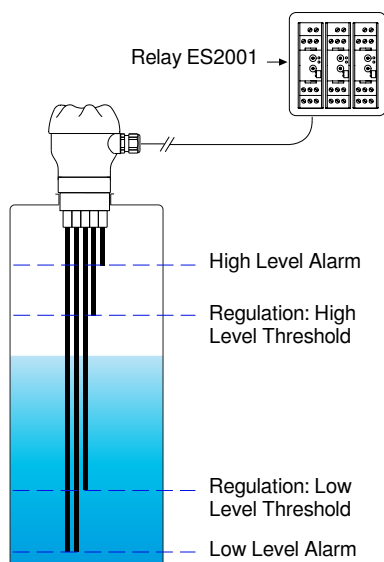
### Acid resistant materials:

With Hastelloy G30 electrode ends and PVC or PVDF stems, the STS probes are useful for level control of most acids.

Other electrode ends such as Tantalum, other stem materials (PTFE or PPH), are available on request.

## TECHNICAL FEATURES

Type	STS/A	STS/Z	STS/D	STS/V	STS/F
Number of electrodes	1	2	3	4	5
BSP fitting	3/4"	2"	2"	2"	2" 1/2
Flange PN 10	ND 25	ND 65	ND 65	ND 65	ND 80
Min. length (L in mm)	50	70	70	70	70
Max. length (in mm)	3000				
Temperature	See corrosion table				
Max. Pressure	4 bar at 20 °C				
Head housing	In PBT, IP 65				
<b>MATERIALS</b>					
Electrode	Hastelloy G30				
Stem and fitting	PVC (max. 55 °C for water)				
	PVDF (Max. 110 °C for water)				



Installation example

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Resistive level detectors  
**STS**

10-03-2020

D-543.01-EN-AB

NIV

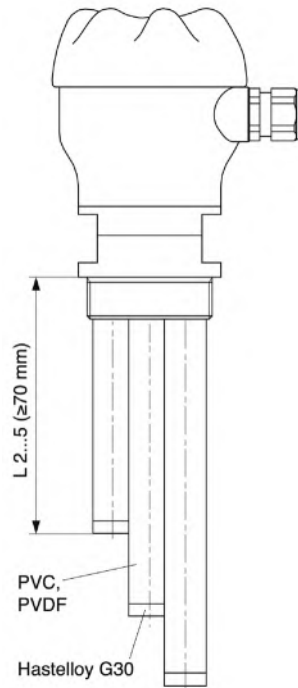
543-01 /1



## CODE NUMBERS AND REFERENCES

Reference	Code for PVC	Code for PVDF
STS / A / ... / G 30	543 010	543 110
STS / Z / ... / G 30	543 020	543 120
STS / D / ... / G 30	543 030	543 130
STS / F / ... / G 30	543 040	543 140
STS / V / ... / G 30	543 050	543 150

NOTE: Stems are supplied at the requested lengths ( $\pm 2$  mm).  
By construction (solvent welding on PVC, welding for PVDF) stems cannot be adjusted on site.  
Procure to order the necessary quantity of relays ES 2001.



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Resistive level detectors  
**STS**

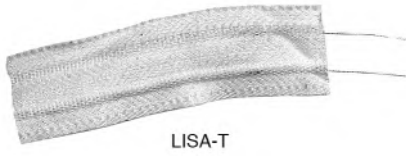
NIV

543-01 /2

10-03-2020

D-543.01-EN-AB

# Leakage detection: Liquid Intrusion Safety Alarm LISA



LISA-T



LISA-B



LISA-G



LISA-T-K2



LISA-T-K1



ES 5000

- Detection of water leaking (1 drop is sufficient)
- Alarm signal before flooding
- Self diagnostic of measuring loop integrity, LED display (Short circuit or ribbon sensor break off)
- Protection of equipment and exposed areas
- Suitable to any surface

## CONCEPT

Detection of flood, leakage, presence of water or moisture in exposed area or special environment.  
LISA system combines a detector (linear or point) with a relay dedicated to this application, the ES 5000.

## APPLICATIONS

The LISA system is dedicated for leakage detection of water distribution (pipes, sprinklers) and alarming in case of water, condensates or humidity in areas where water is prejudicial for equipments (Computer rooms, machinery, power plants, medical equipments, HVAC, museum, stores, etc.).

## DESCRIPTION

The ribbon detector consists of two metal wires connected at the end by a resistor and insulated by an absorbent fabric.  
The special material used for the ribbon, contains ionic ingredients, which allow detection of demineralised water.  
This flexible ribbon is placed in all positions and fits all shapes.  
As soon as there is humidity somewhere on the ribbon, the relay detects the change of resistivity and switch on the alarm signal, even before a significant amount of water could be find out.  
The relay ES 5000 includes a self diagnostic of the integrity of measuring loop (alarm in case of short circuit, or ribbon sensor break off) in order to warrant a positive safe detection system.

## INSTALLATION

The ribbon is applied on any horizontal or vertical surface/ support for monitoring an area, or, the one point detector is used for a local detection.  
The ribbons is fixed on the ground with a special adhesive, or wrapped round a pipe/ a valve.  
An adequate grid of the area will allow to locate the leak.  
Depending on the system and expected monitoring result, one or more detectors will be used with one or more relays.  
After an alarm and repair of the leakage, the ribbon sensor is easily dried out without dismantling it.

### Components of a system LISA:

LISA-T : Ribbon sensor	LISA-T-K1: Connection kit "Start of detection loop"
LISA-B: One point detector	LISA-T-K2: Connection kit "End of detection loop"
LISA-G: Floor detector	ES 5000: Relay

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Leakage detection: Liquid  
Intrusion Safety Alarm  
**LISA**

13-07-2018

D-544.03-EN-AA

NIV

544-03/1

## TECHNICAL FEATURES

### Relay ES 5000

Power supply	230, 115, 48, 24 V AC – 50/60 Hz 24, 12 V DC
Consumption	< 2 VA
Ambient temperature	-15 ... +45 °C
Mass	100 g
Mounting	Rail DIN 46277
Dimensions	22.5 x 75 x 99 mm
Protection	IP40 – Tropicalized on request (varnish)
Hysteresis	About 10 %
Adjustable timer	0.5 ... 3 s (increase and decreasing signal)
Sensitivity:	Low range = 5 to 70 kOhm High range = 15 to 150 kOhm
Current loop output	Galvanic insulated < 6 V AC / < 2 mA
Relay outputs (2)	Max. 250 V AC, 3 A Max. 125 V DC, 1 A
<b>EC Conformity</b>	In accordance with low voltage guidelines (2006/95/EEC) and (89/336/CEE)

### Ribbon sensor LISA-T

Width	20 mm
Packaging	Roll of 50 m (or supply at required length; per meter)

### Floor detection: LISA-G

Mass	< 50 g
Dimensions (Excluding PG 9)	Length: 65 mm; Width: 50 mm; Height: 35 mm

### One point detection: LISA-B

Mass	About 50 g
Dimensions (Excluding PG 9)	Length: 65 mm; Width: 50 mm; Height: 45 mm

### Connection kits

#### LISA-T -K1 and LISA-T -K2

Mass	< 50 g
Dimensions (Excluding PG 9)	Length: 65 mm; Width: 50 mm; Height: 45 mm

To assure the self diagnostic of the measuring loop (short circuit; ribbon break off) using the relay ES5000:

- Length of the ribbon: 50 m Max.
- Independently of ribbon length, an extension may be use to reach the relay: 50 m Max. (2-wire; 2 x 0.5 mm<sup>2</sup>)

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
544 300	ES 5000 / 230 V AC	Relay ES 5000; IP 40; 230 V AC – 50/60 Hz
544 310	ES 5000 / 115 V AC	Relay ES 5000; IP 40; 115 V AC – 50/60 Hz
544 320	ES 5000 / 48 V AC	Relay ES 5000; IP 40; 48 V AC – 50/60 Hz
544 330	ES 5000 / 24 V AC	Relay ES 5000; IP 40; 24 V AC – 50/60 Hz
544 352	ES 5000 / 12 V DC	Relay ES 5000; IP 40; 12 V DC
544 354	ES 5000 / 24 V DC	Relay ES 5000; IP 40; 24 V DC
544 135	LIBA-B	One point detector
544 136	LISA-T	Ribbon sensor / per metre
544 137	PL400	Special adhesive (O/A - on request) for ribbon
544 140	LISA-T-50	Ribbon sensor / Roll of 50 m
544 141	LISA-G	Floor detector
544 142	LISA-T-K1	Connexion kit "Start detection loop"
544 143	LISA-T-K2	Connexion kit "End of detection loop"

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Leakage detection: Liquid  
 Intrusion Safety Alarm  
**LISA**

13-07-2018

D-544.03-EN-AA

NIV

544-03/2

# Relay for resistive level detection

## ES5000



- For all electrical conductive liquids
- Suitable for level or leakage detection
- Adjustable sensitivity and timer, Selection of action mode
- Self diagnostic with instant alarm (LED) for: Short circuit on the loop detection, Loop detection cable break off
- Functions:
  - On /Off level controller between 2 rods
  - Level regulation between 3 rods
  - Leakage, inundation and humidity detection

### PRINCIPLE

The relay ES 5000 works with the electrical conductivity property of the liquid, detecting the opening or closing circuit between two electrodes.

### APPLICATIONS

#### Relay for level control

Minimal or maximal levels – Dosing, flow detection and alarm, pump control, solenoid valve control, fluid detection in a pipe.

#### Relay for leakage, inundation and humidity detection

In use with a LISA sensor, the relay ES5000 is dedicated for leakage detection on water distribution (pipes, sprinklers) and alarming in case of water, condensates or humidity in areas where water is prejudicial for equipments. The relay ES5000 includes a self diagnostic of the detection loop (short circuit on the loop detection and ribbon sensor break off) in order to warranty a positive safe detection system.

### TECHNICAL FEATURES

Power supply input:	230, 115, 48, 24 V AC - 50/60 Hz 12, 24 V DC
Consumption:	< 2 VA
Ambient temperature:	-15 to +45°C
Mass:	100 g
Mounting:	DIN rail (DIN 46277)
Dimensions:	22.5 x 75 x 99 mm
Protection:	IP40 – Tropicalized on request ( <i>varnish</i> )
Hysteresis:	About 10% of sensitivity
Adjustable timer:	0.5 ... 3 s ( <i>increase and decreasing signal</i> )
Sensitivity:	Low range = 5 to 70 kOhm High range = 15 to 150 kOhm
Current loop output:	Galvanic insulated, < 6 V ac / < 2 mA
Relay outputs (2):	Max 250 V, 3 A [AC] Max 125 V, 1 A [DC]
<b>CE Labels:</b>	In accordance with low voltage guidelines (2006/95/EEC) and (89/336/CEE)

# BAMO MESURES

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Relay for resistive  
level detection  
**ES5000**

10-03-2009

544 I1 06 B

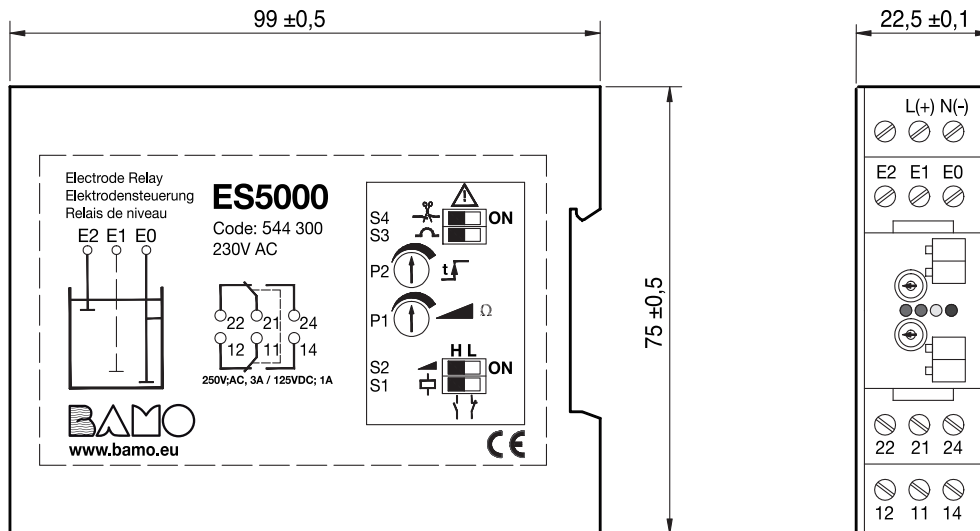
**NIV**

**544-06/1**

## CODE NUMBERS AND REFERENCES

Code	Reference	Designation
544 300	ES5000 /230	Relay, input power supply 230 V / 50-60 Hz
544 310	ES5000 /115	Relay, input power supply 115 V / 50-60 Hz
544 320	ES5000 /48	Relay, input power supply 48 V / 50-60 Hz
544 330	ES5000 /24	Relay, input power supply 24 V / 50-60 Hz
544 352	ES5000 /12 V dc	Relay, input power supply 12 V DC
544 354	ES5000 /24 V dc	Relay, input power supply 24 V DC

## DIMENSIONS



## OPERATING RANGE

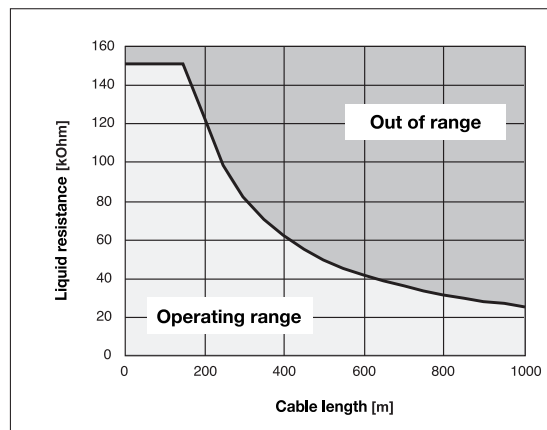
The capacitive resistance of a long cable reduces the sensitivity of the relay ES5000. A standard PVC cable, shielded, 3 conductors, has a capacitance of approx. 100 pF/m. This results in an operating range which is dependent upon cable length and the liquid resistance in accordance with the following drawing.

### Caution:

- Choose a suitable cable with 0.5 mm<sup>2</sup> wires
- Over 25 m distances, preferably use a shielded cable
- All the detection loop, must be faraway from high power lines

**!** To assure the self diagnostic of the detection loop (*short circuit on the loop detection and ribbon sensor break off*) using the relay ES5000, the standard cable (2 wires 0.5 mm<sup>2</sup>) connecting the sensor, is **50 m as a maximum**.

[Only for V AC supply]



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Relay for resistive  
level detection  
**ES5000**

10-03-2009

544 I1 06 B

NIV

544-06/2



# Leak detector and localizer BAMOLEAK



- Leak localization
- Length up to 3,000 metres (12 areas)
- Automatic recognition of loop parameters
- Event recording (date / time)
- Outputs: 4-20 mA, MODBUS RTU, relays

## APPLICATIONS

- Building automation
- Datacenters
- Semiconductor Industry
- Clean rooms
- Archives storage / Libraries / Museums
- Heating and air conditioning systems
- Switching centers, computers room

## DESCRIPTION

BAMOLEAK allows to secure work areas where leaks are prejudicial for equipments, by detecting and precisely locating leaks of conductive liquids. The sensor (cable) is laid along the monitored area or pipeline, and, connected to the evaluation unit. Leakage is detected by the converter, which determines, records and reports information via the analog output, relays and the RS485 Modbus interface.

Two complementary detectors can be connected to the converter such as MAXITOP LWC (Detection in double-walled tank, data-sheet 556-03) or LWC-B (Local floor detector, data-sheet 556-05).

Note: BAMOLEAK can locate one leak at a time.



## TECHNICAL FEATURES

Power supply	Or 100 ... 240 V AC - 50/60Hz Or 10 ... 30 V DC; 12 ... 24 V AC
Consumption	2 ... 5W
Contact outputs	5 contacts, adjustable, potential-free To set as, or N.O. or N.C. contact

### Note:

All contacts are open when de-energized

Switching power	250 V AC, 2 A / 30 V DC, 1 A
-----------------	------------------------------

### Caution:

Contacts are not protected against overload, provide an external protective device.

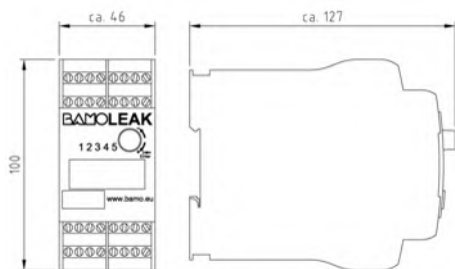
Maximum cable length	3,000 m
Housing	46 x 100 x 127 mm Rail mounting (DIN EN 50 022; 35x7.5 mm)
Protection	IP40

### Note:

The protection against accidental contact according to DIN EN 61010-1 is only guaranteed when the unit is installed in a closed cabinet with a protection IP5x or greater.

Ambient temperature limits	-10 ... +45 °C
Sensor (cable) temperature limits	-50 ... +150 °C
Connectors temperature limits	-20 ... +60 °C

## DIMENSIONS



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Leak detector and localizer  
**BAMOLEAK**

LEV

544-50/1

14-10-2020

D-544.50-EN-AE



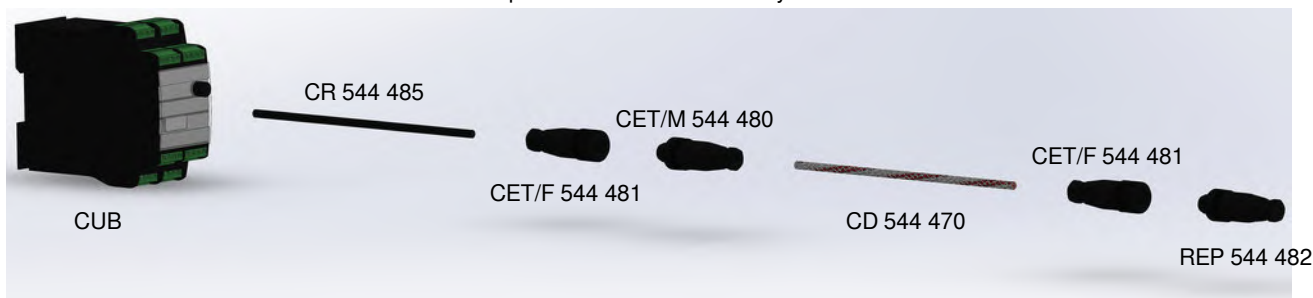
## TECHNICAL FEATURES (CONTINUED)

Wall-mount cabinet (Option)	175 x 200 x 155 mm
Screw terminals	Screw connectors, cable diam. Max. 1.5 mm <sup>2</sup>
Detection areas	12 areas; Setting of name/ TAG to each one
Accuracy of leak localization	< 1 %; ±1 m
Measuring loop	1 input for the 4 poles sensor (cable) 2 additional inputs for 2 one-point detectors (e.g. MAXITOP LWC or LWC B)
Power supply to the detection loops	Localization with sensor (cable): Max. 20 V AC/DC; Max. 5 mA One-point detectors: Max. 30 mA (each)
Analogue output 4-20 mA	Active signal output (with its own loop power) 4 ... 5 mA: No alarm 5 ... 20 mA: Localization of the detected leak point = [ cable length x (current value - 5mA) ] / 15mA 21 mA: Fault, error message
Adjustable timer	When detection occurs: 0.5 to ... 5 minutes delay before signaling
Real time clock	integrated clock with battery, automatic summer time switch can be activated
Records	Automatic record of all events, max. 48 inputs, events can be acknowledged and deleted, individually
Language	To choose between English, German, French, Spanish, Portuguese, Polish
Key protection of settings	4 digits; Can be deactivated
Signaling interface	Display: 2 line-text LCD Status of contact outputs 5 LED (multicolour)
Digital communication	RS 485 / MODBUS
Sélecteur	Rotary switch on front panel

**EC Conformity: The instrument meets the legal requirements of the current European Directives**

## CODE NUMBERS AND REFERENCES

Components of a BAMOLEAK system



Code	Reference	Description
544 450	BAMOLEAK CUB/220	BAMOLEAK converter, DIN rail mounting, 100 ... 240 V AC
544 460	BAMOLEAK CUB/24	BAMOLEAK converter, DIN rail mounting, 10 ... 30 V DC; 12 ... 24 V AC
544 489	WME2	Wall-mounting cabinet with DIN rail, cable glands.

### Accessories:

Code	Reference	Description
544 470	BAMOLEAK CD	Cable sensor, per metre; Length up on request
544 480	BAMOLEAK CET/M	M12 male connector for sensor (cable)
544 481	BAMOLEAK CET/F	Connector M12 female for sensor or ending resistor
544 482	BAMOLEAK REP	Ending resistor
544 485	BAMOLEAK CR	Connection cable, extension, per metre (Length: up on request)
544 486	BAMOLEAK M	Factory mounting: Connector on cable (on request)
544 202	WM25	Floor leak detector
556 500	MAXITOP LWC B	Floor leak detector

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Leak detector and localizer  
**BAMOLEAK**

14-10-2020

D-544.50-EN-AE

LEV

544-50/2

# Magnetic Level Controllers MNR 7



- Versions in: PVC, PP or PVDF
- 1 to 4 level changeover contacts
- Fitting 2" for standard models
- No effects of foam, neither of vapours
- Measuring height: up to 2500 mm

## APPLICATIONS

- Level controllers for liquids, even aggressive ones, not viscous, not clogging and free of suspended solid particles.

## DESCRIPTION

The Reed contacts (up to 4) inside the stem, are actuated directly by the magnet float. Wet parts (stem and float) to choose between: or PVC & PP, or PP, or PVDF

### Quick commissioning:

- Distance of each contact from sealing surface is fixed (requested on P.O.): No adjustment requested on site to guarantee the exact positioning of contacts.
- The PP float passes through the BSP 2" fitting without dismantling the MNR.
- At the stem bottom a nut limits the float movement: By unscrewing it, the float may be removed.

Note: It is recommended to provide the optional flange ND100 to allow the PVDF float to pass through the fitting.

### Recommendations:

The use of a relay ES2001 (data-sheet 250-02) will protect the Reed contact and increase its switching power and lifetime.

## TECHNICAL FEATURES

Height of stem	Min. 250 mm / Max. 2,500 mm
Liquid density	Min = 0.75
Temperature	PVC: 0 ... +60 °C PP: 0 ... +80 °C PVDF: 0 ... +110 °C
Pressure limit	Max. 1 bar at 20 °C

### Materials:

Stem and fitting	PVC, PPH or PVDF
Float	PPH or PVDF
Head housing	PBT, glass fiber reinforced, IP65

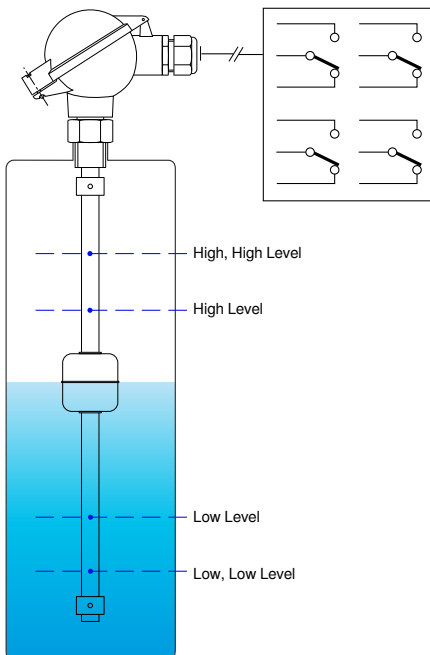
### Contacts:

Number	1 to 4 bistable change-over contacts
Switching power	60 VA / 220 V / 0.5 A
Connections	Screw terminals Cable gland M20 x1.5 (for cable Ø 5 ... 9)
Shortest gap	100 mm between 2 contacts
Accuracy	± 2 mm
Hysteresis	8 mm

### Fittings:

Standard	BSP 2"
Option	Flange ND 100 or BSP 1"

**EC Conformity:** The instrument meets the legal requirements of the current European Directives.



Principe de fonctionnement

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Magnetic Level Controllers  
**MNR 7**

26-02-2020

D-550.01-EN-AA

NIV

550-01 /1

## CODE NUMBERS AND REFERENCES

Standard length: 500 mm (Extra cost over 500 mm)

Code	Reference	Nr of contacts	Stem	Float
550 121	MNR7-PVC/1-2"	1	PVC	PPH
550 122	MNR7-PVC/2-2"	2	PVC	PPH
550 123	MNR7-PVC/3-2"	3	PVC	PPH
550 124	MNR7-PVC/4-2"	4	PVC	PPH
550 221	MNR7-PPH/1-2"	1		PPH
550 222	MNR7-PPH/2-2"	2		PPH
550 223	MNR7-PPH/3-2"	3		PPH
550 224	MNR7-PPH/4-2"	4		PPH
550 321	MNR7-PVDF/1-2"	1		PVDF
550 322	MNR7-PVDF/2-2"	2		PVDF
550 323	MNR7-PVDF/3-2"	3		PVDF
550 324	MNR7-PVDF/4-2"	4		PVDF

### Extra-cost over 500 mm, per each 100 mm:

550 110	PVC stem, per 100 mm
550 210	PPH stem, per 100 mm
550 310	PVDF stem per 100 mm

### Spare parts for MNR 7

550 050	Bistable change-over contact, 60 VA (wires: 500 mm long)
550 211	PPH Float for MNR 7 PVC & PPh (Ø 52 mm)
550 311	PVDF Float for MNR 7 PVDF (Ø 78 mm)

### Option: ISO Flange size ND 100 for MNR7

550 120	PVC Flange ND100, threaded BSP 1"
550 220	PPH Flange ND100, threaded BSP 1"
550 320	PVDF Flange ND100, threaded BSP 1"

## INFORMATION REQUESTED

Operating conditions:

Liquid .....

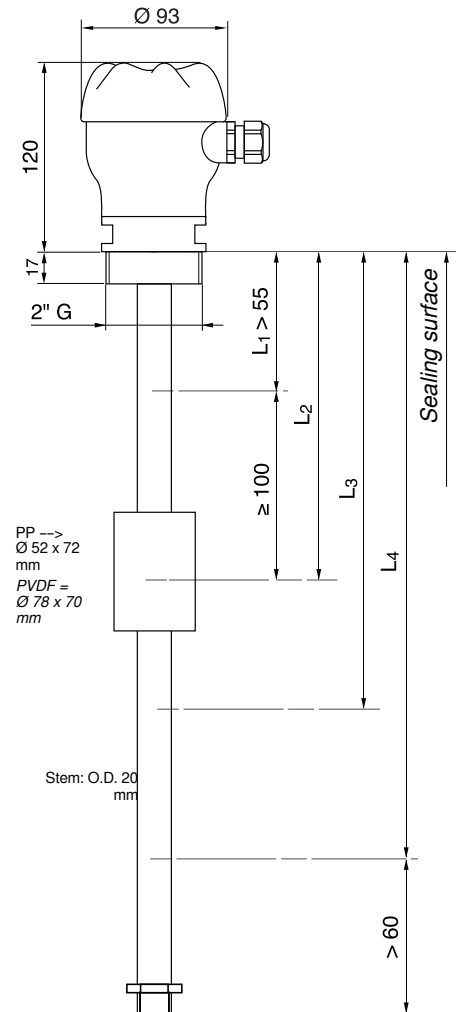
Density .....

Pressure max. Max..... bar

Temperature max. Max ..... °C

### Contact distance from sealing surface:

L1 = .... mm	L2 = .... mm	L3 = .... mm	L4 = .... mm
--------------	--------------	--------------	--------------



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## Magnetic Level Controllers MNR 7

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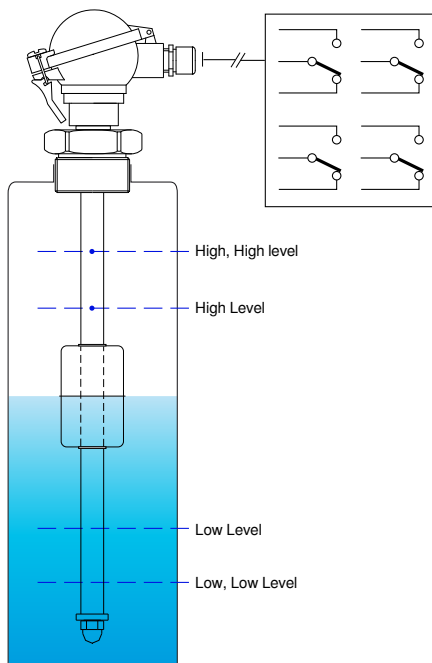
550-01 /2

# Magnetic level controllers in stainless steel

## MNR 7 - I



Avec l'option bride DN 100



Example: In operation

- AISI 316 L version
- 1 to 4 changeover bistable contacts
- No effects of foam, neither of vapours
- Compatible with RTM:  
Reed-Chain with analogue output signal  
(data-sheet 586-01)

### APPLICATIONS

- Level detection on liquids compatible with stainless steel  
MNR 7-I is suitable for liquids, not viscous, not clogging and free of suspended solid particles.

### DESCRIPTION

The Reed contacts inside the stem are actuated when the magnetic float passes in front of; Detection of up to 4 thresholds.  
The contacts are changeover and bistable: status reverses only when the float passes again in front of.

Terminals are in an aluminum housing, IP 65 (cable gland M20 x1.5); Wiring diagram is shown on the board inside. A nut limits the float movement at the stem end: by unscrewing the nut, the float is easily removed.

Tip: The 2" connection model with Ø 52 mm float and the DN 100 flange option, allow direct installation without removing the float.

### TECHNICAL FEATURES

Stem height	Min. 250 mm / Max. 3,000 mm
Liquid density	Min. 0.75: Float O.D. 91 mm; Min. 0.85: Float O.D. 52 mm
Pressure limit	Max. 25 bar at 20 °C
Ambient temperature	-20 ... +70 °C
Operating temperature	-10 ... +100 °C
Reed contacts	Changeover and bistable
Switching power	60 VA / 220 V / 0.5 A
Shortest gap	100 mm between 2 contacts
Accuracy	±2 mm
Hysteresis	8 mm
Floats	Ø 52, height 88 mm; Density: Min. 0.85 Ø 91, height 110 mm; Density: Min. 0.75)
Upper dead zone	≥ 50 mm with float Ø 52 ≥ 75 mm with float Ø 91
Lower dead zone	≥ 85 mm with float Ø 52 ≥ 80 mm with float Ø 91
Connections	Aluminum head housing, painted, IP 65 Cable gland M20 x1.5 (for cables Ø 5 ... 9 mm)
Fittings	BSP 1/2" BSP 2" Option: Flange ND 100

#### Materials

Stem	AISI 316 L (DIN 1.4404)
Float	AISI 316 Ti (DIN 1.4571)
Fittings	AISI 316 Ti (DIN 1.4571)
Flange	AISI 316 L (DIN 1.4404)

**EC Conformity:** The instrument meets the legal requirements of the current European Directives.

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Magnetic level controllers in  
stainless steel  
**MNR 7 - I**

27-02-2020

D-550.02-EN-AA

NIV

550-02/1

## CODE NUMBERS AND REFERENCES

Code	Description
550 401	MNR 7 - I; AISI 316; length 500 mm; fitting BSP 1/2" - 1 contact
550 402	MNR 7 - I; AISI 316; length 500 mm; fitting BSP 1/2" - 2 contacts
550 403	MNR 7 - I; AISI 316; length 500 mm; fitting BSP 1/2" - 3 contacts
550 404	MNR 7 - I; AISI 316; length 500 mm; fitting BSP 1/2" - 4 contacts
550 410	Extra cost for each 100 mm above 500 mm
550 421	MNR 7 - I; AISI 316; length 500 mm; fitting BSP 2" - 1 contact
550 422	MNR 7 - I; AISI 316; length 500 mm; fitting BSP 2" - 2 contacts
550 423	MNR 7 - I; AISI 316; length 500 mm; fitting BSP 2" - 3 contacts
550 424	MNR 7 - I; AISI 316; length 500 mm; fitting BSP 2" - 4 contacts
550 430	Extra cost for each 100 mm above 500 mm
<b>Spare parts for MNR 7 - I</b>	
550 050	Bistable changeover contact 60 VA (cable output 500 mm)
550 411	Float for MNR 7 - I, AISI 316 Ti, Ø 91 mm
550 ____	Float for MNR 7 - I, AISI 316 Ti, Ø 52 mm)
<b>Option: DN 100 Flange for MNR 7 - I with fitting BSP 1/2"</b>	
550 419	ISO Flange ND 100 type; threaded bore BSP 1/2"

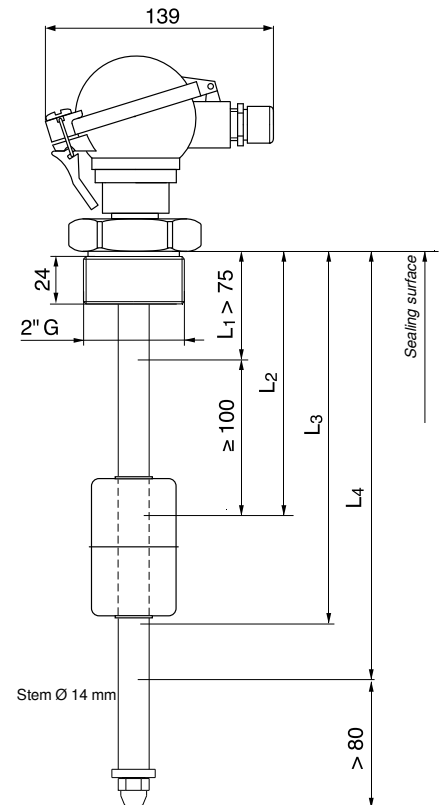
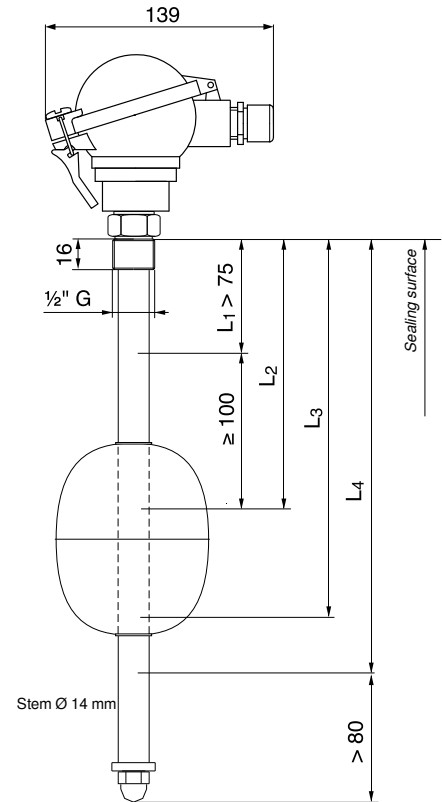
## ORDERING INFORMATION

### Operating conditions:

Liquid .....  
 Density .....  
 Pressure Max. .... bar  
 Operating temperature ..... °C

### Trigger point distances

L1 = ..... mm    L2 = ..... mm    L3 = ..... mm    L4 = ..... mm



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Magnetic level controllers in  
 stainless steel  
**MNR 7 - I**

27-02-2020

D-550.02-EN-AA

NIV

550-02/2

# Magnetic float level controller

## MNR 7 Ex



- Construction: stainless steel 1.4571
- Up to 4 bi-stable change over contacts
- ATEX II 1/2 G - EEx ib IIC T4

### APPLICATIONS

Automation ON/OFF of pumps and solenoid valves, low and high alarm indication, automatic tank filling up or draining, etc.

MNR7 level controllers are suitable to non viscous, non sticky liquids without magnetic and solids particles. The liquids may not crystallize or polymerized.

### PRINCIPLE

Switches are mounted in the guide tube; they are actuated by the magnet built in the float, to allow 1 to 4 level detections within the application.

### DESCRIPTION

The housing is IP65 and the cable pass through a cable gland PG11, acc. to Ex specifications. Internal wiring is done on a screw terminal.

On the lower end of guide tube, a blocking ring allows to take off the float before to fit the guide tube through a small diameter hole.

### ORDERING

Please, verify the material compatibility with your chemical fluid and the limits of pressure and temperature with your process maxima, as well the correspondence of ATEX certificate with your requirements.

- Our technicians may help you in MNR7 definition. Always mention the fluid in contact, concentration, process temperature and pressure.

- Note the exact distance of contact(s) measured as of the sealing surface. Consider the minimum distance between two contacts (100 mm) and dead zone we indicate on the drawings.

- The power supply of each contact of the MNR 7 Ex should be from a Zener barrier or certified Intrinsically Safe relay. Our RDN 11 relay is convenient to that purpose, see documentation 251.

### TECHNICAL FEATURES

Wetted parts material:	Stainless steel DIN 1.4571 (AISI 316 L) - PTFE
Housing:	Aluminum, IP 65 acc. EN 60 529
Process connection:	BSP 1" as a standard Flange DN100 PN10 stainless steel 1.4571
Length:	200...3000 mm
Minimum specific weight:	750 g / L
Fluid temperature:	-20...+100°C
Room temperature:	-20...+60°C
Contact:	1 to 4
Minimum distance between 2 contacts:	50 mm
Contact type:	bi-stable change over contacts, 60 VA

The use of a magnetic float level controller MNR 7 Ex is only for connection to intrinsically safe control circuits in conformity with EEx ia II C or EEx ib II C specification in zone 0 category 1.

CE Mark: in accordance with low-voltage directive (73/23/ECC), EMC directive (89/336/ECC); EN 50 082-2:1995 and EN 55 011 (class A):1991.

# BAMO MESURES

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## Magnetic float level controller

### MNR 7 Ex

27-02-2007

550 I1 03 A

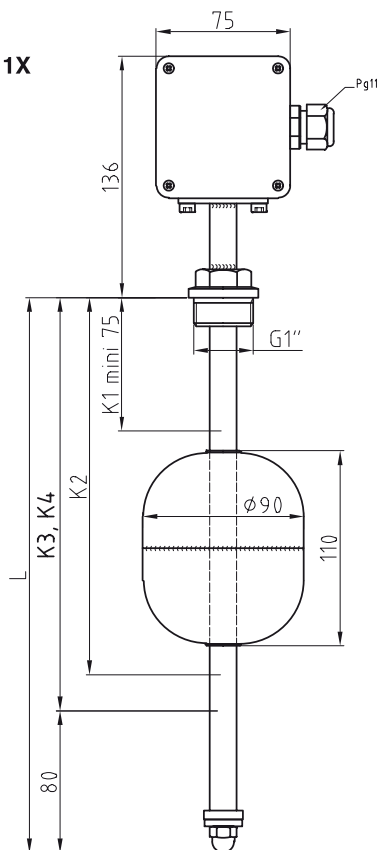
## NIV

### 550-03/1

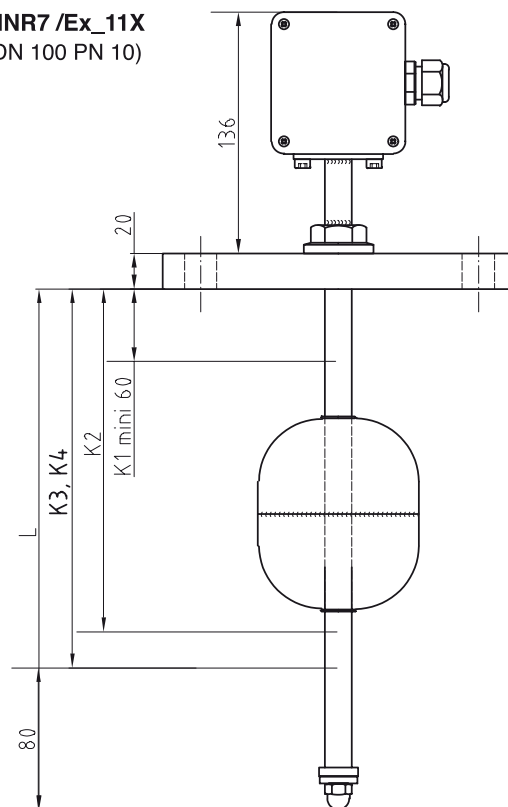
550



MNR7 /Ex\_11X  
(1" G)



MNR7 /Ex\_11X  
(DN 100 PN 10)



**CODE NUMBERS AND REFERENCES**

Code	Reference	Designation
550 501	MNR7 /Ex 1-1	Level controller Ex / 1 contact / 1" G
550 502	MNR7 /Ex 2-1	Level controller Ex / 2 contacts / 1" G
550 503	MNR7 /Ex 3-1	Level controller Ex / 3 contacts / 1" G
550 504	MNR7 /Ex 4-1	Level controller Ex / 4 contacts / 1" G
550 511	MNR7 /Ex 1-2	Level controller Ex / 1 contact / flange DN 100 PN 10
550 512	MNR7 /Ex 2-2	Level controller Ex / 2 contacts / flange DN 100 PN 10
550 513	MNR7 /Ex 3-2	Level controller Ex / 3 contacts / flange DN 100 PN 10
550 514	MNR7 /Ex 4-2	Level controller Ex / 4 contacts / flange DN 100 PN 10
550 010	+value	Extra-cost for each 100 mm over the standard length of 500 mm

**NOTES**

The maximum room temperature is 60°C.

For use as a category 1 device, only if room temperature is between -20 and +60°C and the room pressure is between 0.8 and 1.1 bar.

When the zone is not under category 1 requirements, the maximum fluid temperature acceptable for the level controller MNR7 Ex is 100°C



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Magnetic float level controller  
**MNR 7 Ex**

27-02-2007

550 I1 03 A

**NIV**

**550-03/2**

# Magnetic level controllers

## MNR 6



- Versions: PVC, PPH, PVDF or AISI 316
- 1 or 2 changeover contacts
- Reduced dimensions
- No effects of foam and vapours
- Measuring height: Up to 1500 mm

### APPLICATIONS

Pumps and solenoid valves automation, low and high alarm signals, overflow detection, etc.

The MNR 6 series is recommended for non-viscous, non-sticky liquids and without magnetic particles or suspended solids.

### DESCRIPTION

Reed contacts are adjusted at factory according requested trigger points on purchase order; They are actuated by the magnetic float. Wet parts are in PVC, PPH, PVDF or stainless steel (see further on detailed versions).

#### Quick commissioning:

Trigger point distances are determined prior to manufacture in relation to the sealing surface, in order to ensure the correct position of the contacts. The float can be removed from the bottom of the MNR6 controller (end stop ring removed). It is useful to order the option 2" coupler or a flange NB 50 to allow the float introduction from the tank top when possible.

#### Recommendations:

The use of a relay ES2001 (data-sheet 250-02) is recommended to protect the Reed contact by a low intensity current in the loop and to procure a great longevity to the device.

### TECHNICAL FEATURES

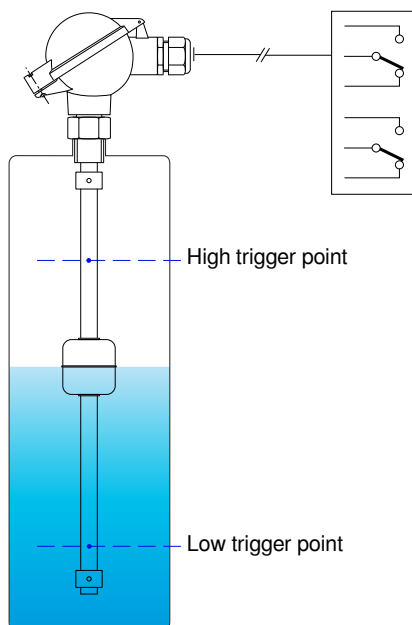
Trigger point distances	From sealing surface: Min. 250 mm, Max. 1500 mm <i>See the table "CODES AND REFERENCES"</i>
Temperature limits	PVC-U: 5 ... +50 °C; PPH: -5 ... +80 °C PVDF: -10 ... +110 °C; AISI 316 L: -20 ... +110 °C
Pressure limits	Max. 3 bar at 20 °C for plastic versions Max. 20 bar at 20 °C for stainless steel version

#### Materials

Stem and fitting	PVC, PP, PVDF or AISI 316 L
Float	PP, PVDF or AISI 316 L
Head housing	PBT for plastic versions; IP 65 (or DIN Plug IP 65) Aluminum alloy for AISI 316L version; IP 54 (or DIN plug IP 65)

#### Output signals:

Number of contacts	1 or 2 changeover contacts <i>One stop ring is added if a bistable contact is requested</i>
Switching power	60 VA / 220 V / 1 A
Terminals	Terminal board head housing or DIN Plug or cable output (3 m)
Gap between two contacts	Min. 100 mm
Accuracy	± 2 mm
Hysteresis	8 mm



In operation

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Magnetic level controllers  
**MNR 6**

05-05-2021

D-551.01-EN-AE

NIV

551-01 /1

## CODE NUMBERS AND REFERENCES

### Model

#### Stem and stop rings material

- P** PVC; Max. height: 1000 mm
- H** PPH; Max. height: 1000 mm
- V** PVDF; Max. height: 1000 mm
- I** AISI 316 L; Max. height: 1500 mm

#### Floats

- H** PPH: Height 36 mm; Ø 42; Mass: 20 g; S.G. Min. 0.65
- V** PVDF: Height: 49 mm; Ø 41; Mass: 40 g; S.G. Min. 0.90
- I** AISI: Height: 43 mm; Ø 43; Mass: 24 g; S.G. Min. 0.70

#### Number of contacts

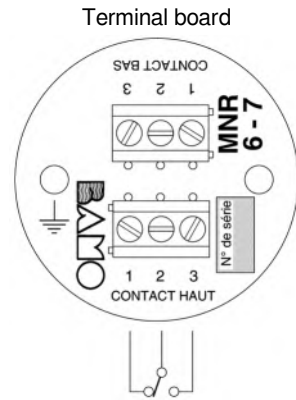
- 1** 1 contact
- 2** 2 contacts

#### Fitting

- 00** None
- 1** BSP 1/2"
- 2** BSP 2"
- 51** Flange NB 50

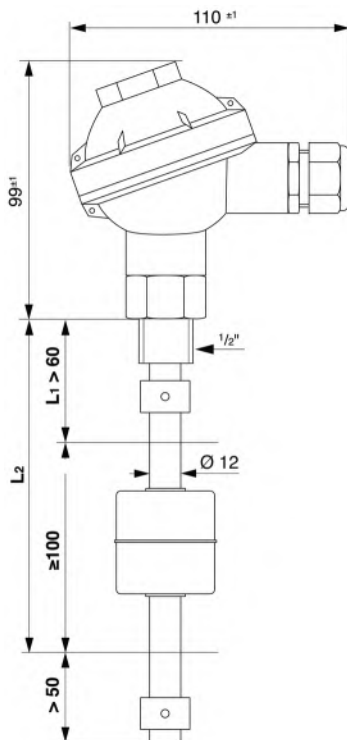
#### Connection

- FIL** Cable output (3 m long)
- DIN** DIN connector (only 1 contact)
- PP** PP head
- B** Aluminum alloy head

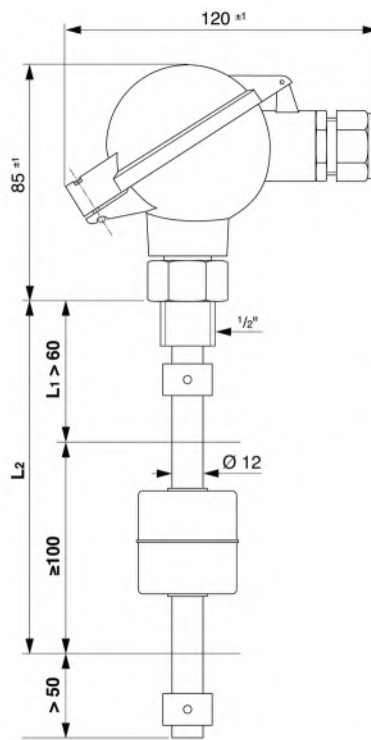


MNR6 P H 2 1 PP

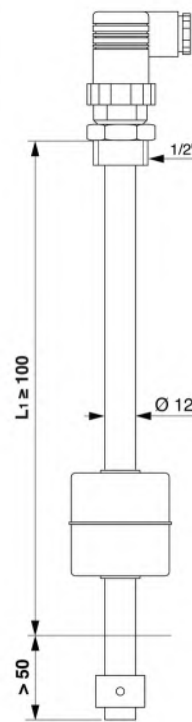
## DIMENSIONS



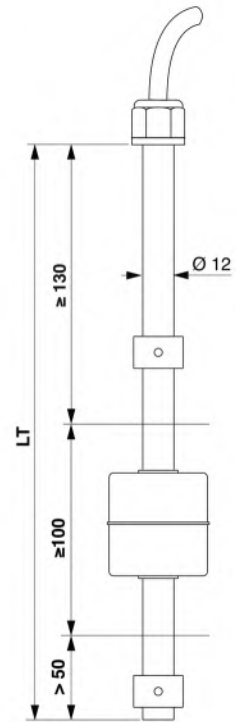
PP head



Aluminum head



DIN connector



Cable output

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Magnetic level controllers  
**MNR 6**

05-05-2021

D-551.01-EN-AE

NIV

551-01/2

# MEASURING TRANSDUCER MAXIMAT SHR CS



- Measuring transducer for overflow inhibitors and leakage detection systems
- 2-wire measuring circuit
- Relay output with potential-free double changeover contact

## APPLICATION

For connecting an overflow sensor per German Water Resources Act (WHG):






- MAXIMAT C...
  - MAXIMAT VK...
- Leakage sensor (WHG):
- MAXIMAT LW C..., LW...
- Safety probe:
- CAPSYTRON SFL...
- Or limit switch:
- MAXITOP...

## DESCRIPTION

The MAXIMAT SHR CS measuring transducer is used as power supply, current band monitor and alarm relay.

It serves in combination with the overflow sensors and leakage sensors included in the MAXIMAT VK..., MAXIMAT LW... and MAXIMAT C... series, as well as MAXITOP... limit switches, as part of overflow inhibitors and leakage detection systems.

## TECHNICAL DATA

Power supply	230V AC $\pm 10\%$ ; 50...60Hz; optional 24V DC $\pm 10\%$
Note	The device may only be connected to supply power via an electrical disconnecting device which is located in close proximity.
Power consumption	approx. 3VA / approx. 3W
Ambient temperature	-20...+60 °C
Housing	IP40, 22,5x75x110mm, for top-hat rail 35x7,5mm, DIN EN 50 022
Caution	Contact protection per DIN EN 61010-1 is only assured when installed to a closed switch cabinet or housing with at least IP54 protection!
Terminals	Screw terminal for wire gauge of up to 2.5mm <sup>2</sup>
Relay output	potential-free double changeover contact max. 250V AC; max. 115V DC, max. 3A AC; max. 0.5A DC, min. load 10mA at 5V DC
Caution	Contacts are not protected against overload, use external protective device!
Time delay	0.3...3s adjustable
Measuring circuit	max. 300m, min. wire cross-section 0.5mm <sup>2</sup>
Signaling	<p>  LED (green) Operation   LED (green) Relay operated   LED (red) Overflow alarm   LED (red) Measuring circuit interrupted   LED (red) Short circuit                 </p>

**CE mark: The device fulfills the legal requirements of applicable EU-guidelines**

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**MEASURING TRANSDUCER  
MAXIMAT SHR CS**

21-05-2021

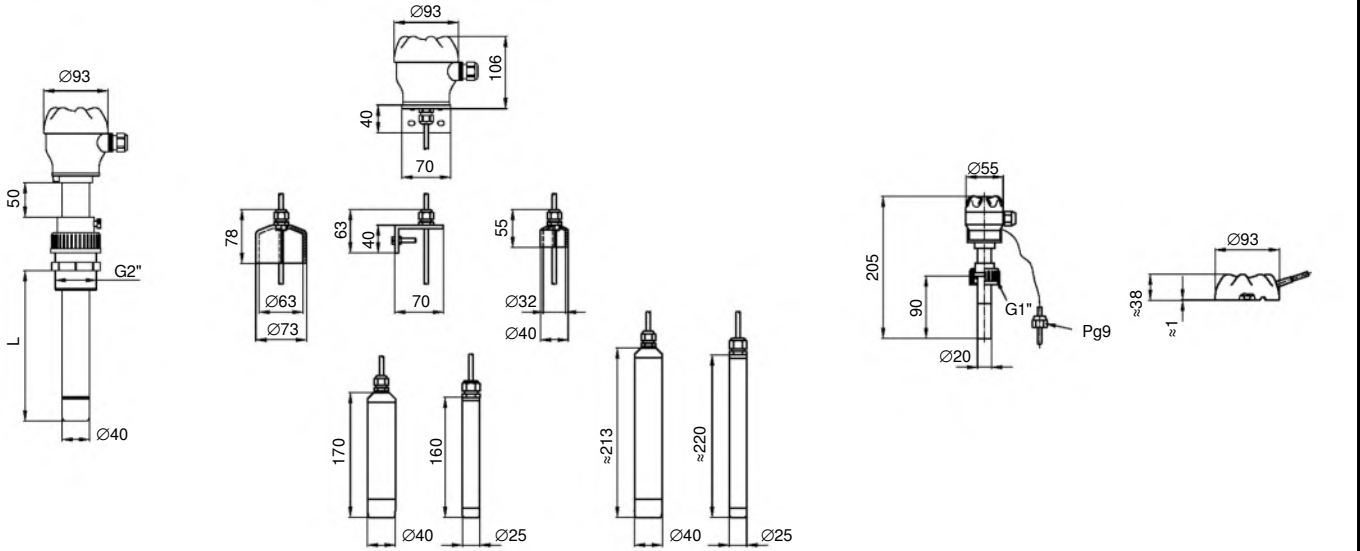
D-555.06-EN-AC

**555-06 /1**

## ORDERING INFORMATION

Code	Reference	Description
555 600	SHR CS G	MAXIMAT SHR CS G, 230V AC
555 610	SHR CS D	MAXIMAT SHR CS D, 24V DC

Example: compatible overflow sensors and Leakage sensors per German Water Resources Act (WHG)



Overfill sensor  
MAXIMAT C... / MAXITOP...

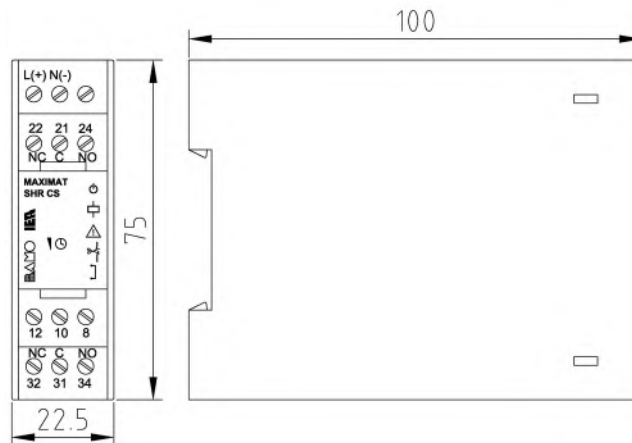
Leakage probe  
MAXIMAT LW...

Leakage probe  
MAXIMAT LW C... SDR

Floor probe  
MAXIMAT LWC B...

Other probe types on request

## DIMENSIONS



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## MEASURING TRANSDUCER MAXIMAT SHR CS

21-05-2021

D-555.06-EN-AC

555-06/2

# Alarming unit for MAXIMAT and MAXITOP MAXIMAT TC4



- For detectors MAXIMAT C... Series
- Optical and acoustic signals, in conformity with overfill prevention devices (ZG-ÜS)
- Automatic probe detection and testing
- Wire break monitoring
- Function "Test" of the entire system\*

## APPLICATION

Signaling of alarms at:

- Storage tanks
- Up to 4 monitored tanks
- Etc.

## DESCRIPTION

MAXIMAT TC4 is a signaling device for up to 4 overfill prevention devices or leakage detectors of MAXIMAT C ... series, with an optical and an acoustic signals according to the approval principles for overfill prevention devices (ZG-ÜS). If an alarm signal is issued by one of the MAXIMAT C ..., it is signaled optically and acoustically by the MAXIMAT TC4.

## TECHNICAL FEATURES

Power supply	230 V AC 50/60 Hz; Optional version for 24 V DC
Consumption	About: 6 VA / 6 W
Ambient temperature	-20 ... +60 °C
Protection (EN 60 529)	IP65
Supply to the detectors	15 V DC, short-circuit proof
Inputs	4 detectors (Overfill and leak probes) 1 external reset contact
Outputs	4 Potential-free changeover contacts, assigned to the individual probes 1 Potential-free changeover contact, for common external alarm 1 Potential-free changeover contact for an external horn
Contact load output relay	250 V AC / 115 V DC 500 VA / 3 A
Terminals	Wire cross-section Max. 2.5 mm <sup>2</sup>
Signaling	4 Multicolor LED Flashing red = alarm unacknowledged Continuous red light = alarm acknowledged Flashing yellow = probe defective Yellow continuous light = test is running Continuous green light = probe in operation LED dark = no probe connected 1 Acoustic signal (piezo generator) > 75 dB (A) /1m 1 Extra-bright flash LED for common alarm
Controls	Reset button for alarm acknowledgement Test button for complete system test*

### \* Note:

The test routine is not a substitute for the regular operational test prescribed in the ZG-ÜS, which must be carried out at least once a year.

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Alarming unit for MAXIMAT  
and MAXITOP  
**MAXIMAT TC4**

15-04-2021

D-555.07-EN-AA

LEV

555-07 /1



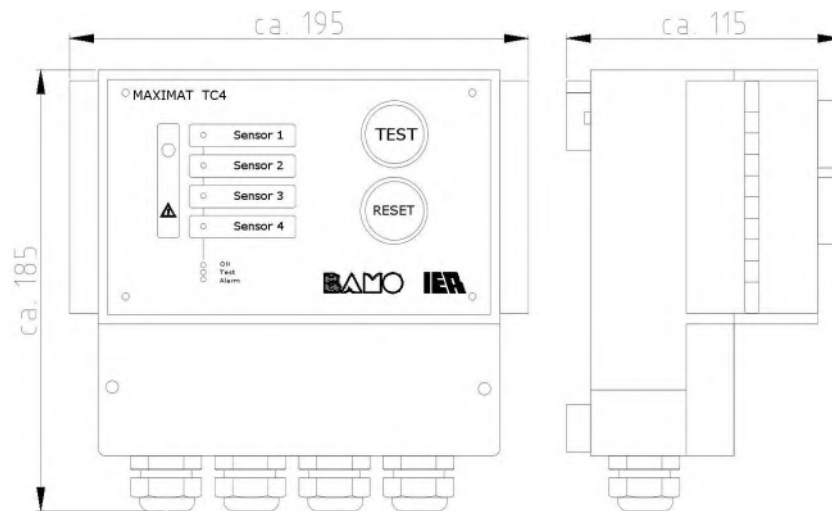
## TECHNICAL FEATURES (continued)

EC Conformity: The instrument meets the legal requirements of the current European Directives.

## ORDERING INFORMATION

Code	Reference	Description
555 700	MAXIMAT TC4 G	MAXIMAT TC4; power supply 230 V AC
555 710	MAXIMAT TC4 D	MAXIMAT TC4; Power supply 24 V DC

## DIMENSIONS



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Alarming unit for MAXIMAT  
and MAXITOP  
**MAXIMAT TC4**

15-04-2021

D-555.07-EN-AA

LEV

555-07 /2

555

555

# 1 Channel alarm unit MAXIMAT TC1, TC1-B



- Alarm unit, 1 channel, for: MAXIMAT CX & and MAXITOP series, overfil and leak detectors
- Optical and acoustic alarms (> 75 dB)
- Diagnostic of detection loop
- Relay output, changeover contact
- Robust and inexpensive

## APPLICATIONS

Alarm signaling device for:

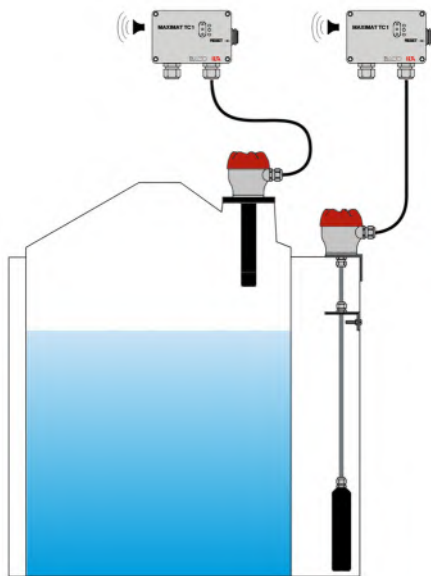
- Containers for storage of liquids, in safe area
- Retention basins, piping
- Tanks and collecting basins

## DESCRIPTION

MAXIMAT TC1 is a signaling unit for overflow and leakage detectors MAXIMAT (X series) and MAXITOP. The detector is powered directly by TC1 unit. The built-in buzzer provides local alarm to the operator, and the LEDs inform visually about the alarm status. The audible alarm is acknowledged through the push-button on the right side.

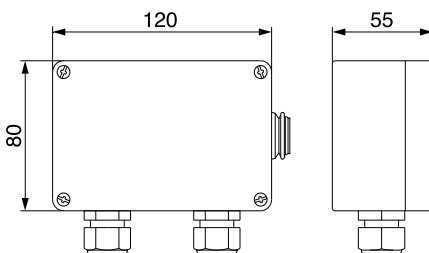
## TECHNICAL FEATURES

Power supply	230 V AC $\pm 10\%$ ; 50/60 Hz; 24 V DC
Consumption	About 2 VA / 2 W
Protection	IP 65 according EN 60 529
Temperature	-20 ... +60 °C
Connections	Screw terminals
Indications	Green LED for "operating system" Red LED for "alarm in progress" Yellow LED for "alarm not yet acknowledged" Integrated audible alarm; can be disabled
Output relay	Max. 230 V AC / 3 A; potential free changeover contact
Housing	Polycarbonate, 120x80x55 mm; for wall mounting
Operating element	Push button for test and alarm acknowledgement



Example: Application with MAXIMAT CX series

## Dimensions



## CODE NUMBERS AND REFERENCES

Code	Reference	Description
555 720	MAXIMAT TC1 G	Alarming unit, 230 V AC
555 730	MAXIMAT TC1 D	Alarming unit, 24 V DC

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1 Channel alarm unit  
**MAXIMAT TC1, TC1-B**

09-10-2019

D-555.10-EN-AD

NIV

555-10/1

# 1 Channel alarm unit MAXIMAT TC1-B



- Alarm unit, for 1 dry-contact detector
- Optical and acoustic alarms
- Alarming until acknowledgement
- Output relay : Changeover contact
- Robust and inexpensive

## APPLICATIONS

Alarm signaling device for:

- Containers for storage of liquids, in safe area
- Retention basins
- Tanks and collecting basins

## DESCRIPTION

MAXIMAT TC1-B is an optical and audible alarm unit for dry-contact detectors. The built-in buzzer provides local alarm to the operator and the LED inform visually about the alarm status. The audible alarm is acknowledged with the push-button on the right side.

## TECHNICAL FEATURES

Power supply	230 V AC $\pm 10\%$ - 50/60 Hz 24 V DC
Consumption	About 2 VA / 2 W
Protection	IP 65 according EN 60 529
Temperature	-20 ... +60 °C
Detector input	Closed dry-contact: Normal operation Open dry-contact: Alarm status Terminal: Cable Max. 2.5 mm <sup>2</sup>
Delay	About 1 second
Signaling	1 LED (green): operating 1 LED (red): alarm occurs 1 LED (yellow): unacknowledged alarm Audible alarm integrated; Can be disabled
Switching power	230 V AC / 3 A; change-over, potential free contact

### Operating mode:

In normal operation, the dry-contact of detector is closed. If the dry-contact of detector opens, the TC1-B goes into alarm and the relay output switches.

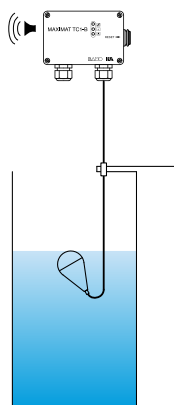
The operator must then acknowledge the alarm.

Case	Polycarbonate Wall mounting
Acknowledgement	By push-button

**EC Conformity:** The instrument meets the legal requirements of the current European Directives

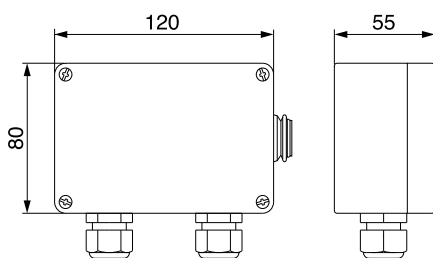
## CODE NUMBERS AND REFERENCES

Code	Reference	Description
555 740	MAXIMAT TC1B G	MAXIMAT TC1B G, alarm unit 230 V AC
555 741	MAXIMAT TC1B D	MAXIMAT TC1B D, alarm unit 24 V DC



Example: In use with a level controller  
NIVOSTOP

## DIMENSIONS



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1 Channel alarm unit  
**MAXIMAT TC1-B**

10-10-2019

D-555.11-EN-AB

NIV

555-11 /1

# Compact Overfill detector MAXITOP



- Wet parts in plastic materials
- For aggressive and conductive liquids
- Fail safe; Auto-diagnostic with SHR relay
- Fitting: Adjustable depth

## APPLICATIONS

The MAXITOP monitors the overfilling of a tank with electrically conductive, non-flammable liquids, even highly aggressive liquids.  
Example : Storage tanks for caustic soda (NaOH), hydrochloric acid (HCl), etc.

## DESCRIPTION

The detector MAXITOP is designed to prevent overfilling of tanks. It detects conductive liquids (acids, alkalis) with a reactance below 5 kOhm and a coupling capacitance towards ground of more than 50 pF. In no case should liquids form insulating or conductive deposits.

The MAXITOP has 4 different possible interfacing connections:

- Direct connection to a 4 channels alarm unit MAXIMAT TC4 (data sheet 555-07) or 1 channel unit MAXIMAT TC1 (data-sheet 555-10)
- Direct connection to a PLC
- For relay output and loop diagnostic with a MAXIMAT SHR (data sheet 555-06)
- For relay output with a MAXIMAT CST (data sheet 555-09)

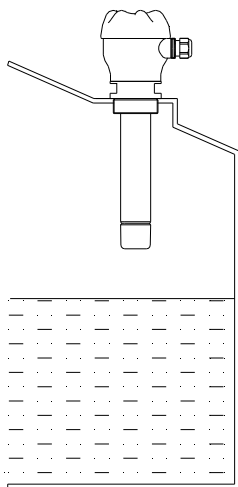
## TECHNICAL FEATURES

Power supply	15 ... 27 V DC
Consumption	< 1 W
Ambient temperature	-20 ... +60 °C
Operating pressure	Atmospheric 0.8 to 1.1 bar
Stem	HD-PE, O.D. 40 mm
Fitting	PVC, BSP 2", sliding coupling for depth adjustment
Trigger point distances (L)	L Max.: or 500 mm or 700 mm or 900 mm
Other lengths	On request
Head housing	PBT, fibreglass reinforced, IP 65 according EN 60 529
Connectors	Screw terminals, wire Max. 2.5 mm <sup>2</sup>
Input	For external button switch to test the complete system
Signaling display	Green LED on the terminals board
Output	Reed contact, potential free, for low voltage Rated: 50 V AC/DC; 0.5 A; 10 VA

**EC Conformity: The instrument meets the legal requirements of the current European Directives.**

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
556 109	MAXITOP 500	Overfill detector, L max. = 500 mm, BSP 2"
556 113	MAXITOP 700	Overfill detector, L max. = 700 mm, BSP 2"
556 117	MAXITOP 900	Overfill detector, L max. = 900 mm, BSP 2"



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Compact Overfill detector  
**MAXITOP**

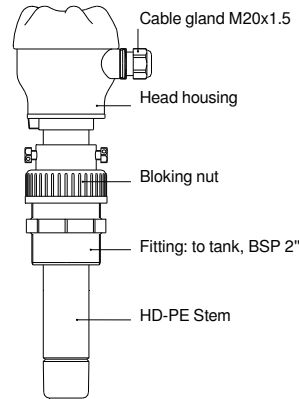
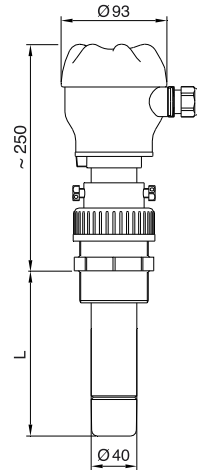
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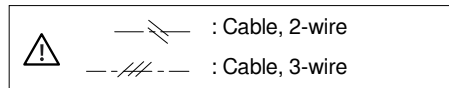
556-01 /1

## DIMENSIONS

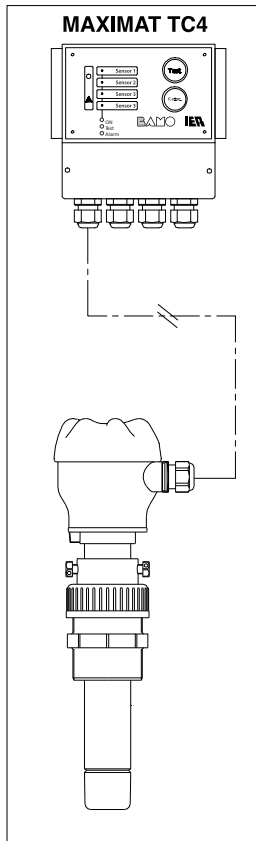


## 4 INTERFACING CONNECTIONS

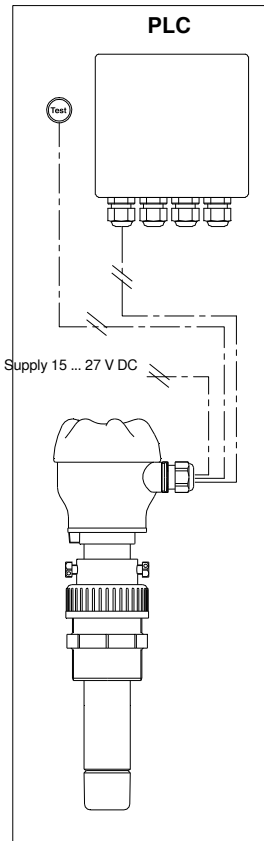
A button "TEST" for diagnostic of operating conditions; It is not mandatory for the detection itself.



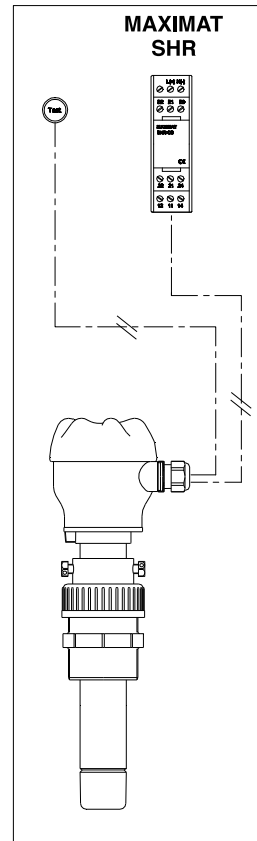
Connection to a TC4 (or TC1) alarm unit



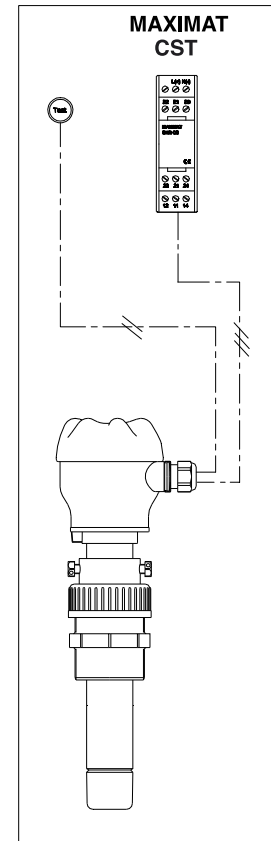
Connection to a PLC



Connection through SHR relay



Connection through CST relay



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Compact Overfill detector  
**MAXITOP**

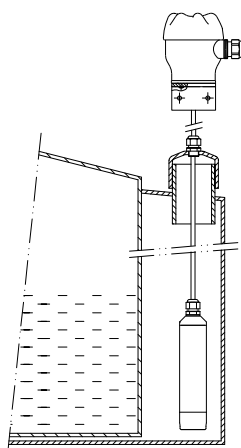
10-03-2020

D-556.01-EN-AA

NIV

556-01 /2

# Leak detector MAXITOP – LW C



- Capacitance detection loop
- For aggressive and conductive liquids
- Fail safe; Auto-diagnostic with SHR relay
- Wet parts in plastic materials
- Safe: no electrode touching the fluid

## APPLICATIONS

With its integrated positive safety converter, the MAXITOP is ideal to give an alarm when a leakage occurs from storage tank for electrically conductive, non-flammable liquids, even highly aggressive liquids.

## DESCRIPTION

The detector MAXITOP is designed to detect the presence of liquids (acids, alkalis) with a reactance below 5 kOhm and a coupling capacitance towards ground of more than 50 pF.

In no case should liquids form insulating or conductive deposits.

The MAXITOP LW C has 4 different possible interfacing connections:

- Direct connection to a 4 channels alarm unit MAXIMAT TC4 (data sheet 555-07) or 1 channel unit MAXIMAT TC1 (data-sheet 555-10)
- Direct connection to a PLC
- For relay output and loop diagnostic with a MAXIMAT SHR (data sheet 555-06)
- For relay output with a MAXIMAT CST (data sheet 555-09)

## TECHNICAL FEATURES

Power supply	15 ... 27 V DC
Consumption	< 1 W
Operating pressure	Atmospheric 0.8 to 1.1 bar
Probe	HD-PE, O.D. 40 or in PVC O.D. 25 mm
Suspension cable	Shielded cable, PVC sheath, standard length 6 m, 5-wire, 0.34 mm <sup>2</sup>
Head housing	PBT, fibreglass reinforced, IP 65 according EN 60 529
Connectors	Screw terminals, wire Max. 2.5 mm <sup>2</sup>
Input	For external button switch to test the complete system
Signaling display	Green LED on the terminals board
Output	Reed contact, potential free, for low voltage Rated: 50 V AC/DC; 0.5 A; 10 VA
Hysteresis	About 2 mm
Switching contact	Liquid height Min. 5 mm

**EC Conformity:** The instrument meets the legal requirements of the current European Directives.

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Leak detector  
**MAXITOP – LW C**

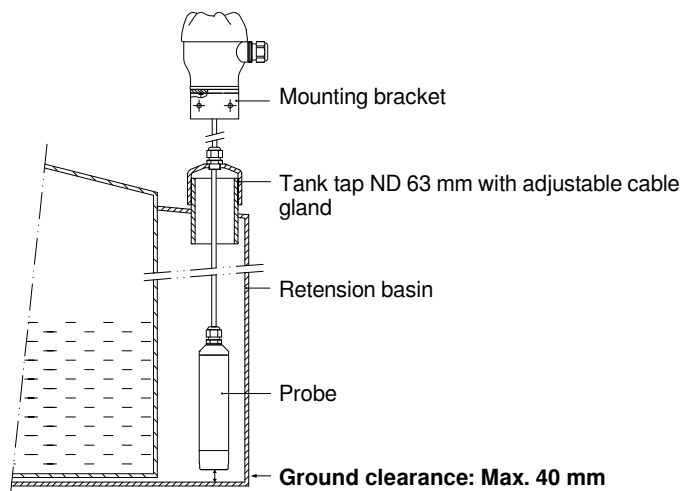
19-03-2021

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556-03/1

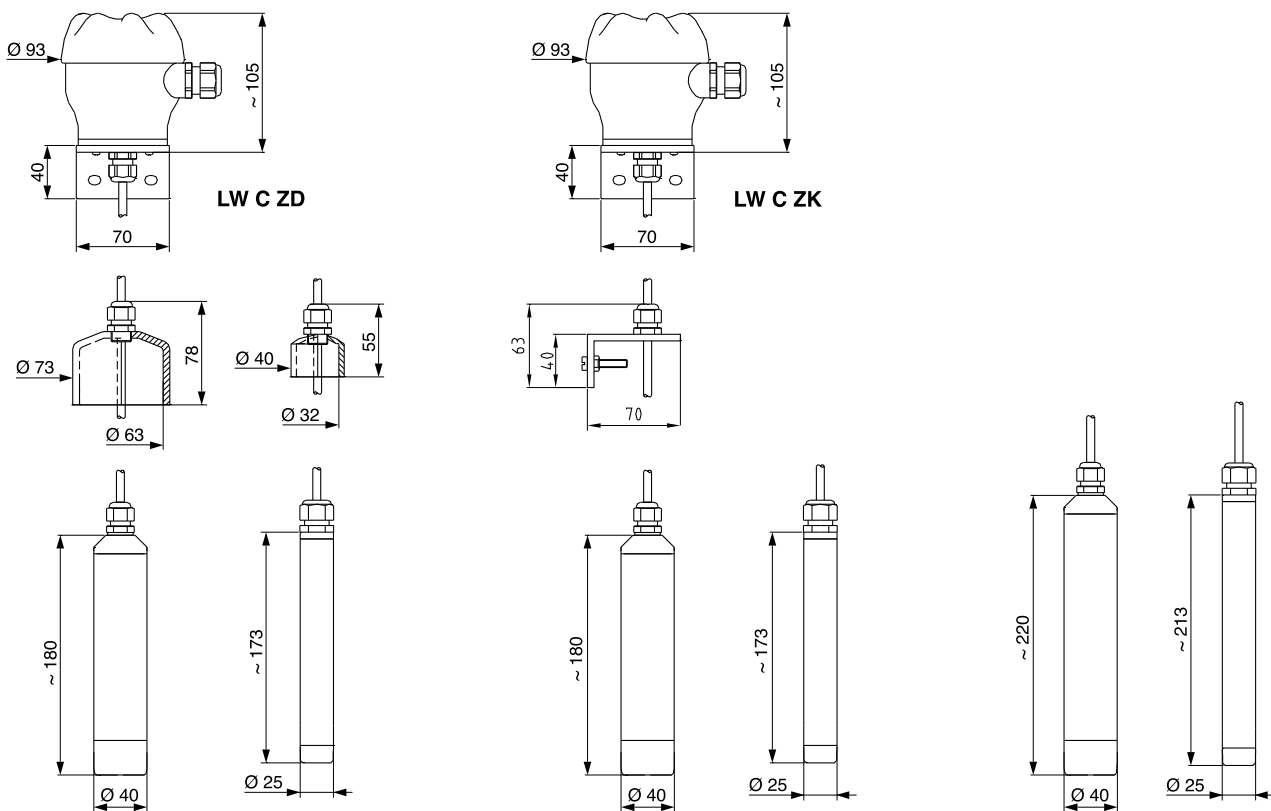




## CODE NUMBERS AND REFERENCES

Code	Reference	Description
556 300	MAXITOP-LW C ZK Ø 40	Complete with HD-PE probe O.D. 40 mm, bracket and adjustment system
556 305	MAXITOP-LW C ZK Ø 25	Complete with PVC probe O.D. 25 mm, bracket and adjustment system
556 310	MAXITOP-LW C ZD Ø 40	Complete with HD-PE probe O.D. 40 mm, bracket, PVC female tap Ø 63 with adjustment system
556 315	MAXITOP-LW C ZD Ø 25	Complete with PVC probe O.D. 25 mm, bracket, PVC female tap Ø 32 with adjustment system

## DIMENSIONS



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Leak detector  
**MAXITOP – LW C**

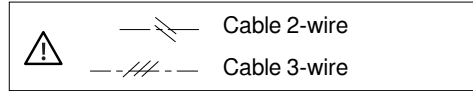
19-03-2021

D-556.03-EN-AB

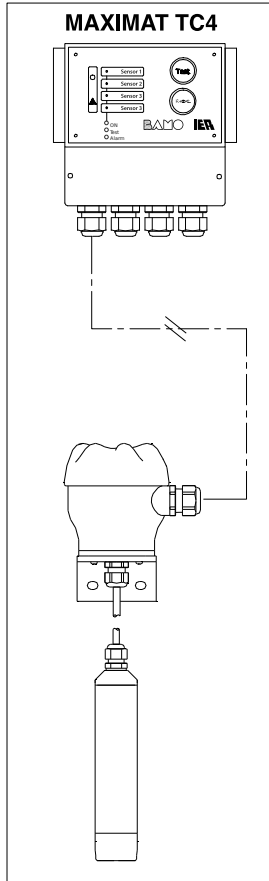
NIV

556-03/2

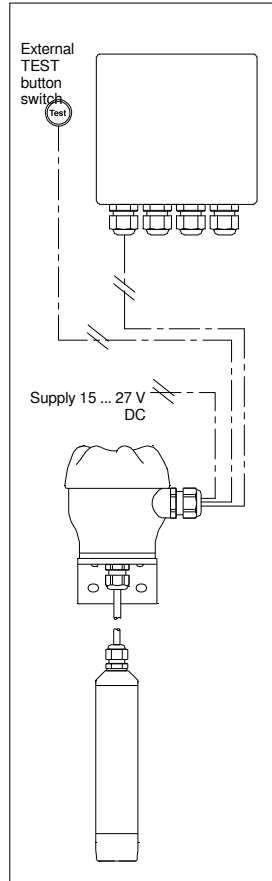
## 4 TYPES OF ELECTRICAL CONNECTIONS



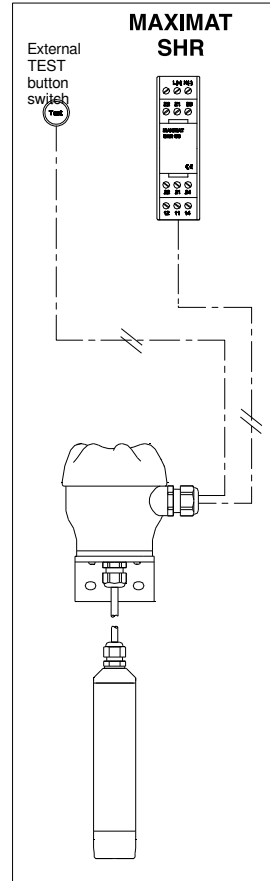
Connection to a TC4 (or TC1) alarm unit



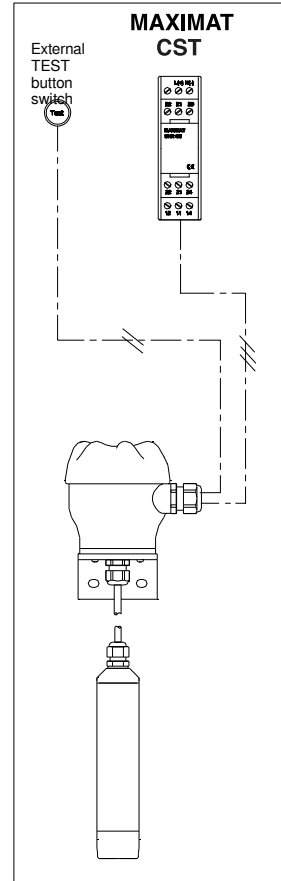
Connection to a PLC



Connection through SHR relay



Connection through CST relay



556

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Leak detector  
**MAXITOP – LW C**

19-03-2021

D-556.03-EN-AB

NIV

556-03/4

# On-line leak detector in double-walled piping MAXIMAT LW CX SDR



Detector with its on-line holder



MAXIMAT LW CX SDR 4



Detector on its on-line holder with viewing tube

- All-plastic versions
- Integrated transmitter and connection for test button
- No moving parts
- For aggressive and conductive liquids
- NPN / PNP interface

## AGREEMENTS

- General building supervisory approval issued by DIBt: Z-65.40-496
- Certification of Product Approval by SVTI ASIT: KVV-Nr. 321.012.19
- Vlaream II (Corcon bvba) certificate: CP0914/3073-HCC001

## APPLICATION

Leak detector in accordance with the German Water Resources Act (WHG) for double-walled pipings with water-polluting, electrically conductive, non-flammable liquids.

## DESCRIPTION

The MAXIMAT LW CX SDR compact leak detectors are designed to detect leaks in double-walled piping with water-polluting liquids.

When an electrically conductive liquid comes into contact with the detection sensor, the integrated electronics respond by interrupting the continuous output signal; This signal can be read out from the system controller as acoustic and optical alarms.

## TECHNICAL FEATURES

Working principle	Capacitive high-frequency sensor
Ambient temperature	-20 ... +60 °C
Operating pressure	Atmospheric; Limits: 0.8 to 1.1 bar
Head housing	PBT, fibre-glass reinforced
Protection	IP65 according to EN 60 529
Fittings	See the table "ordering information"
Power supply	15 ... 27 V DC
Consumption	< 1 W
Materials	Probe: PE or PP Union nut: PVC / PP Seal Reference Electrode: TPR Seals of probe and ball valve: EPDM (Option: FPM)
Output	<b>Potential-free Reed contact for low voltage (Normally Closed, it opens when alarm occurs)</b> Rated: Max. 50 V AC/DC, 0.5 A, 10 VA; Convenient for operating with a coupling relay or PLC, signaling device TC4 / TC1 or CST unit. <b>Or: 2-wire alarm output reporting</b> with transmitter MAXIMAT SHR C

**Note: Simultaneous use of both outputs is not possible.**

Terminals	Screw terminals, cable max. 2.5 mm <sup>2</sup>
Additional function	Connection of an external test button (potential-free contact), for a complete diagnostic of the device integrity (connection loops, electronics).

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On-line leak detector in  
double-walled piping  
**MAXIMAT LW CX SDR**

01-06-2021

D-556.04-EN-AE

LEV

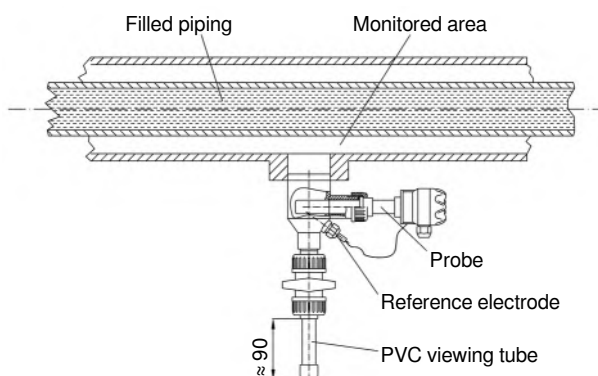
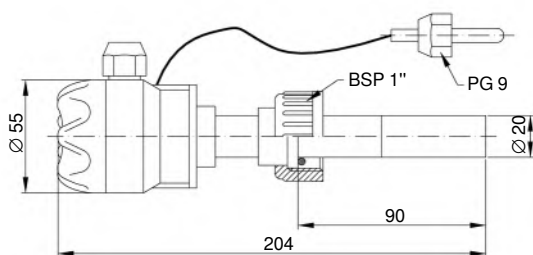
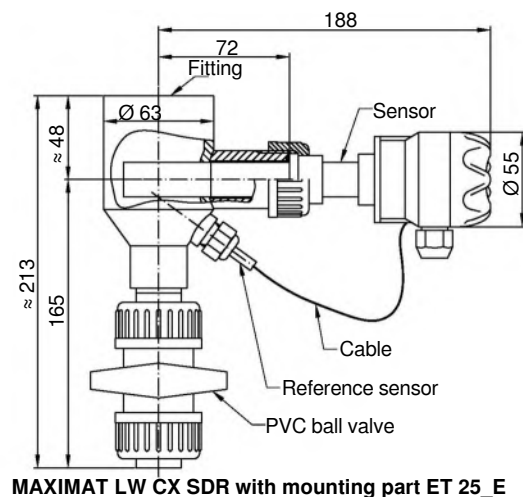
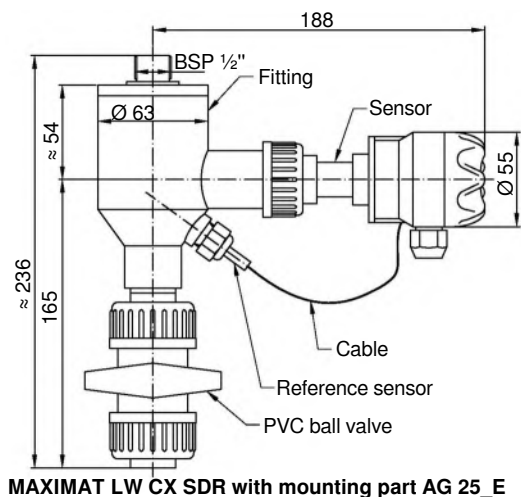
556-04/1

## TECHNICAL FEATURES (continued)

Connectivity interfaces Alarm units: MAXIMAT TC1 / TC4  
Coupling relay: CST  
Transmitter: MAXIMAT SHR C  
Automation with PLC

EC Conformity: The instrument meets the legal requirements of the current European Directives.

## DIMENSIONS



## CODE NUMBERS AND REFERENCES

Code	Reference	Description
556 810	MAXIMAT LW CX-SDR 4	Detector, PE, sensor Ø 20 mm; With PVC union nut BSP 1"; Reference sensor PG 9
556 815	MAXIMAT LW CX-SDR 2	PP leak probe with Ø20mm sensor With PP union nut BSP 1"; Reference electrode Pg9
556 820	ET 251 E	PVC holder, for solvent welding Ø 63 mm; PVC ball valve ND 15
556 830	ET 254 E	HDPE holder, for fusion welding Ø 63 mm; PVC ball valve ND 15
556 840	AG 251 E	PVC holder, fitting BSP 1/2"; PVC ball valve ND 15
556 850	AG 254 E	HD-PE holder, fitting BSP 1/2"; PVC ball valve ND 15
556 860	PVC viewing tube	Transparent viewing tube for holders models AG

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On-line leak detector in  
double-walled piping  
**MAXIMAT LW CX SDR**

01-06-2021

D-556.04-EN-AE

LEV

556-04/2

# Leak detector on floor MAXITOP LWC B



- Capacitance detection loop
- For aggressive and conductive liquids
- Fail safe; Self diagnostic of loop integrity with SHR or TC4 or TC1
- Wet parts in plastic materials

## APPLICATIONS

The MAXITOP LWC-B is ideal to give an alarm when a leakage occurs on the floor of retentions or collecting areas. With its fail safe detection loop, it is permanently operational.

## DESCRIPTION

MAXITOP LWC-B is designed to detect conductive liquids with a reactance of up to 5 kOhm/cm and when the coupling capacitance towards ground is more than 50 pF. The liquids may not generate electrical insulating or conductive deposit.

**MAXITOP LWC-B has 5 different types of connections:**

- Contact output, low voltage (Max. 50 V AC/DC; Max. 0.5 A; Max. 10 VA)
- Relay output, adding a relay converter CST (data-sheet D-555.09)
- Output relay, adding a relay converter SHR (data-sheet 555-06)
- Direct connections to a PLC
- Signaling events on site, with devices TC4 or TC1 (data-sheet 555-07)

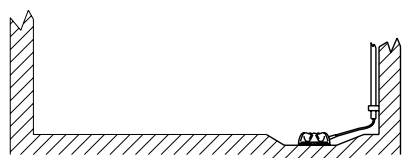
## TECHNICAL FEATURES

Power supply	15 ... 26 V DC
Consumption	About 1 W
Ambient temperature	-20 ... +60 °C
Housing	PBT; IP 67 (EN 60529)
Cable output	Standard length: 6 m 5 x 0.5 mm <sup>2</sup> , shielded, PVC sheath
Trigger point	Minimum height of liquid: 1 mm

**EC Conformity:** The instrument meets the legal requirements of the current European Directives.

## CODE NUMBER AND REFERENCE

Code	Reference	Description
556 500	MAXITOP LWC-B	Floor leak detector With PVC cable; 6 m long



Floor leak detection

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Leak detector on floor  
**MAXITOP LWC B**

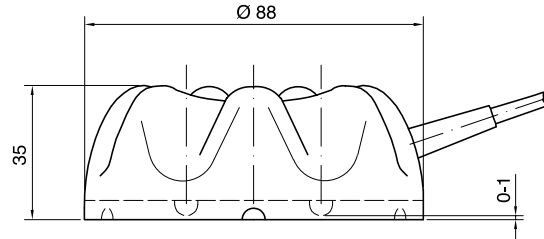
26-06-2020

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556-05 /1

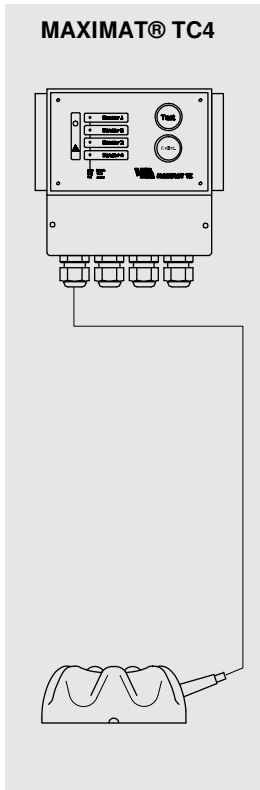
## DIMENSIONS



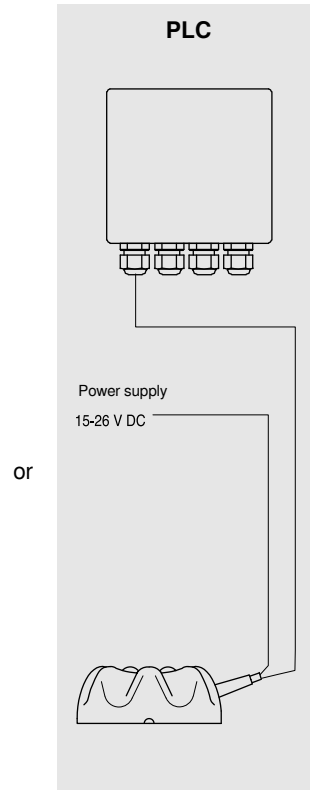
## CONNECTION POSSIBILITIES

- Schematic representation of connection possibilities -  
For detailed electrical connections: see the end-user manual msa556-05.

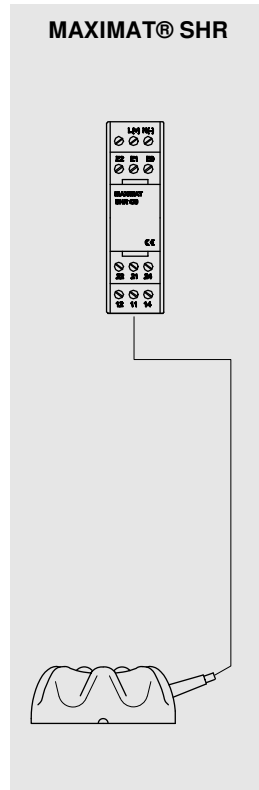
Direct connection to alarm units TC4 (or TC1)



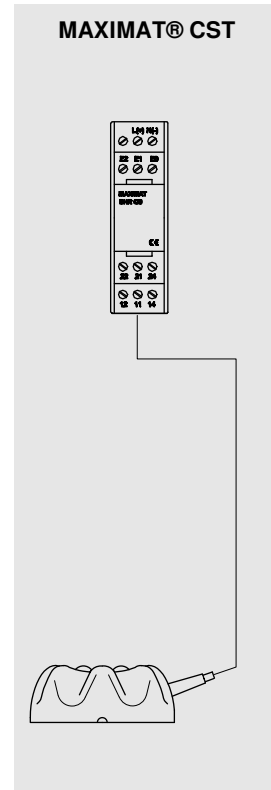
Connection to a PLC



Connection with the converter SHR



Connection with a relay CST



556

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Leak detector on floor  
**MAXITOP LWC B**

26-06-2020

D-556.05-EN-AA

NIV

556-05/2



# Compact overflow detector MAXIMAT CX



- All-plastic versions
- Integrated transmitter and connection for test button
- No moving parts
- For storage tanks
- NPN / PNP interface

## AGREEMENTS

- General building supervisory approval issued by DIBt: Z-65.13-494
- Certification of Product Approval by SVTI ASIT: KVU-Nr. 302.019.19
- Vlarex II (Corcon bvba) certificate: CP0914/3072-HCC001
- GOST-Clearance Certificate: 42 1300/ 9026 10 290 0

## APPLICATION

Overflow detector in accordance with the German Water Resources Act (WHG) for containers used for storing, filling and handling water-polluting, electrically conductive, non-flammable liquids.

## DESCRIPTION

MAXIMAT CX compact overflow detectors are level limit switches which are used to prevent overflowing of containers with water polluting liquids. When an electrically conductive liquid comes into contact with the detector stem, the integrated electronics respond by interrupting the continuous output signal. This signal can be read out from the system controller as an acoustic and optical alarms and, if required, can be used to cause an emergency shutdown of the filling process.

## TECHNICAL FEATURES

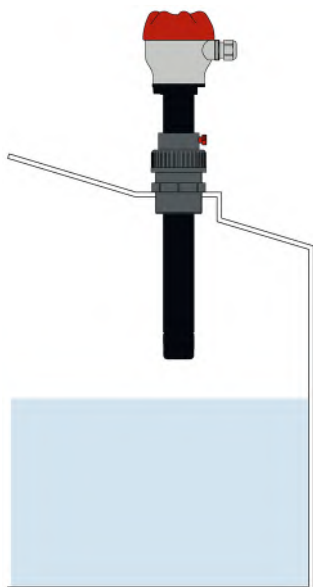
Detection	Capacitive high-frequency sensor, fail-safe detector
Ambient temperature	-20 ... +60 °C
Operating pressure	Atmospheric; Limits: 0.8 to 1.1 bar
Housing head	PBT, fibre-glass reinforced
Protection	IP65 according to EN 60 529
Fittings	See the table "ordering information"
Power supply	15 ... 27 V DC
Consumption	< 1 W
Outputs	<b>Potential-free Reed contact for low voltage (Normally Closed, it opens when alarm occurs)</b> Rated: Max. 50 V AC / DC, Max. 0.5 A, Max. 10 VA, convenient for operating with a coupling relay or PLC, signaling device TC4 / TC1 or CST unit. <b>2-wire alarm output reporting</b> with transmitter MAXIMAT SHR C

**Note: Simultaneous use of both outputs is not possible.**

Terminals	Screw terminals, cable max. 2.5 mm <sup>2</sup>
Additional function	Connection of an external test button (potential-free contact), for a complete diagnostic of the device integrity (connection loops, electronics).

Connection options	Alarm units: MAXIMAT TC1 / TC4 Coupling relay: CST Transmitter: MAXIMAT SHR C Automation with PLC
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**WHG**



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Compact overflow detector  
**MAXIMAT CX**

16-10-2019

D-556.06-EN-AC

**LEV**

**556-06/1**

## TECHNICAL FEATURES (continued)

EC Conformity: The instrument meets the legal requirements of the current European Directives.

## ORDERING INFORMATION

### Compact overfill detector MAXIMAT CX

- 20** Stem O.D. 20mm
- 40** Stem O.D. 40mm

- K** with connection head
- 0** without connection head

#### Materials

- 4** PE (Standard)
- 2** PP (on request)
- 3** PVDF (on request)

#### Trigger point

- V** Adjustable
- N** Fixed point

#### Fittings

- U2** CX40: BSP 2" sleeve nut for weld-on union (V type)
- U254** CX40: BSP 2" sleeve nut for PE weld-on union (V type)
- U252** CX40: BSP 2" sleeve nut for PP weld-on union (V type)
- U253** CX40: BSP 2" sleeve nut for PVDF weld-on union (V type)
- G2** CX40: BSP 2" process interface, external thread (N & V types)
- F40** CX40: Flange DN 40, PN 10 (N & V types)
- F50** CX40: Flange DN 50, PN 10 (N & V types)
- G1** CX20: BSP 1" process interface, external thread (N & V types)
- G11/4** CX20: BSP 1 1/4" process interface, external thread (V type)
- G11/2** CX20: BSP 1 1/2" process interface, external thread (V type)
- F25** CX20: Flange DN 25, PN 10 (V type)
- F32** CX20: Flange DN 32, PN 10 (V type)

#### Fitting materials

- 1** PVC (Standard)
- 4** PE
- 2** PP
- 3** PVDF

**L** Distance (mm), from sealing surface \*

MAXIMAT CX

#### Other versions: On request.

Please contact us.

- (V): Adjustable process connection (Adjustable trigger point distance)
- (N): Not adjustable process connection (Fixed trigger point distance)

#### Note:

Not all materials can be combined with each other; This applies for all non-adjustable versions on above table.

The overall length of the stem is 50 mm longer than the distance "L" plus, the height of the adjusting threaded fitting. During commissioning, the triggering level "A" can be adjusted by 50 mm downwards (i.e. lower switching point). Distance "L" is the desired trigger point measured as of the sealing surface.

\* Min. installation length for O.D. 40 and 20 mm versions = 150 mm

\* Max. installation length for O.D. 40 mm versions = 1000 mm

\* Max. installation length for O.D. 20 mm versions = 500 mm

Larger lengths and version with double cable gland: On request.

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Compact overfill detector  
**MAXIMAT CX**

LEV

556-06/2

16-10-2019

D-556.06-EN-AC

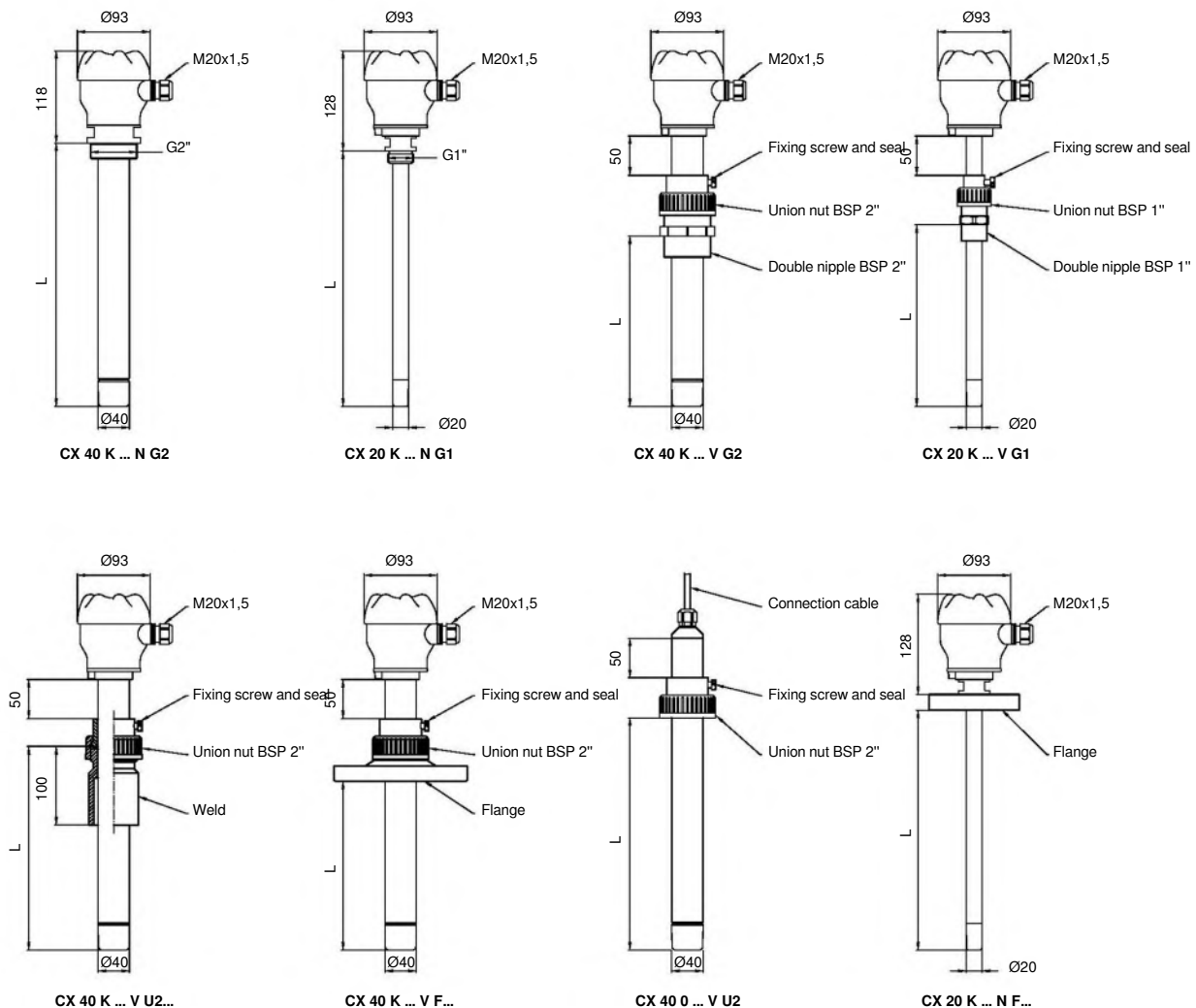
## ORDERING INFORMATION (continued)

### Standard versions

Code	Reference	Description
556 602	MAXIMAT CX 40 K 4 V G2 1 L= 200mm	Terminal housing, O.D. 40 mm, PE, adjustable, BSP 2" PVC, L = 200mm
556 604	MAXIMAT CX 40 K 4 V G2 1 L= 300mm	Terminal housing, O.D. 40 mm, PE, adjustable, BSP 2" PVC, L = 300mm
556 606	MAXIMAT CX 40 K 4 V G2 1 L= 400mm	Terminal housing, O.D. 40 mm, PE, adjustable, BSP 2" PVC, L = 400mm
556 608	MAXIMAT CX 40 K 4 V G2 1 L= 500mm	Terminal housing, O.D. 40 mm, PE, adjustable, BSP 2" PVC, L = 500mm
556 662	MAXIMAT CX 20 K 4 V G1 1 L= 200mm	Terminal housing, O.D. 20 mm, PE, adjustable, BSP 1" PVC, L = 200mm
556 664	MAXIMAT CX 20 K 4 V G1 1 L= 300mm	Terminal housing, O.D. 20 mm, PE, adjustable, BSP 1" PVC, L = 300mm
556 666	MAXIMAT CX 20 K 4 V G1 1 L= 400mm	Terminal housing, O.D. 20 mm, PE, adjustable, BSP 1" PVC, L = 400mm
556 668	MAXIMAT CX 20 K 4 V G1 1 L= 500mm	Terminal housing, O.D. 20 mm, PE, adjustable, BSP 1" PVC, L = 500mm

## DIMENSIONS

### Examples of common models



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Compact overflow detector  
**MAXIMAT CX**

16-10-2019

D-556.06-EN-AC

LEV

556-06/3

# Compact leak detector MAXIMAT LW CX



- All-plastic versions
- Integrated transmitter and connection for test button
- No moving parts
- For retention on storage tanks
- NPN / PNP interfaces

## AGREEMENTS

- General building supervisory approval issued by DIBt: Z-65.40-496
- Certification of Product Approval by SVTI ASIT: KVV-Nr. 321.012.19
- Vlare II (Corcon bvba) certificate: CP0914/3073-HCC001
- GOST-Clearance Certificate: 42 1300/ 9026 10 290 0

## APPLICATION

Leak detection in accordance with the German Water Resources Act (WHG) for double-walled containers and retention in use for water-polluting, electrically conductive, non-flammable liquids.

## DESCRIPTION

MAXIMAT LW CX compact leak detectors are used to detect leakage of containers, outside the container, leaks of water polluting liquids. When an electrically conductive liquid comes into contact with the detector probe, the integrated electronics respond by interrupting the continuous output signal. By interrupting the signal, audible and visual alarms are triggered.

## TECHNICAL FEATURES

Detection	Capacitive high-frequency sensor, fail-safe detector
Ambient temperature	-20 ... +60 °C
Operating pressure	Atmospheric; Limits: 0.8 to 1.1 bar
Housing head	PBT, fibre-glass reinforced
Protection	IP65 according to EN 60 529
Fittings	See the table "ordering information"
Power supply	15 ... 27 V DC
Consumption	< 1 W
Materials	Mounting bracket or cap: PVC Probe: PVC for O.D. 25; PE for O.D. 40
Outputs	<b>Potential-free Reed contact for low voltage (Normally closed, it opens when alarm occurs)</b> Rated: Max. 50 V AC / DC, Max. 0.5 A, Max. 10 VA, convenient for operating with a coupling relay or PLC, signaling device TC4 / TC1 or CST unit. <b>2-wire alarm output reporting with transmitter MAXIMAT SHR C</b> with transmitter MAXIMAT SHR C

**Note: Simultaneous use of both outputs is not possible.**

Terminals	Screw terminals, cable max. 2.5 mm <sup>2</sup>
Additional function	Connection of an external test button (potential-free contact), for a complete diagnostic of the device integrity (connection loops, electronics).
Connection options	Alarm units: MAXIMAT TC1 / TC4 Coupling relay: CST Transmitter: MAXIMAT SHR C Automation with PLC

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Compact leak detector  
**MAXIMAT LW CX**

18-10-2019

D-556.07-EN-AB

LEV

556-07 /1

## TECHNICAL FEATURES (Continued)

EC Conformity: The instrument meets the legal requirements of the current European Directives.

## ORDERING INFORMATION

### MAXIMAT LW CX with 6 m long cable

#### Probes

- 25** O.D. 25 mm (PVC)
- 40** O.D. 40 mm (PE)

#### Detector versions

- K** Mounting bracket with adjustable cable gland
- D** Cap Ø63 or Ø32 with adjustable cable gland
- 0** Without head housing neither brackets

MAXIMAT LW CX

Other cable lengths, fitting types: On request.

Code	Reference	Description
556 700	MAXIMAT LW CX 40 K	Leak detector, PE, O.D. 40 mm; Connection head; mounting bracket with adjustable cable gland
556 710	MAXIMAT LW CX 40 D	Leak detector, PE, O.D. 40 mm; Connection head; cap Ø 63 mm with adjustable cable gland
556 715	MAXIMAT LW CX 40 0	Leak detector, PE, O.D. 40 mm; Cable output, 6m long without mounting accessories
556 730	MAXIMAT LW CX 25 K	Leak detector, PVC, O.D. 25 mm; Connection head; mounting bracket with adjustable cable gland
556 740	MAXIMAT LW CX 25 D	Leak detector, PVC, O.D. 25 mm; Connection head; cap Ø 32 mm with adjustable cable gland
556 745	MAXIMAT LW CX 25 0	Leak detector, PVC, O.D. 25 mm; Cable output, 6 m long without mounting accessories



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Compact leak detector  
**MAXIMAT LW CX**

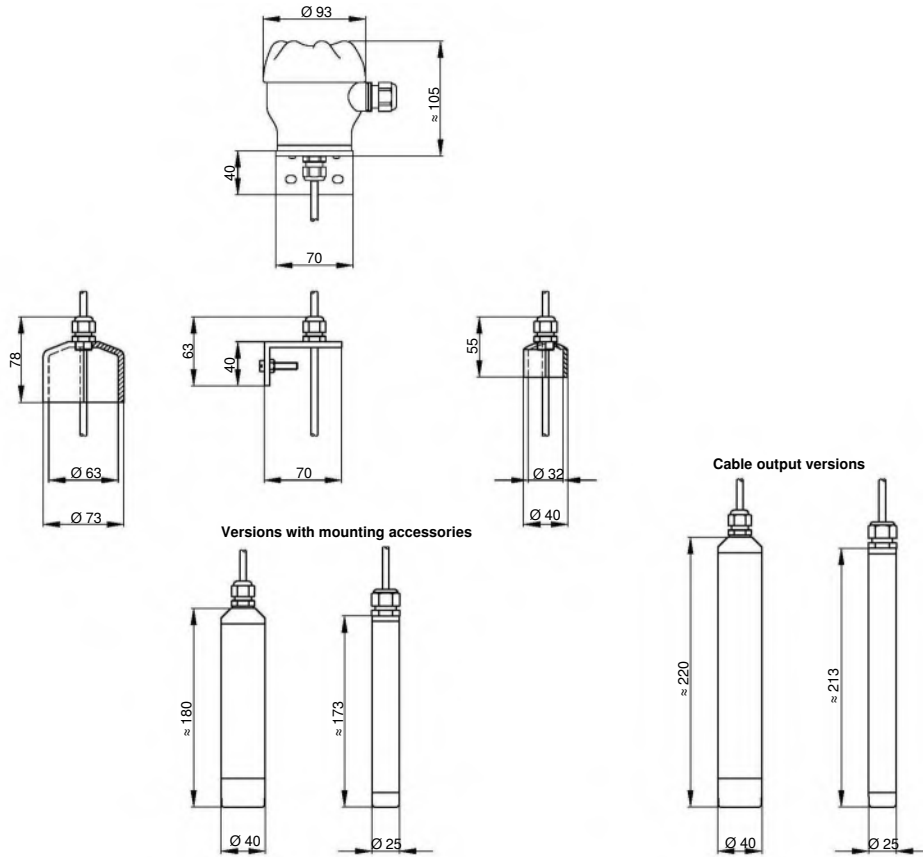
18-10-2019

D-556.07-EN-AB

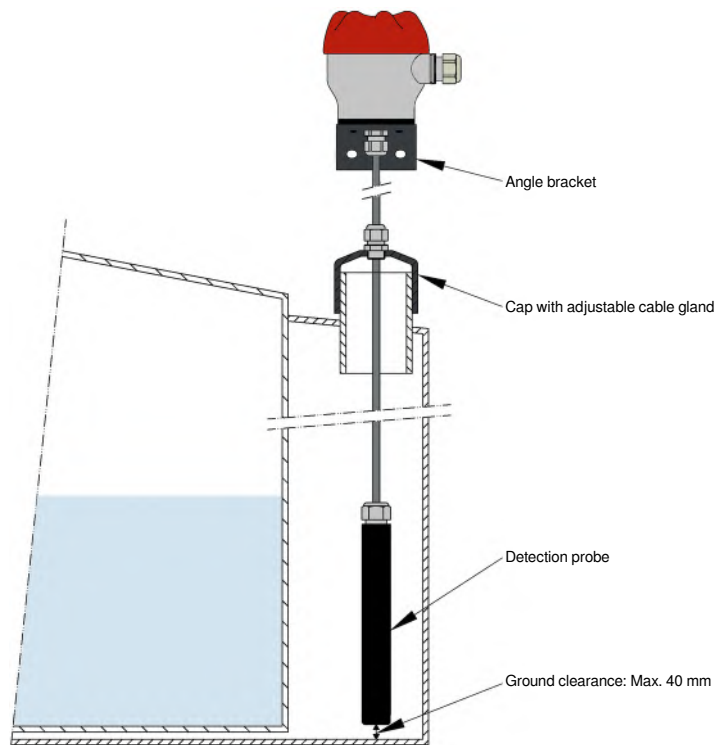
LEV

556-07 /2

**DIMENSIONS**



**Examples**



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**Compact leak detector  
 MAXIMAT LW CX**

18-10-2019

D-556.07-EN-AB

**LEV**

**556-07/3**

556

556



# Leak detector on floor MAXIMAT LWC BX



# WHG



Bottom view

- All-plastic versions
- Integrated transmitter and connection for test button
- No moving parts
- Floor leak detection
- NPN / PNP interfaces

## AGREEMENTS

- General building supervisory approval issued by DIBt: Z-65.40-496
- Certification of Product Approval by SVTI ASIT: KVV-Nr. 321.012.19
- Vlare II (Corcon bvba) certificate: CP0914/3073-HCC001
- GOST-Clearance Certificate: 42 1300/ 9026 10 290 0

## APPLICATION

Leak detection in accordance with the German Water Resources Act (WHG) for retention basins and floors where are in use water-polluting, electrically conductive, non-flammable liquids.

## DESCRIPTION

MAXIMAT LWC BX compact leak detectors are used to detect leakage or spread water polluting liquids. Due to the short detection height of liquid, about 1mm, even a small leakage quantity is reliably detected. The device is used for leakage detection of water polluting media.

## TECHNICAL FEATURES

Detection	Capacitive high-frequency sensor, fail-safe detector
Ambient temperature	-20 ... +60 °C
Operating pressure	Atmospheric; Limits: 0.8 to 1.1 bar
Housing head	PBT, fibre-glass reinforced
Protection	IP67 (not suitable for permanent immersion)
Power supply	15 ... 27 V DC
Consumption	< 1 W
Cable	PVC, 6 m long; 5x 0.34 mm <sup>2</sup>
Outputs	<b>Potential-free Reed contact for low voltage (Normally closed, it opens when alarm occurs)</b> Rated: Max. 50 V AC / DC, Max. 0.5 A, Max. 10 VA, convenient for operating with a coupling relay or PLC, signaling device TC4 / TC1 or CST unit. <b>2-wire alarm output reporting</b> with transmitter MAXIMAT SHR C

**Note: Simultaneous use of both outputs is not possible.**

Additional function	Connection of an external test button (potential-free contact), for a complete diagnostic of the device integrity (connection loops, electronics).
Connection options	Alarm units: MAXIMAT TC1 / TC4 Coupling relay: CST Transmitter: MAXIMAT SHR C Automation with PLC

**EC Conformity: The instrument meets the legal requirements of the current European Directives.**

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## Leak detector on floor MAXIMAT LWC BX

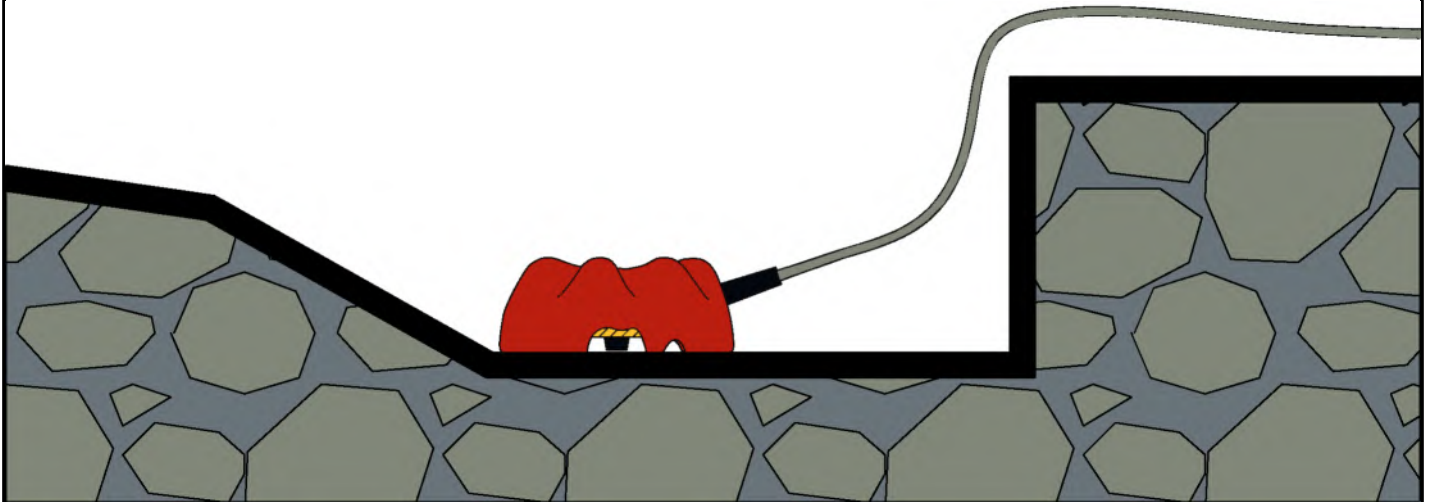
18-10-2019

D-556.08-EN-AC

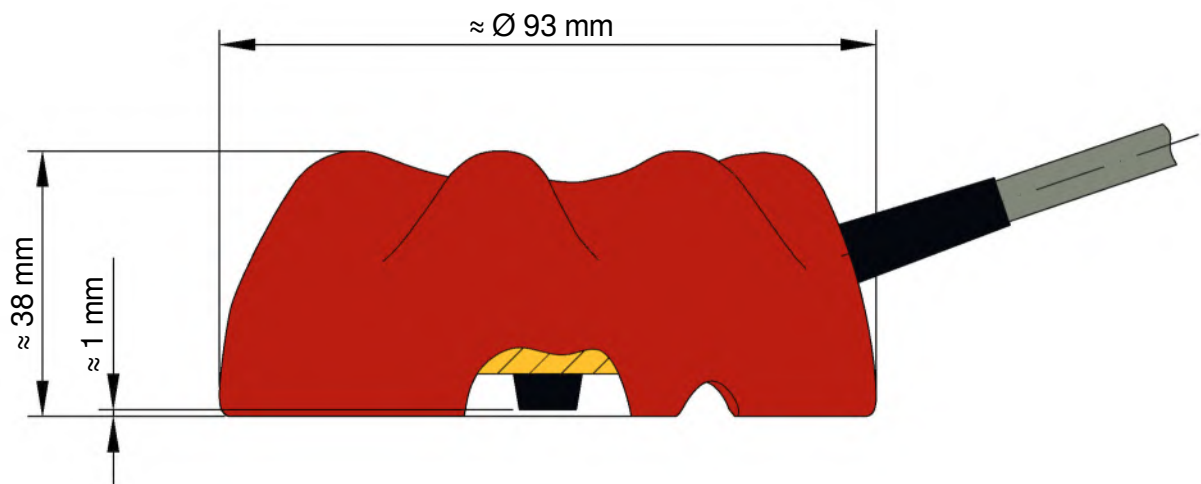
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556-08/1

## Examples



## DIMENSIONS



## CODE NUMBERS AND REFERENCES

Code	Reference	Description
556 910	MAXIMAT LWC BX	Floor leak detector MAXIMAT LWC BX

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Leak detector on floor  
**MAXIMAT LWC BX**

18-10-2019

D-556.08-EN-AC

LEV

556-08/2

# Dry run protection CAPSYTRON TLS



- Wet parts in plastic materials
- Compact probe
- Plug for function test
- Switches when pipe is empty
- No moving parts

## APPLICATIONS

- Protection against dry run; Detection of empty filling pipe
- Prevents hammer effects when air is compressed in the pipe.

## DESCRIPTION

The CAPSYTRON TLS is designed for empty tube detection. It avoids hammer effects when filling a tank.

It is designed to detect the presence of liquids whose reactance is  $< 5 \text{ k}\Omega$ , or even whose coupling capacity to earth is  $> 50 \text{ pF}$ . In no case should liquids form insulating or conductive deposits.

## TECHNICAL FEATURES

Power supply	15 ... 27 V DC
Consumption	$< 1 \text{ W}$
Output	Potential free Reed contact N.C. with liquid; N.O. without liquid (in air) Rated: Max. 50 V AC / DC; Max. 0.5 A; Max. 10 VA for PLC connection or coupling relay
Connector	Screw terminals, IP 20, cable Max. 2.5 mm <sup>2</sup>
Additional function	Connection to an external test button, with which the whole electronics, wiring and signaling device can be tested.
Probe	Or PE, or PP
Length	Min. 95 mm
Fitting	Union nut BSP 1", includes EPDM o-ring
Ambient temperature	-20 ... +60 °C
Pressure limit	2 bar
Housing terminal	PBT, IP 65 acc. EN 60529

### Caution:

When supply is switched on, the output contact remains closed about 0.5 second during the auto-test routine.

The Capsytron TLS sensor is of one piece; Previous series had 1 detector and 1 reference electrode, separated of each other (SFL / SFL BZ).

To adapt actual model to an old series holder, we recommend to plug in a tap where was the reference electrode.

**EC Conformity: The instrument meets the legal requirements of the current European Directives.**

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Dry run protection  
**CAPSYTRON TLS**

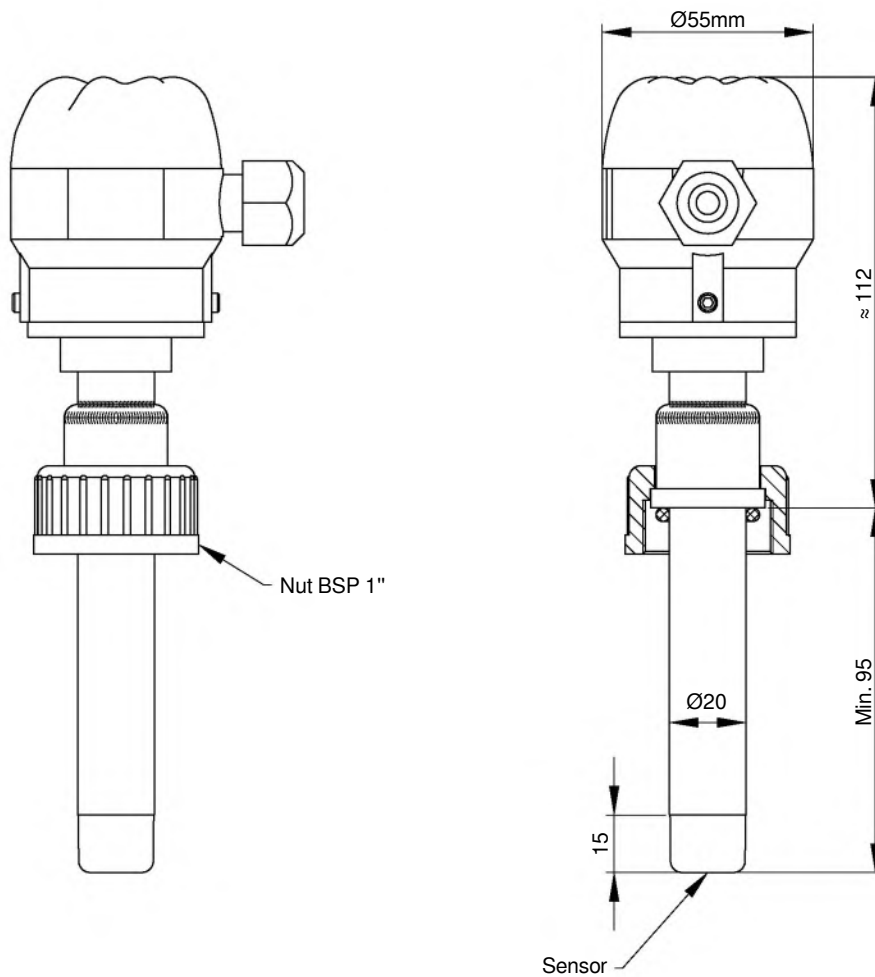
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556-95/1

## DIMENSIONS



## CODE NUMBERS AND REFERENCES

Code	Reference	Description
556 900	CAPSYTRON TLS 4	CAPSYTRON TLS, 15 - 27V DC, HD-PE stem, PVC nut BSP 1"
556 905	CAPSYTRON TLS 2	CAPSYTRON TLS, 15 - 27V DC, PP stem, PVC nut BSP 1"

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Dry run protection  
**CAPSYTRON TLS**

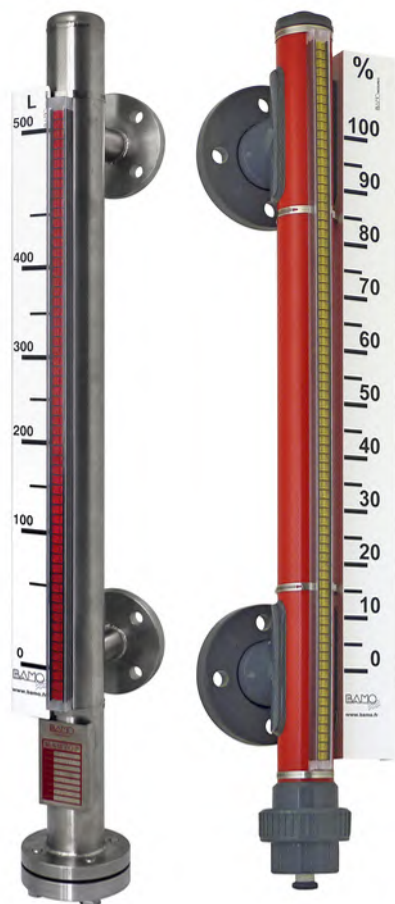
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LEV

556-95/2

# Level indicator MAGTOP



- Lateral mount
- Direct reading on two-color magnetic ruler
- Materials: AISI 316L, PVC, PPH, PVDF
- Operating under pressure
- Options: Level switches, Graduated ruler, Analogue output 4-20 mA

## APPLICATIONS

Direct reading of level in opaque and closed tanks, metal or plastic vessels.

## DESCRIPTION

The MAGTOP instantly indicates the level of liquid contained in a tank, via a two-color magnetic ruler, flaps pivoting to the passage of the float in the measuring tube.

According to mechanical strength and chemical compatibility, MAGTOP is well adapted to work with liquids such as hot water, oils, alkali and acids. Instrument is installed on the tank by lateral or axial fittings. When the distance between fittings is large, we integrate brackets on the measuring tube to afford the weight; they have to be fixed on corresponding tank brackets.

MAGTOP are available in various models:

- MAGTOP 300 in stainless steel is suitable for lateral mounting on metal tanks.
- MAGTOP 400 & 410 are designed to an axial installation over the tank; The necessary space outside the tank is equivalent to height of immersion.
- MAGTOP 801, 803 & 806 (PVC, PPH, PVDF) are convenient for use with aggressive fluids.

To facilitate handling during commissioning or to satisfy transport conditions, MAGTOP can be made in 2 or 3 parts.

**The MAGTOP is subject to a plan submitted for approval, before manufacture.**

### Options, accessories

- Adjustable level switches to mount on measuring tube (data sheets 585)
- Reed chain "RTM" with transmitter 4-20 mA (or resistor output) for MAGTOP (made of one piece); See data sheet 586-01.
- Graduated ruler in cm, % or volume according specifications.
- Drain valve with fitting 1/2" G

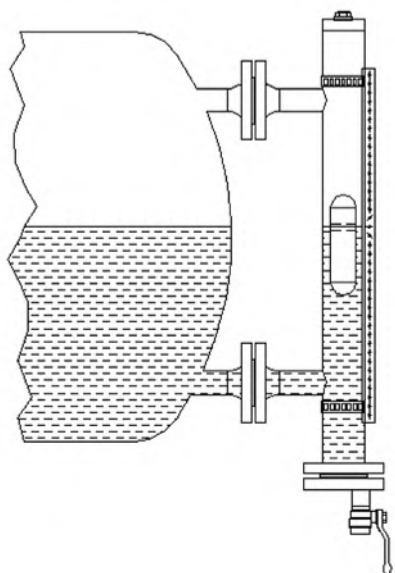
## DEFINITION OF AN INSTRUMENT

### OPERATING CONDITIONS

Liquid: .....  
 Density ..... (kg /m<sup>3</sup>)  
 Pressure ..... (bar)  
 Temperature ..... (°C)

Model:  
 Type ..... (300, 400, 410, 801, 803, 806)  
 Center to Center ..... (L in mm, acc. spec.)  
 Fittings ..... (acc. spec.)  
 OPTIONS ..... (acc. spec.)

PED or/ and ATEX versions see data-sheet 560-03



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Level indicator  
**MAGTOP**

30-10-2020

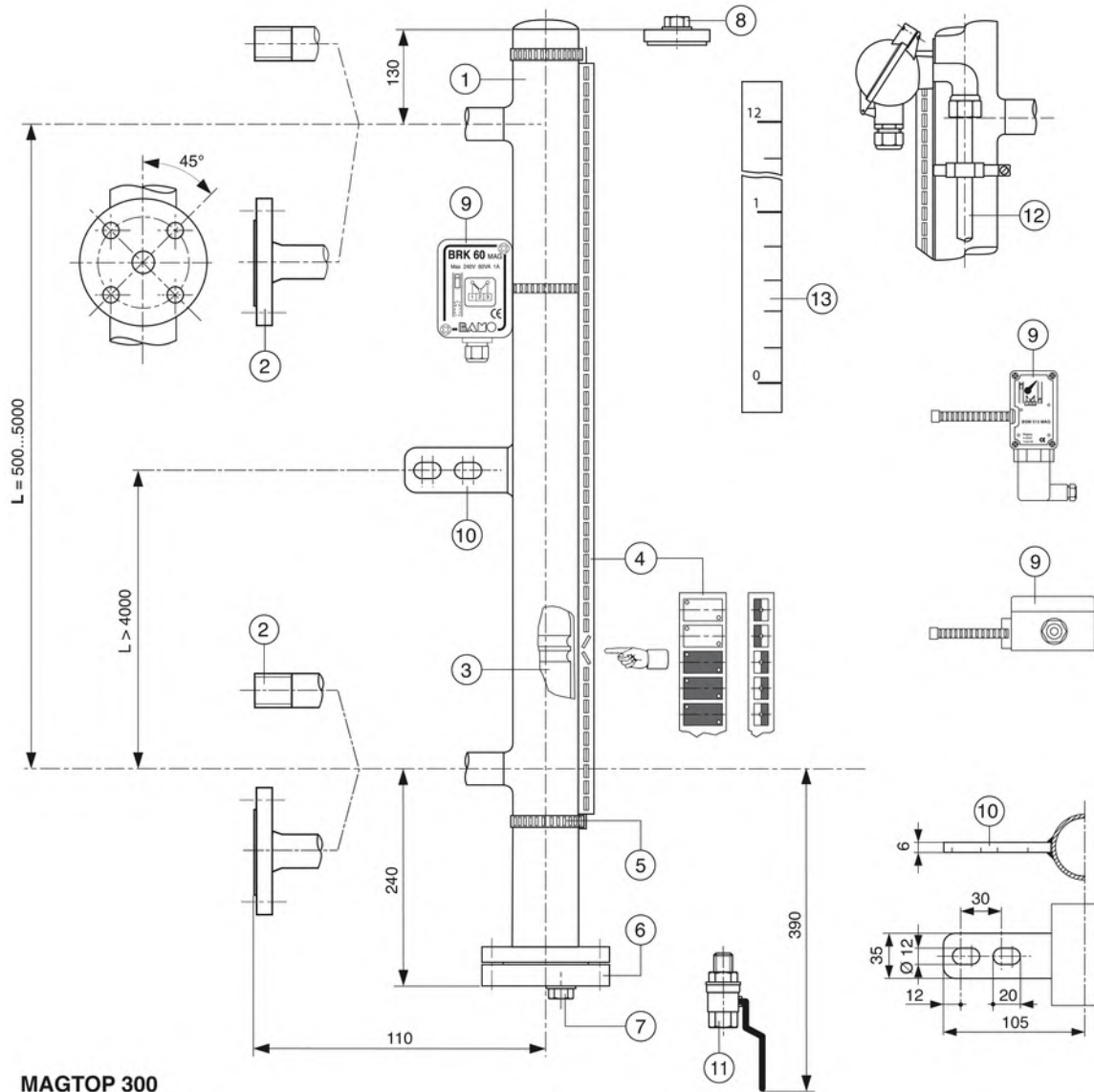
D-560.01-EN-AF

NIV

560-01 /1



# MAGTOP 300: All stainless steel version



MAGTOP 300

## DESCRIPTION

1	AISI 316L measuring tube, Ø 60.3
2	Lateral fittings: Flanges ND 10, 15, 20, 25, 32 (PN 16); Threads ½", ¾", 1" G (PN 16); other fittings on request
3	Float with built-in magnet
4	Magnet ruler: Makrolon® or Aluminum according to temperature
5	Clamp collars in stainless steel 304
6	Plain flange for float insertion or maintenance
7	Drain plug ½" G
8	OPTION : Vent plug ½" G
9	OPTION: Level switches BRK 60/MAG (T° < 80 °C); BSM 515 (T° < 90 °C); BRT60 if temperature is up to 200 °C
10	Brackets (L > 4000)
11	OPTION : Drain valve ½" G
12	OPTION : RTM, Reed chain with output signal resistor or with 4-20 mA transmitter (only when measuring tube is of 1 piece)
13	OPTION: Stainless steel graduated ruler (volume, %, cm), scale linear or not

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Level indicator  
**MAGTOP**

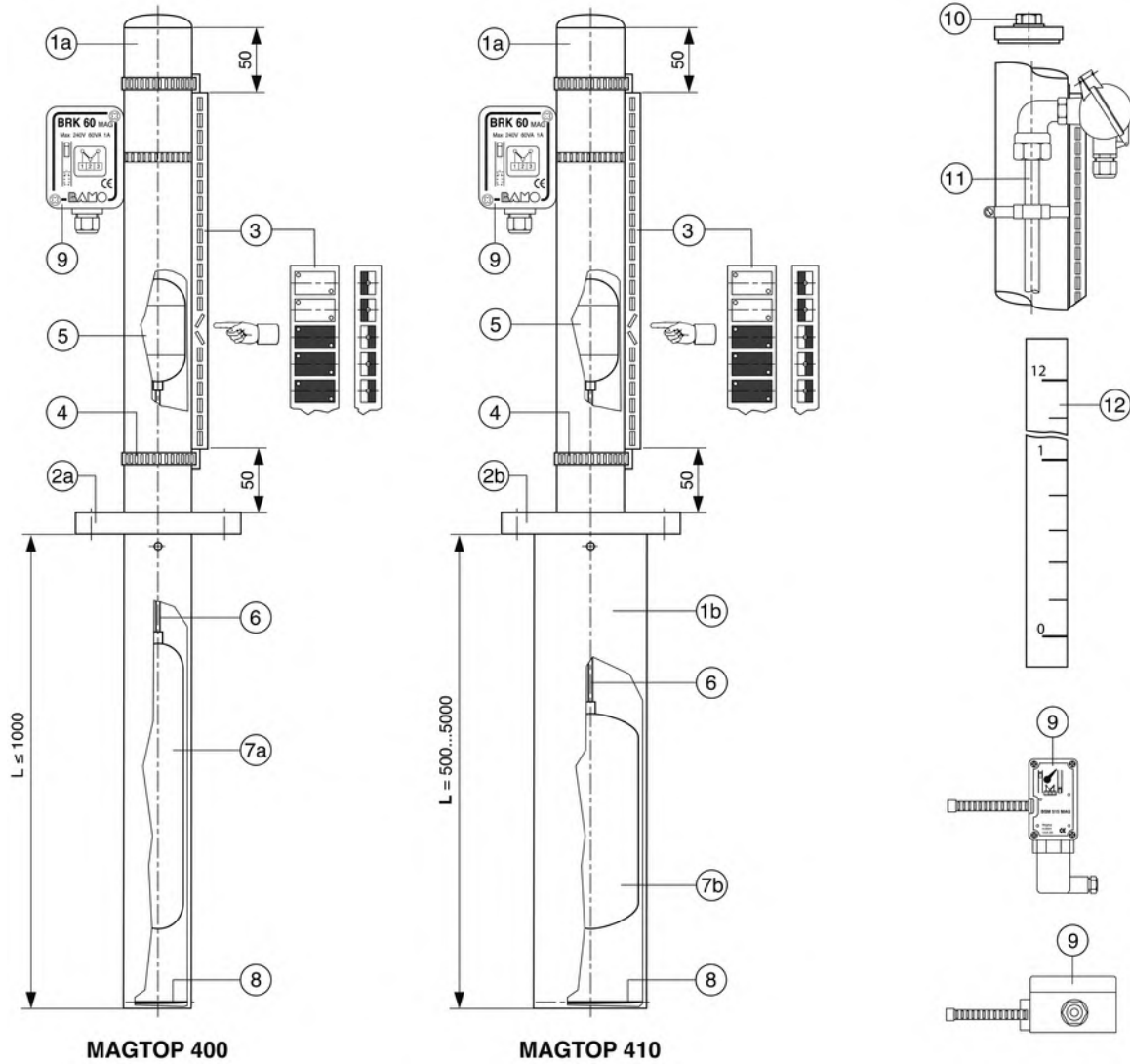
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560-01 /2





MAGTOP 400

MAGTOP 410

**DESCRIPTION**

1a	AISI 316L measuring tube, Ø 60.3
1b	Immersion tube: AISI 316 L, Ø 104
2a	Axial connection: flange DN 80, 100, 125 / PN 16
2b	Axial connection: Fitting by flange DN 125 / PN 16
3	Magnet ruler: Makrolon® or Aluminum according to temperature
4	Clamp collars in stainless steel 304
5	Magnet actuator
6	Rod assembly
7a	Float Ø 50 mm, height 330 mm
7b	Float Ø 90 mm, height 195 mm
8	Float stopper
9	OPTION: Level switches BRK 60/MAG (T° < 80 °C); BSM 515 (T° < 90 °C); BRT60 if temperature is up to 200 °C
10	OPTION : Vent plug ½" G
11	OPTION : RTM, Reed chain with output signal resistor or with 4-20 mA transmitter
12	OPTION: Stainless steel graduated ruler (volume, %, cm), scale linear or not

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**Level indicator  
MAGTOP**

30-10-2020

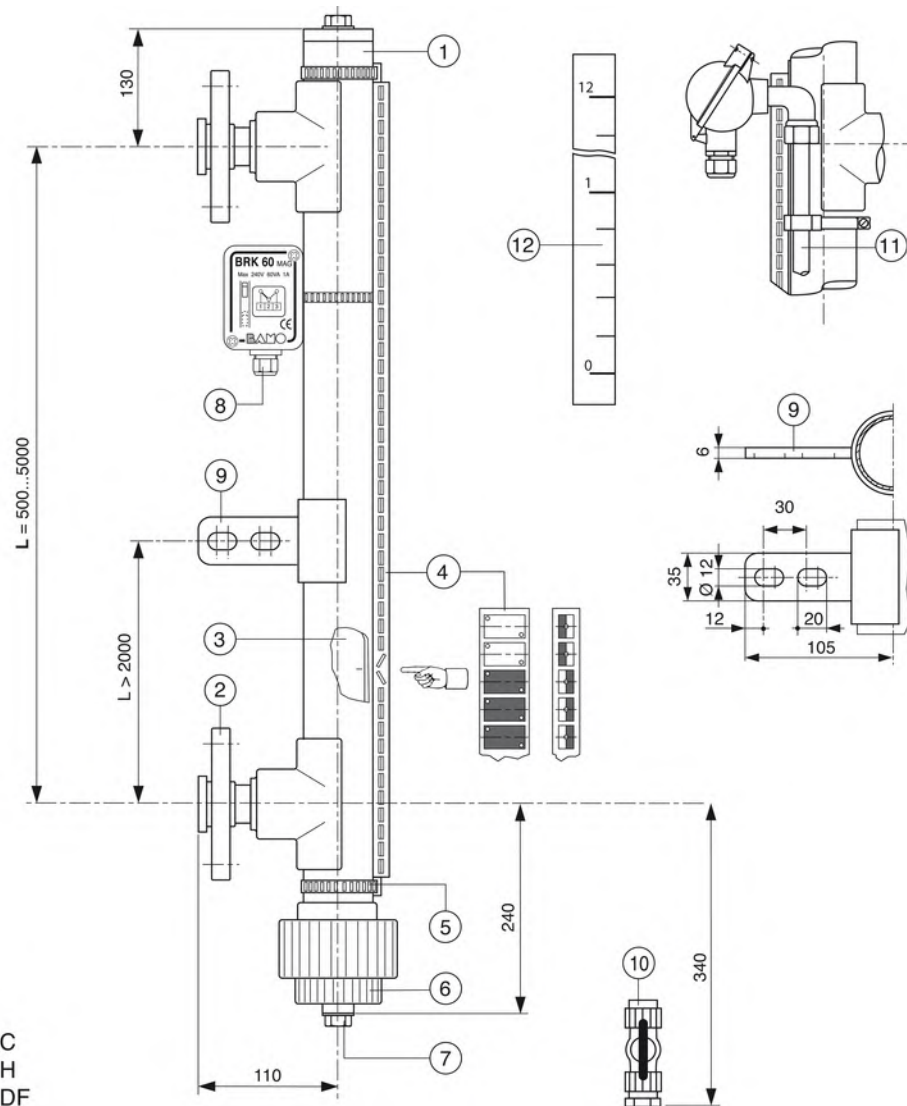
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**NIV**

**560-01 /3**

## MAGTOP 800: Plastic versions PVC, PPH or PVDF

Important: As a maximum, operating pressure is 6 bar at 20 ° C.



MAGTOP 801 → PVC  
 MAGTOP 803 → PPH  
 MAGTOP 806 → PVDF

### DESCRIPTION

1	Measuring tube Ø 63 mm, PVC (MAGTOP 801), PPH (MAGTOP 803), PVDF (MAGTOP 806)
2	Lateral fittings: Flanges ND 25 or 32 in PVC (MAGTOP 801), in PP steel core (MAGTOP 803 & 806); other fittings on request
3	Float with built-in magnet: PVC (MAGTOP 801), PPH (MAGTOP 803), PVDF (MAGTOP 806)
4	Magnet ruler: Makrolon®
5	Clamp collars in stainless steel 304
6	Union (3 pieces) for float insertion or maintenance
7	Drain plug ½" G, PVC (MAGTOP 801), PPH (MAGTOP 803), PVDF (MAGTOP 806)
8	OPTION: Level switches BRK 60/MAG
9	Brackets (L > 2000 mm), PVC (MAGTOP 801), PPH (MAGTOP 803), PVDF (MAGTOP 806)
10	OPTION : Drain valve ½" G, PVC (MAGTOP 801), PPH (MAGTOP 803), PVDF (MAGTOP 806)
11	OPTION : RTM, Reed chain with output signal resistor or with 4-20 mA transmitter (only when measuring tube is of 1 part)
12	OPTION: Graduated ruler (volume, %, cm), scale linear or not, in PVC (MAGTOP 801, 803 & 806)

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Level indicator  
**MAGTOP**

NIV

560-01 /4

30-10-2020

D-560.01-EN-AF

# Level indicator - ATEX or/ and P.E.D. MAGTOP D



- Versions ATEX or and PED
- Direct reading on two-color magnetic ruler
- Temperature up to 450 °C
- Pressure up to 250 bar
- Options: Level switches, graduated ruler, Analogue signal transmitter

## APPLICATION

Direct reading and control of level inside opaque and closed metal tanks in hazardous area ATEX or/ and under pressure requirements of Pressure Equipment Directive.

## DESCRIPTION

MAGTOP D indicates instantly the level of liquid inside the tank, with a two-colour ruler with magnetic flaps actuated by the magnetic float inside the measuring tube.

Design of this series allows the installation in hazardous area on storage tank for dangerous fluids, under pressure, with high temperature. For extreme operating temperatures we provide a complete or partial insulation (fiber glass fabric).

Our MAGTOP D are made of stainless steel with lateral fittings, flanges or threaded fittings.

Other type of connection is available: coaxial or for over-tank installation (free space above the tank is equivalent to the immersion depth).

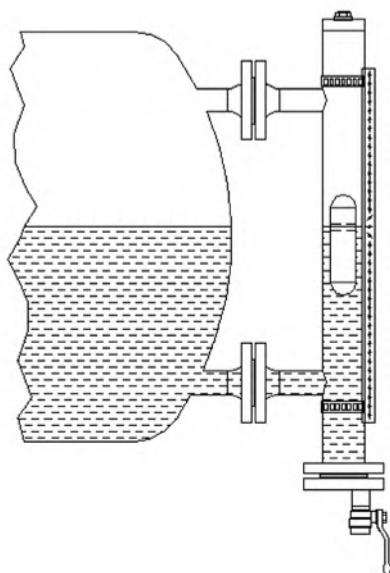
**MAGTOP D is subject to approval: we submit a plan before manufacture (mandatory).**

### Options : Accessories

- Level switches are adjustable along the measuring tube (data-sheets 585-...)
- Analogue transmitter with a 4-20 mA output signal.
- Graduated ruler in %
- Drain valve (1/2" BSP or NPT).

### Certificates available on request (before quote/ manufacturing):

- Materials certificate EN 10204 3.1
- P.E.D. 2014/68/EU
- Pressure test (bar) 2.2
- GL, LRS or BV
- NACE MR 01.75 / ISO 15156
- ATEX II 1/2 G c IIC T1...T6; II 1 D Txx °C



## MAGTOP ATEX, DESIGN

### Operating conditions:

Hazardous area, ATEX Class: .....

Liquid .....

S.G. ....

Pressure ..... bar

Temperature ..... °C

### Features:

Center to Center ..... (L= CtoC in mm)

Fittings ..... (according to specifications)

OPTIONS ..... (according to specifications)

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Level indicator - ATEX or/ and  
 P.E.D.  
**MAGTOP D**

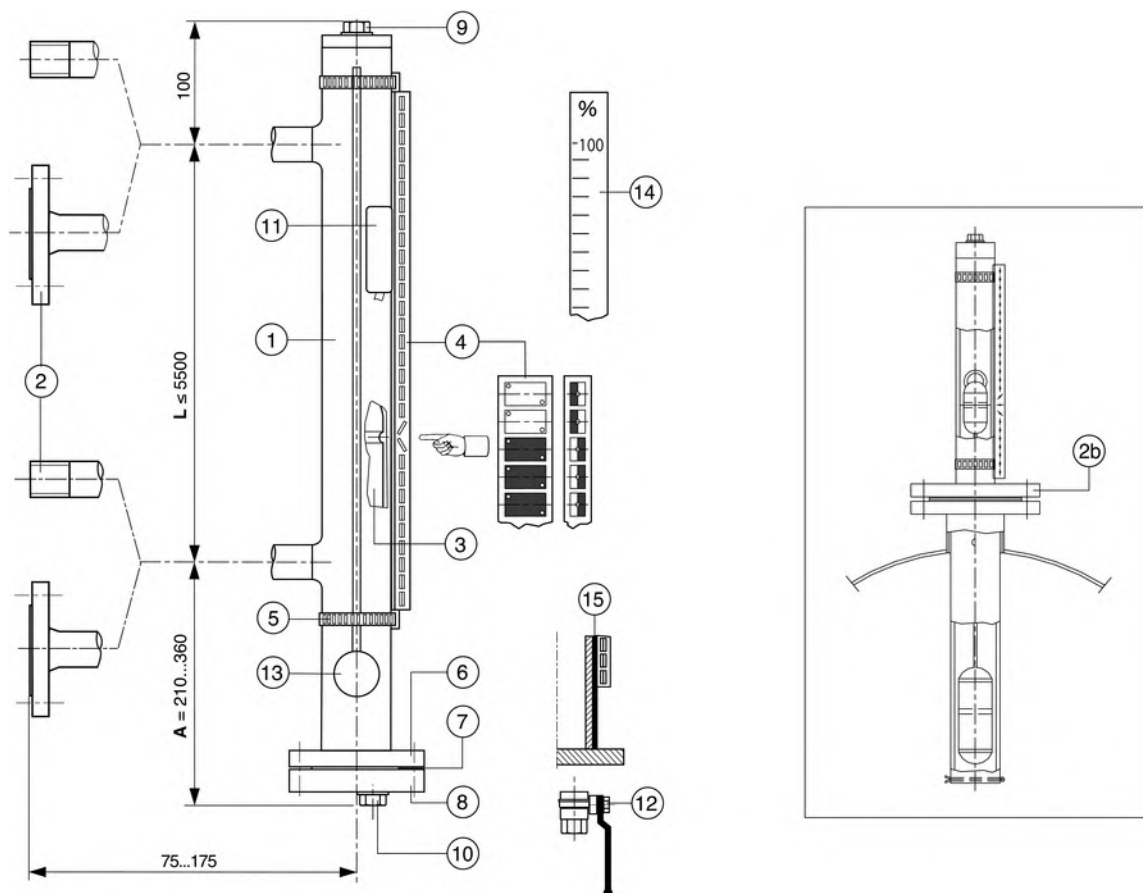
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560-03/1

**NOMENCLATURE**



1	Measuring tube O.D. 60.3 x2 mm	AISI 316 L
2	Sided tank fittings: ANSI flanges	AISI 316 L
	Sided tank fittings: ISO flanges	AISI 316 L
	Sided tank fittings: Male threads BSP or NPT	AISI 316 L
2b	Axial tank fitting: ND 50 to 150 / PN 40 ----> On request	AISI 316 L
3	Float: Dimension according to the density of the liquid	AISI 316 Ti or Titanium
4	Indicator	Aluminum/ Polycarbonate/ Glass
5	Mounting clip	AISI 301
6	Flange for float removal	AISI 316 L
7	Gasket	PTFE, Aramide, Graphite
8	Counter flange	AISI 316 L
9	Vent plug 1/2" BSP or NPT	AISI 316 L
10	Drain plug 1/2" BSP or NPT	AISI 316 L
11	OPTION : Level switch, with ATEX certification	-
12	OPTION : Drain valve 1/2" BSP or NPT	-
13	OPTION : Reed chain ±5 mm, with 4-20 mA transmitter EExia	AISI 316 L; Aluminum
14	OPTION : Graduated ruler [ % ]	AISI 316 L
15	OPTION : Thermic insulation (partial or total)	Fiber glass fabric

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**Level indicator - ATEX or/ and P.E.D. MAGTOP D**

30-10-2020

D-560.03-EN-AE

**NIV**

**560-03/2**

# Level indicator GNR 5 - PVC



- Direct reading on site
- Height: 40 to 500 cm
- Wet parts: PVC, PPH
- Seals: EPDM
- Adjustable level switches

## APPLICATIONS

Reading and control of liquid level in a tank; With level switches: Pump and solenoid valves automation, remote alarm signals.

## DESCRIPTION

The GNR5 consists of a transparent PVC tube for direct viewing of the stored liquid level.

Stop valves (in option) allow the disassembly of the measuring tube by keeping the tank under pressure.  
Drain valve as an option on the bottom fitting.

To limit shocks to the measuring tube, GNR5 can be equipped with a transparent PVC protection screen.

Accessories: Level switches BSM or BRK to send a remote signal on/off for alarms or automation of pump or solenoid valve.

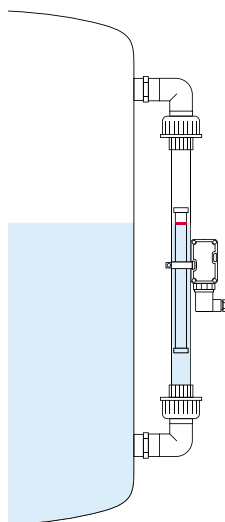
## TECHNICAL FEATURES

Measuring tube	PVC, transparent, Ø 32 mm
Magnetic float	PPH, Ø 25 mm (height 180 mm)
Stop valves	PVC, EPDM seals (standard)
Operating temperature	0... +45 °C
Operating pressure	4 bar max. at 20 °C
Fittings:	<i>To the tank</i>
	Loose flanges, PVC, DN20 or DN25 (PN 10)
	Threads: BSP 1"
Center to center	400 ... 5000 mm
	<i>For heights greater than 2000 mm, the indicator is supplied in 2 parts.</i>

### Options:

- Level switches BRK 60 (data-sheet 585-02)
- Level switches BSM 501 (data-sheet 585-01)
- Protection screen, Ø 63 mm, transparent PVC

To validate the use of a GNR5 for your application, please provide the distance CtoC, fluid quality & density, maxima of temperature and pressure, requested fittings & accessories.



Operating system

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Level indicator  
**GNR 5 - PVC**

04-10-2019

D-571.01-EN-AC

NIV

571-01 /1



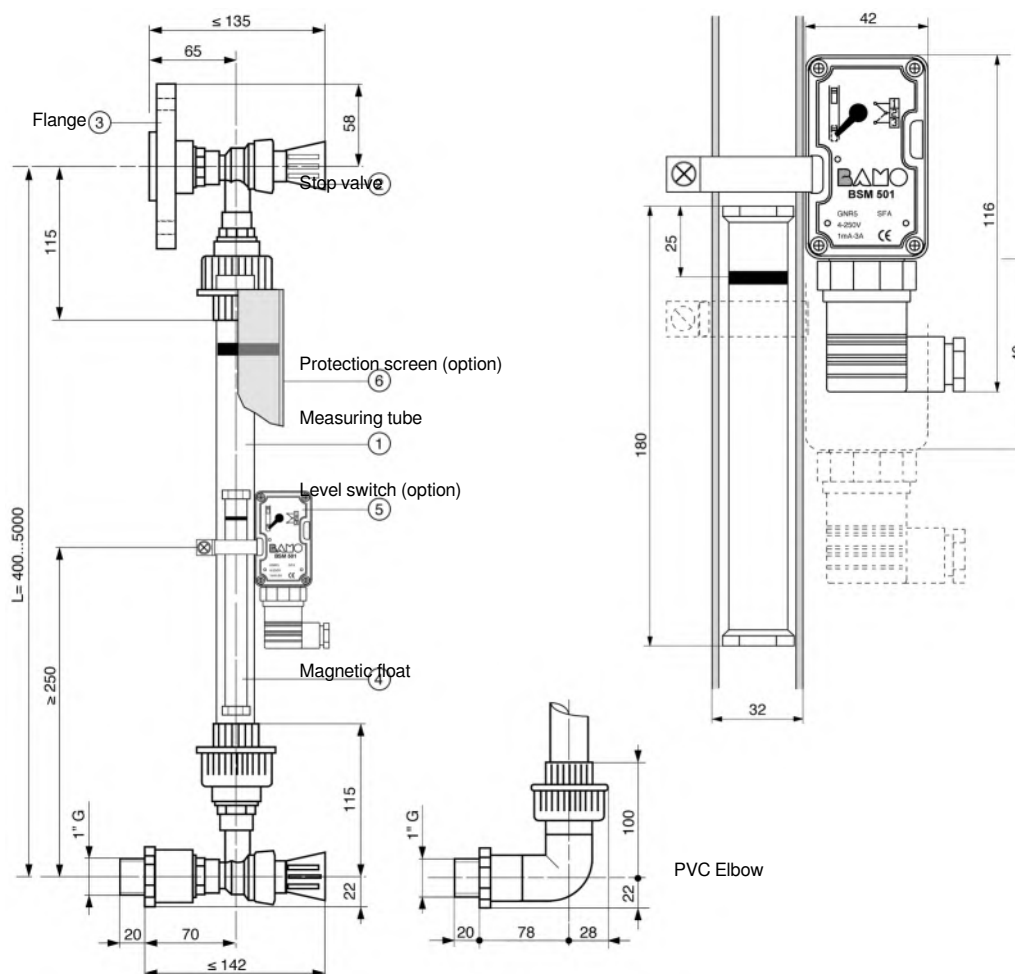
## CODE NUMBERS AND REFERENCES

Code	Reference	Fittings	Stop valves	Elbows (90°)	Drain valve
571 100	GNR 5/PVC-52/1"	Threads BSP 1"	On top & bottom	-	-
571 101	GNR 5/PVC-52/DN 20	Flanges DN 20	On top & bottom	-	-
571 102	GNR 5/PVC-52/DN 25	Flanges DN 25	On top & bottom	-	-
571 120	GNR 5/PVC-52/1"+P	Threads BSP 1"	On top & bottom	-	Included
571 121	GNR 5/PVC-52/DN 20 +P	Flanges DN 20	On top & bottom	-	Included
571 122	GNR 5/PVC-52/DN 25 +P	Flanges DN 25	On top & bottom	-	Included
571 110	GNR 5/PVC-42/1"	Threads BSP 1"	On bottom	On top	-
571 111	GNR 5/PVC-42/DN 20	Flanges DN 20	On bottom	On top	-
571 112	GNR 5/PVC-42/DN 25	Flanges DN 25	On bottom	On top	-
571 200	GNR 5/PVC-32/1"	Threads BSP 1"	-	On top & bottom	-
571 201	GNR 5/PVC-32/DN 20	Flanges DN 20	-	On top & bottom	-
571 202	GNR 5/PVC-32/DN 25	Flanges DN 25	-	On top & bottom	-

### Accessories

570 080	GNR 52	For replacement: Magnetic float, PPH, for PVC tube $\varnothing$ 32 x 2,4
585 100	BSM 501 / 32	Level switch BSM 501, with stainless steel collar for tube $\varnothing$ 32
570 050	BRK 60 / 32	Level switch BRK 60, with stainless steel collar for tube $\varnothing$ 32
571 130	Ecran PVC $\varnothing$ 63	Protection screen $\varnothing$ 63, transparent PVC

## DIMENSIONS



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Level indicator  
**GNR 5 - PVC**

04-10-2019

D-571.01-EN-AC

NIV

571-01/2



# Level indicator GNR 6



- Direct reading on site
- Measuring tube O.D. 63 mm
- Wet parts: PVC and PPH
- Stop valves, included
- Options: Level switches, graduated ruler

## APPLICATIONS

Reading and control of liquid level in a tank; With level switches: Pump and solenoid valves automation, remote alarm signals.

## DESCRIPTION

The GNR6 consists of a transparent PVC tube for direct viewing of the stored liquid level.

Standard supply includes the stop valves to allow the disassembly of the measuring tube for cleaning maintenance. The measuring tube is in transparent PVC, O.D. 63 mm, which guides the magnetic float. On the bottom the PVC drain plug (union fitting) allows an easy introduction of the float into the measuring tube.

Option: Graduated ruler, PVC ruler, graduated in cm or on request in % or in volume.

The ruler is fixed with PE clamps to the measuring tube.

Accessories: Level switches BSM or BRK to send a remote signal on/off for alarms or automation of pump or solenoid valve.

## TECHNICAL FEATURES

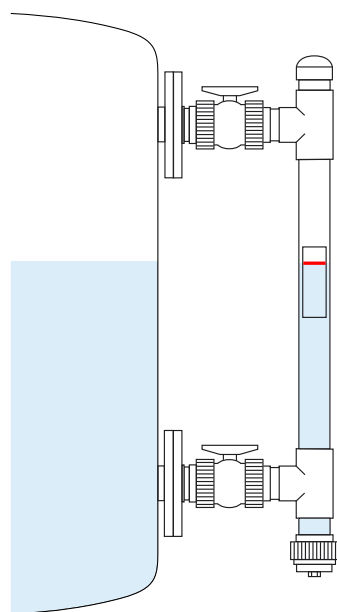
Measuring tube	PVC, transparent, Ø 63 mm
Stop valves	PVC
Seals	EPDM (Option : FPM)
Magnetic float	PPH, Ø 52 mm, 132 mm high, 170 g
Operating temperature	0... +45 °C
Operating pressure	Atmospheric
Fittings	Loose flanges, PVC, (PN16) On request: Threads or unions
Center to center	As a minimum: 500 mm <i>For heights greater than 2000 mm, the indicator is supplied in 2 parts.</i>

### Options:

- Level switches BRK 60 (data-sheet 585-02)
- Level switches BSM 501 (data-sheet 585-01)
- Graduated ruler, white PVC

To validate the use of a GNR 6 for your application, please provide the distance CtoC, fluid quality & density, maxima of temperature and pressure, requested fittings & accessories.

Standard version is convenient for liquids of S.G. 1 with a viscosity similar to water one.



Operating system

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Level indicator  
GNR 6

08-10-2019

D-572.01-EN-AB

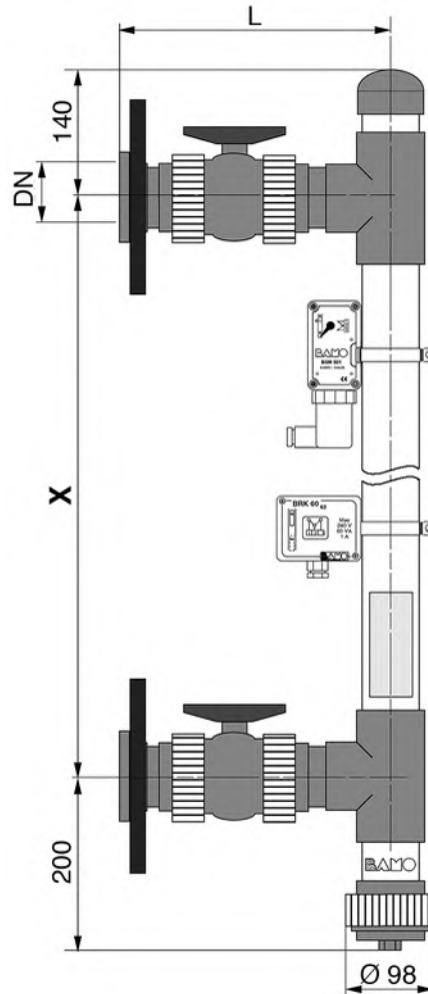
NIV

572-01 /1

## CODE NUMBERS AND REFERENCES

Code	Reference	Fittings	Sealing
572 100	GNR 6 / PVC - 63	Flanges ND 50 (PN 16)	EPDM
572 105	GNR 6 / PVC - 50	Flanges ND 40 (PN 16)	EPDM
572 110	GNR 6 / PVC - 40	Flanges ND 32 (PN 16)	EPDM

## DIMENSIONS



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Level indicator  
**GNR 6**

08-10-2019

D-572.01-EN-AB

NIV

572-01 /2

# Level controllers and indicators CF3/ CF4 Series



- Tank height from 250 to 3000 mm
- Transmission: angle drive
- Fitting: male 2" BSP
- Head housing: IP 54
- 3 possible functions:  
**Direct reading**  
**With 1 to 3 contacts, potential free**  
**Output signal: continuous resistive signal ( $\Omega$ )**

## APPLICATIONS

Gauge for level display and filling control.

- Diesel in storage tank or day-tank
- Stored lubricating oil, glycol water, rainwater

Particularly suited to meet the needs and conditions of use for storage tank or day-tank of diesel generators.

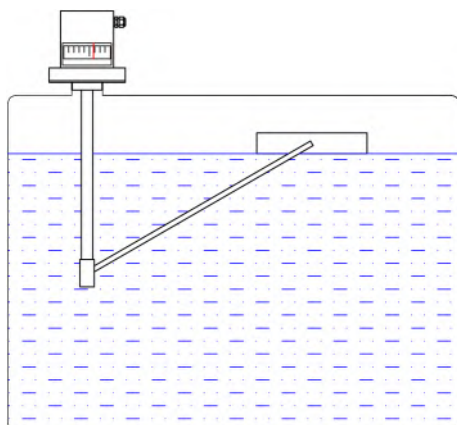
## DESCRIPTION

The electric gauge is mounted above the tank. Against the liquid height, the float transmits the level through an angle drive to a vertical stem. The stem actuates on a pointer associated with a graduated dial to display the level in the tank. Depending on the model, it can also act on contacts, and/ or a potentiometer which will deliver an ohmic value image of measurement.

The instrument is available with several functions:

- 1 continuous signal output ( $\Omega$ )
- Display for direct reading of level  
 For commodity, the level is visible on 2 opposite sides.
- 1 to 3 contacts (potential free)  
 Option: on request up to 5 contacts

*The complete system is supplied ready to install and to use.*



## TECHNICAL FEATURES

Materials	Steel, Nylon Float: Foamed PVC
Flange seal	Cork gasket
Fitting	2" BSP, male
Head housing	IP 54
Operating pressure	Atmospheric
Operating temperature	Between 0 and 40 °C
Measuring distances	Model 1: From 250 up to 1100 mm Model 2: From 1100 up to 3000 mm
Scale:	Liters
Contact(s)	Default setting: Filling function: ON at 50 % and OFF at 80 % capacity (2-way contact, 10 A, 230 V, potential free) - High level: 90 % capacity (Change-over contact, 10 A, 230 V, potential free) - Low level alarm: 30 % capacity (Change-over contact, 10 A, 230 V, potential free) <i>On request: Factory adjustment between 10 and 90 %.</i>
Output, resistive signal	From 0 to 90 $\Omega$ (approx., $\pm 15$ %)

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Level controllers and  
indicators  
**CF3/ CF4 Series**

08-09-2017

D-579.02-EN-AB

NIV

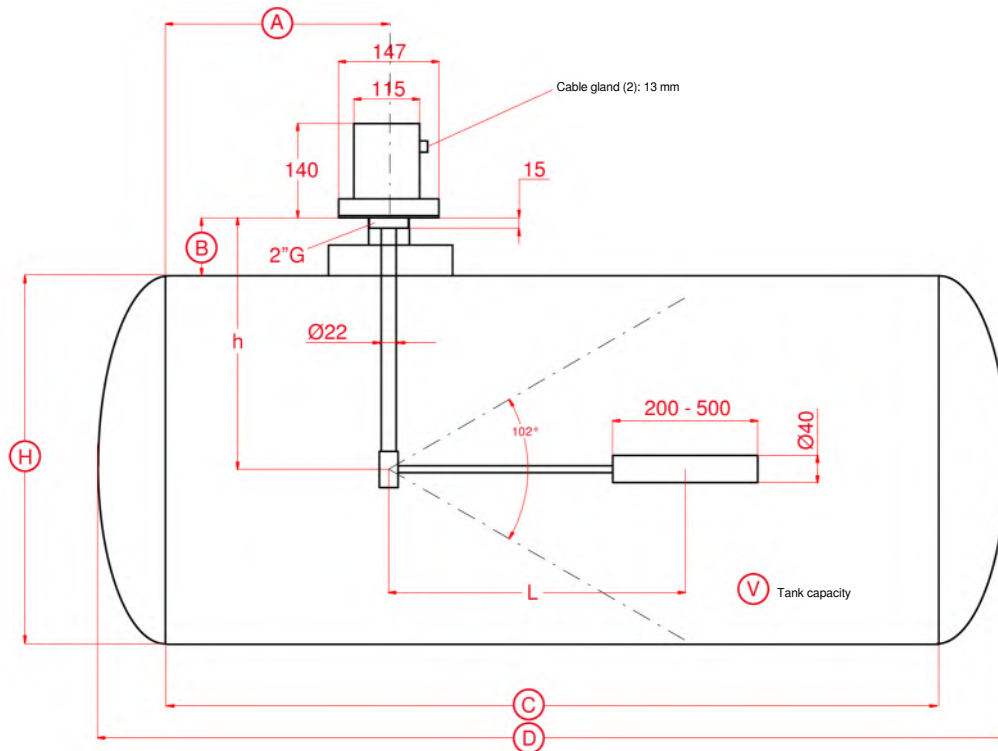
579-02/1

## CODE NUMBERS AND REFERENCES

Code	Reference	Direct reading	Output $\Omega$	Contacts		
				LOW Level	HIGH Level	ON/ OFF
Model 1: distance from 250 up to 1100 mm						
579 050	CF3	●	●			
579 054	CF3-1S	●	●	●		
579 058	CF3-2S	●	●	●	●	
579 070	CF4 RD SIA	●	●	●	●	●
579 200	CF4	●		●	●	●
579 220	CF20			●	●	●
579 300	JLD20	●				
579 636	CF102			●		
579 641	CF103			●	●	
Model 2: Distance from 1100 up to 3000 mm						
579 052	CF3 G	●	●			
579 056	CF3 G-1S	●	●	●		
579 060	CF3 G-2S	●	●	●	●	
579 072	CF4 RD SIA G	●	●	●	●	●
579 210	CF4 G	●		●	●	●
579 225	CF20 G			●	●	●
579 304	JLD20 G	●				
579 637	CF102 G			●		
579 642	CF103 G			●	●	

## DIMENSIONS

Dimensional (not to scale)



Dimensions A, B, C, D, H and V (tank volume) must be confirmed on purchase order.  
In case of a rectangular shaped tank, the width must be mentioned as well.

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Level controllers and  
indicators  
**CF3/ CF4 Series**

08-09-2017

D-579.02-EN-AB

NIV

579-02/2

# Level electric gauge JE100



- Tank height from 1250 to 3000 mm
- Transmission: angle drive
- Fitting: male 2" BSP
- Head housing: IP67
- 2 possible functions:
  - 1 or 2 contacts, potential free
  - 1 analogue output ( $\Omega$ ) + 1 contact

## APPLICATIONS

Level transmitter and alarm signals on low and high levels, are designed for indoor or outdoor tanks:

Liquid storage examples:

- Diesel
- Lubricating oil
- Glycol water
- Rainwater

They are particularly well adapted for storage or day-tank on diesel generators located outdoor.

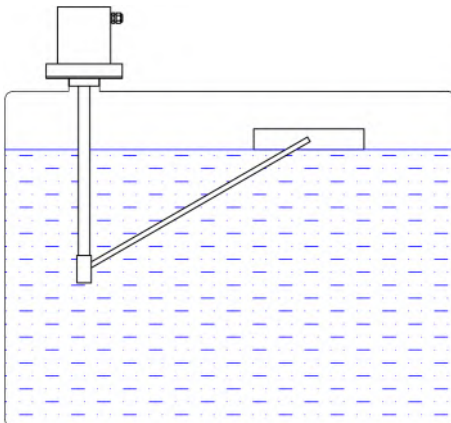
## DESCRIPTION

Under the thrust of the fluid, the float transmits the level through an angle drive to a vertical stem.

The stem is then actuating a potentiometer (resistive output) and/or actuates contacts (alarms).

The electric gauge is mounted above the tank.

The complete system is supplied ready to install and to use.



## TECHNICAL FEATURES

Materials	Steel, Nylon Float: Foamed PVC On request: Stainless steel (316L)
Flange seal:	Cork gasket
Mounting	BSP 2", male fitting
Head housing	Nylon, IP67 1 pressure gland 13 mm
Pressure	Atmospheric
Temperature	Between 0 and 40 °C
Contacts	Default setting: 1 or 2 contacts (2 way contact), 10 A, 230 V, potential free HIGH level alarm: 90 % LOW level alarm : 25 % On request: Factory adjustment between 20 and 90 %.
Continuous signal output	Resistive signal From 0 to 215 $\Omega$ (approx., $\pm 15\%$ )

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Level electric gauge  
JE100

12-01-2021

D-579.03-EN-AC

NIV

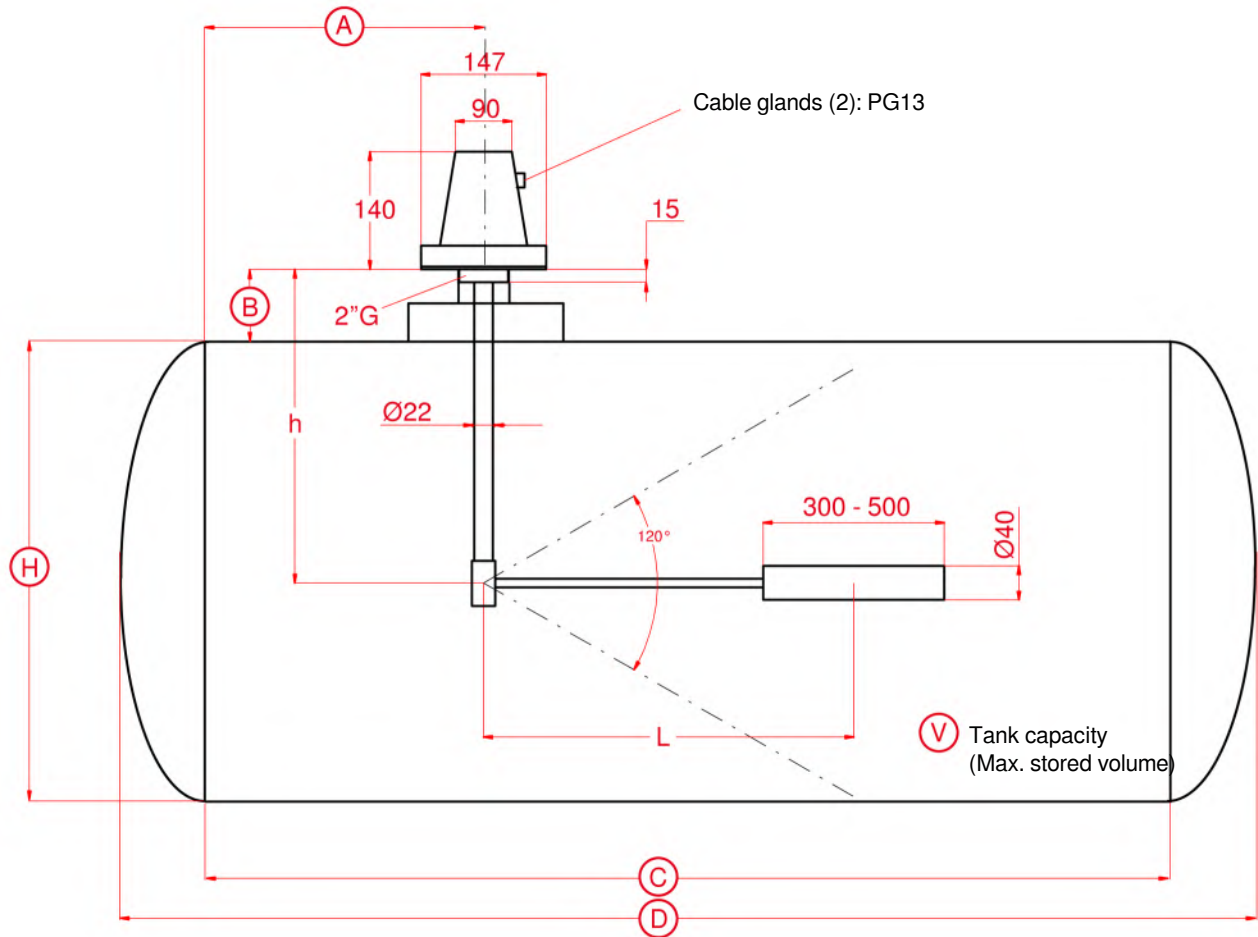
579-03/1

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
579 010	JE100	Resistor output ( $\Omega$ )
579 012	JE100 C	Resistor output ( $\Omega$ ) + 1 contact (LOW level alarm)
579 639	CF102 IP67	1 contact (LOW level alarm)
579 643	CF103 IP67	2 contacts (LOW and HIGH level alarms)

## DIMENSIONS

Dimensional (not to scale)



Dimensions A, B, C, D, H and V must be confirmed on purchase order.  
In case of a rectangular shaped tank, the width must be mentioned as well.

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Level electric gauge  
**JE100**

12-01-2021

D-579.03-EN-AC

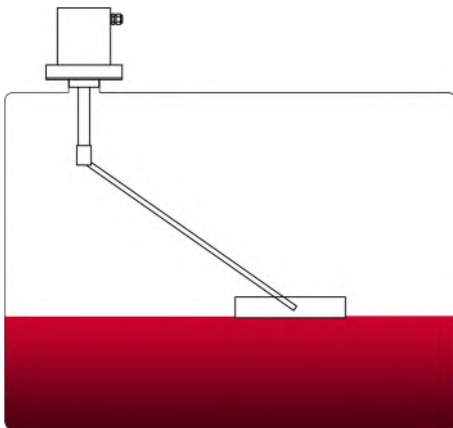
NIV

579-03/2



# Level indicator and controller CF80 Series

- Height from 150 to 650 mm
- Fitting: BSP 2", male
- Head housing: IP54
- 3 possible functions:
  - Direct reading on dial
  - With 1 to 3 contacts, potential free
  - Output signal: continuous resistive signal ( $\Omega$ )



## APPLICATIONS

These controllers for alarms on low, high levels, and transmitters of continuous level, are designed for indoor and small tanks

- Diesel in tanks
- Day-tanks
- Lubricating oil
- Glycol water
- Rainwater

Particularly suited for small storage tanks (150 to 650 mm high), e.g. on filling automation of tanks for diesel generators.

## DESCRIPTION

Under the thrust of the fluid, the float transmits the level through a rod transmission to a vertical stem.

The stem actuates a pointer on the dial, the contacts or/ and a potentiometer for output resistive signal image of the level.

Gauge is mounted on the top of the tank.

Instrument is available in various versions according to requirements:

- Direct reading of level on top or/ and side of gauge head.
- 1 to 3 contacts (2 way contact), high and low levels and/ or pump automation
- Output for continuous resistive signal

*The complete system is supplied ready to install and to use.*

Models JE80, CF80 and JLD are designed for tanks with a height of 150 to 500 mm.

Model JE80N is designed for tanks with a height of 150 to 650 mm.

## TECHNICAL FEATURES

Materials	Steel, Nylon, brass, stainless steel
	Float: foamed PVC
	Flange seal: Cork gasket
Fitting	BSP 2", male
Head housing	IP 54
Dial	Above: Orange background; Graduations at 0, 1/2 and 1 (fig1.) Side: White background; Graduations at 0, 1/2 and 1 (fig.2)
Operating pressure	Atmospheric
Operating temperature	From 0 to 40 °C

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## Level indicator and controller CF80 Series

08-09-2017

D-579.04-EN-AB

NIV

579-04/1

Contacts

Default setting:

Low level alarm: 20 % capacity (Change-over contact, 10 A, 230 V, potential free)

High level alarm: 85 % capacity (Change-over contact, 10 A, 230 V, potential free)

Filling function: ON at 40 % and OFF at 80 % capacity (2-way contact, 10 A, 230 V, potential free)

*On request: Factory setting between 20 and 85 % capacity.*

Output, resistive signal

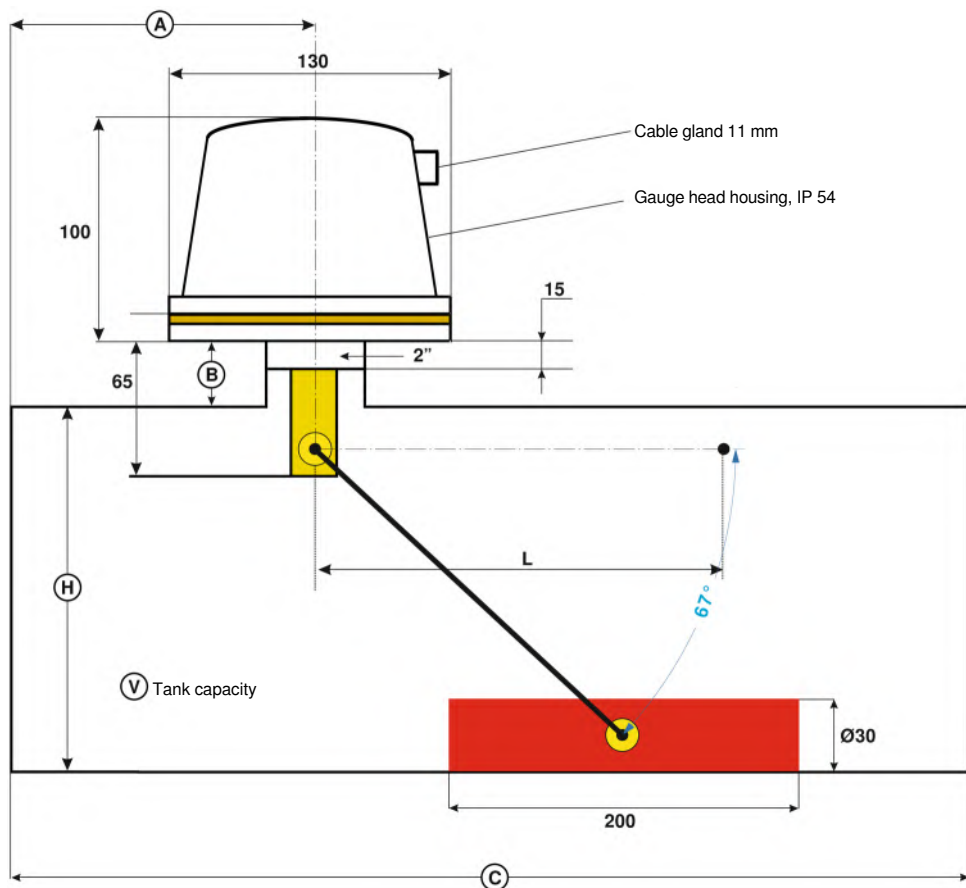
From 0 to 160  $\Omega$  (approx.,  $\pm 15\%$ )

## CODE NUMBERS AND REFERENCES

Code	Reference	Direct reading on dial		Output, $\Omega$	Contacts		
		On top	On the side		LOW level	HIGH level	ON/ OFF
579 030	JE80			●			
579 032	JE80 1S			●	●		
579 034	JE80 2S			●	●	●	
579 040	JE80 N	●		●			
579 042	JE80 N-1S	●		●	●		
579 044	JE80 N-2S	●		●	●	●	
579 500	CF80 N	●	●		●	●	●
579 502	CF80 1S				●		
579 504	CF80 2S				●	●	
579 510	CF 80				●	●	●
579 518	JLD 80	●					

## DIMENSIONS

Dimensional (not to scale)



Dimensions A, B, C, H and V (tank volume) must be confirmed on purchase order.  
In case of a rectangular shaped tank, the width must be mentioned as well.

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Level indicator and controller  
**CF80 Series**

08-09-2017

D-579.04-EN-AB

NIV

579-04/2

# Float switch for retention receiver CF30 Series



CF-30

- For retention receiver and gutter
- Stem length: from 150 to 2000 mm
- Easy installation
- Output: contact, potential free
- Head housing: IP 54

## APPLICATIONS

The float switch CF30 and its variants, are designed to detect a leak from the main tank falling into the retention receiver.

Compatibility with liquids (examples):

- Diesel
- Lubricating oil
- Rainwater
- Water-glycol mixture

As it is a simple controller, much more applications are available.

## DESCRIPTION

Against the liquid height, the float lift up a stem actuating a change-over contact.

The fitting allows installation on almost any day-tank or retention receiver. The stem length may be modified on request.

Several versions are available depending on detection heights and mounting:

### CF30 Model:

The float is mounted vertically to reduce dimensions.

Distance H: Min. 150 mm

Distance H: Max. 950 mm

Detection from 100 mm of liquid as a minimum (depending of H).

### CF31 Model:

The float is mounted horizontally for a detection as soon as possible.

Distance H: Min. 150 mm

Distance H: Max. 2000 mm

Detection from 20 mm of liquid as a minimum (depending of H).

### CF32 Model:

Similar to CF30, but with BSP 2" fitting



CF-31



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Float switch for retention  
receiver  
**CF30 Series**

13-03-2020

D-579.10-EN-AC

NIV

579-10/1

## TECHNICAL FEATURES

Materials	Stem: Stainless steel Float: Foamed PVC
Head housing	IP 54
Operating pressure	Atmospheric
Operating temperature	Between 0 and 40 °C
Contact(s)	1 changeover contact, 4 A, 230 V, potential-free <i>Factory setting</i>

## CODE NUMBERS AND REFERENCES

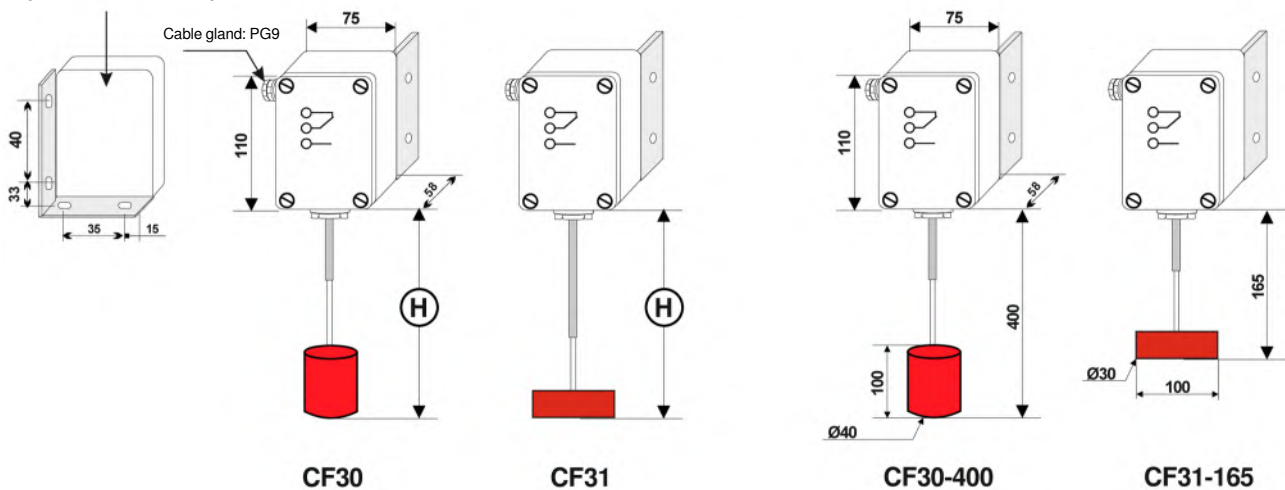
Code	Reference	Description	Distance H
579 601	CF30-400	Float switch, vertical float, 400 mm	400 mm
579 611	CF31-165	Float switch, horizontal float, 165 mm	165 mm
579 600	CF30-xxx	Float switch, vertical float, length H on request	150 up to 950 mm
579 610	CF31-xxx	Float switch, horizontal float, length H on request	150 up to 2000 mm
579 615	CF32-xxx	Float switch, vertical float, fitting BSP 2", length H on request	150 up to 950 mm

## DIMENSIONS

*Dimensional (not to scale)*

The diameter and the length of the float vary according to the distance H.

Housing: Horizontal or vertical fitting



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Float switch for retention  
 receiver  
**CF30 Series**

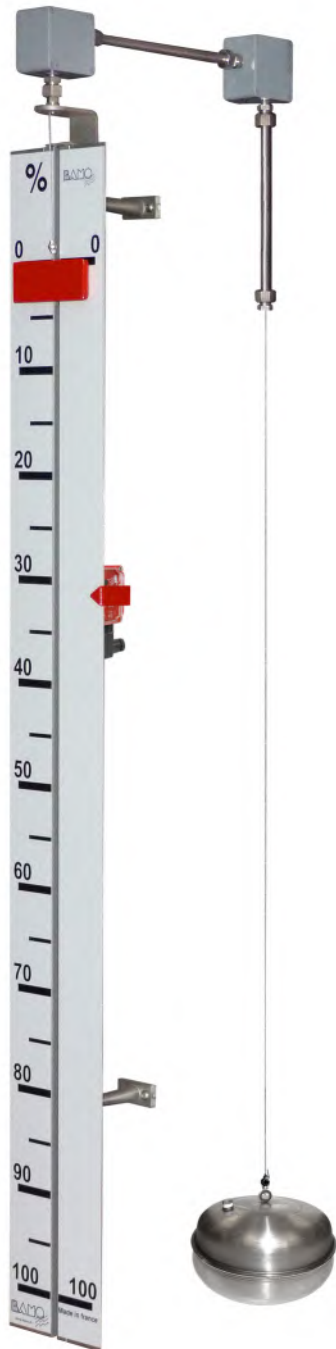
13-03-2020

D-579.10-EN-AC

NIV

579-10/2

# Level gauge JAR



- **Metallic level indicator**
- **Height up to 15 m**
- **Graduated ruler in %, m<sup>3</sup> or volume**
- **Protected pulleys with no-jump system**
- **Modular equipment**

## APPLICATIONS

Level indication for large metal tanks (water storage, lubricant oil, etc.)

## DESCRIPTION

The gauge JAR is designed for large metal tanks installed outdoors.

JAR is custom made, delivered in several parts for easy transport and installation on site. The graduated ruler is subject to an approval (drawing is sent before manufacture).

This level indicator includes a float and a pointer linked together with a cable running on 2 pulleys. The pointer is used as a counter weight; it slides along a graduated ruler, following the height of the liquid inside the tank. The graduated scale is fixed on the tank by means of adjustable and sliding tees and can be equipped with level switches.

Note: In the case of a pulley system, the indication is the inverse image of the level in the tank.

## TECHNICAL FEATURES

### Operating limits

- Tank at atmospheric pressure
- Operating temperature: From 0 °C to 80 °C

### JAR kit, base 2980 mm high, includes:

- 1 float, Ø 200 mm, AISI 316
- 6 m long cable, AISI 316, Ø 1 mm
- 2 cable clamps, AISI 316
- 1 pulley AISI 316, ruler top mounting, with a no jump system, protected in aluminum casing
- 1 pulley AISI 316, tank top mounting, with a no jump system, protected in aluminum casing
- 2 transfer tubes AISI 316, Ø 12 mm, each 1 m long
- 1 pointer with built-in magnet, AISI 316, red painted
- 1 graduated ruler in aluminum
- 1 set of 3 sliding tees, adjustable depth

### Options:

- Additional section of 1490 mm with 1 fixing tee
- Level switches (change over contact) BSM 501/J

**EC Conformity: The instrument meets the legal requirements of the current European Directives**

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Level gauge  
**JAR**

NIV

582-01 /1

21-02-2019

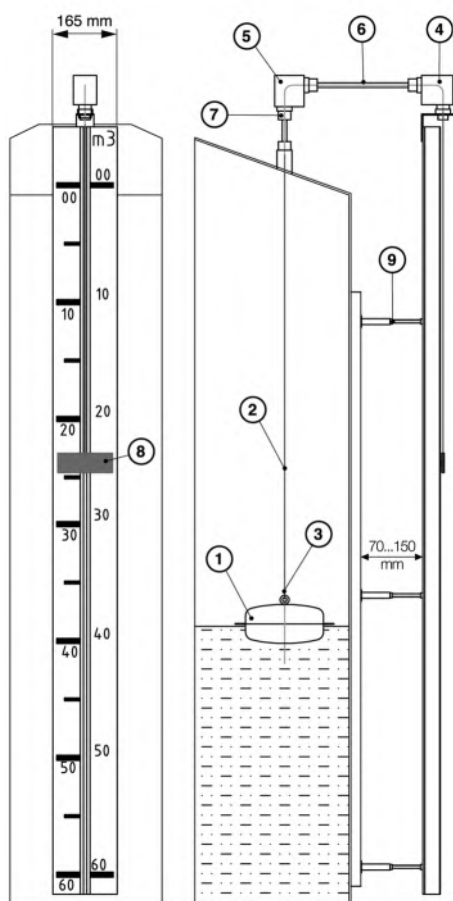
D-582.01-EN-AD

## CODE NUMBERS AND REFERENCES

Code	Reference	Description	
582 010	JAR Kit, base	Complete JAR system, base 2980 mm	
<b>Spare parts:</b>			<b>Mark</b>
583 300	FI/200/SFA	AISI 316 float, Ø 200 mm	1
583 302	FI/200/SFA OG	AISI 316 float, Ø 200 mm, with guiding rings	-
583 500	CIM/SFA	AISI 316 cable, Ø 1 mm	2
583 550	SC/SFA	AISI 316 Cable clamp	3
582 040	JAR/PI	Pulley in aluminum case (ruler top)	4
582 041	JAR/PC	Pulley in aluminum case (tank top)	5
582 045	TT/J	AISI 316 Transfer tube, 1 m long (2 tubes needed)	6
582 042	RO/J	Gland connector 3/8" BSPT conical	7
582 050	IM/J	Pointer (red painted), built-in magnet	8
582 055	FIX/J	Tee fitting, sliding (adjustable depth between 70 & 150 mm)	9

### Option:

Code	Reference	Description
585 010	BSM 501/J	Level switch, change-over contact for JAR (data-sheet 585-01)



# BAMO

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## Level gauge JAR

NIV

582-01 /2

21-02-2019

D-582.01-EN-AD



# Parts SFA series

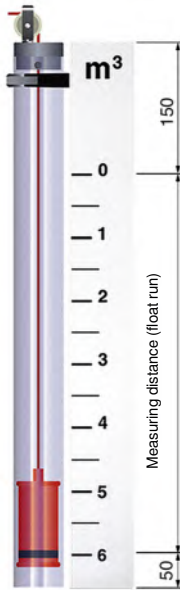


Fig. 1

## GRADUATED RULERS

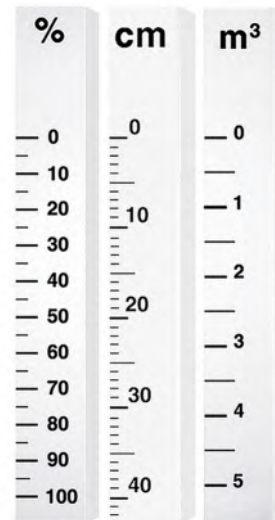
<b>Material</b>	PVC, white
<b>Section</b>	U shape (70 x 35 mm)
<b>Marks</b>	Black printed
<b>Top blind zone</b>	150 mm
<b>Bottom blind zone</b>	50 mm
<b>Units</b>	% Metric [ cm ] Volume Weight

### When total length is greater than 2.30 m:

Unless otherwise specified, equipment with heights greater than 2.30 meters is made of two interlocking parts.

### Position of markings:

Unless otherwise specified, (as shown in Fig.1), the graduated scale is on the left side (for mounting the ruler to the right of the tube).



Graduated ruler for SFA & SFA/E



Level switch BSM 501



Level contact BRK

## LEVEL SWITCHES

They have a bistable behavior: they remain on the last position actuated by the magnetic counterweight; Change of status occurs when counterweight is passing back.

Level switch BSM 501, see data-sheet 585-01; Level contact BRK 60, see data-sheet 585-02.

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Parts  
SFA series

22-02-2019

D-583.03-EN-AA

NIV

583-03/1

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
583 200	SFA/T	Pulley, PPH & AISI brackets, top of tube (tapping the tube)
583 250	SFA/R	Pulley, top of tank, PPH & AISI bracket (fixing: 2 screws, not supplied).
583 260	SFA/TR/PLAS	Set of 2 pulleys, all plastic, for tube & tank, PP/PVC
583 760	PE/SFA	Gastight pulley (for solvent welding on transfer tubes), ND 32
583 212	FI/102/SFA	Float AISI 316 L, spherical, Ø 102
583 300	FI/200/SFA	Float, ballast type, AISI 316 L, Ø 200 (possibility to load weight, sand/water)
583 302	FI/200/SFA OG	Float, ballast type, AISI 316 L, Ø 200, with guide rings (possibility to load weight, sand/water)
583 370	FP98/SFA	Float, PPH, Ø 98, h = 110, S.G. min. 0.94, for CP63 & CP50, includes fixing device for rope fitting
583 374	FP90/SFA	Float, PPH, Ø 90, h = 100, for CP40, includes fixing device for rope fitting
583 371	FP/SFA/PVC	Float, PVC, Ø 98, S.G. min 1.44, for CP63, includes fixing device for rope fitting
583 380	FP/C/SFA/PVC	Float, PVC, Ø 98, S.G. min. 1, for CP63, includes fixing device for rope fitting
583 372	FP/SFA/PVDF	Float, PVDF, Ø 80, S.G. min. 1, for CP63, includes fixing device for rope fitting
583 403	CP63/SFA	Counterweight, built-in magnet, PVC, Ø 50, for tube Ø 63 x 57
583 401	CP50/SFA	Counterweight, built-in magnet, PVC, Ø 40, for tube Ø 50 x 42.6
583 404	CP40/SFA	Counterweight, built-in magnet, PVC, Ø 32, for tube Ø 40 x 34
583 500	CIM/SFA	Cable, AISI 316, Ø 1 (supplied at requested length)
583 550	SC/SFA	Clamp, AISI 316, to fit stainless steel cable to stainless steel float
583 552	SCCP/SFA	Clamp, AISI 316, to fit stainless steel cable on PVC counterweight
583 560	CPM/SFA	Rope, PP, Ø 3 (supplied at requested length)
583 566	CT/SFA	Rope, PTFE, Ø 3 (supplied at requested length)
583 570	TT/SFA	Guide tube, transparent PVC, Ø 63 x 57
583 575	CTB/SFA	Adjustable tee with PE collar Ø 63, to fit guide tube to tank

All dimensions are in mm



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Parts  
**SFA series**

22-02-2019

D-583.03-EN-AA

NIV

583-03/2

# Level indicator, reduced path SFA / CR



- Convenient to a wide range of liquids
- Easy to install; Simple to use
- Reduced graduated ruler
- Guided float
- Adjustable level switches

## APPLICATIONS

SFA/CR is convenient for any level indication inside open tanks, on very deep tanks or to reduce indicating ruler length on top of a tank.

## DESCRIPTION

The float, suspended to a cable supported with 2 pulleys, drives a counterweight inside the ruler made of PVC.  
The counterweight is suspended to a third pulley in order to reduce at half the path.

The ruler accepts level switches BRK, actuated by the magnet inside the counterweight.

## CODE NUMBERS AND REFERENCES

**Code** 583 800

**Description** SFA/CR/Inox

Stainless steel version, includes:

- 1 stainless steel bottom tank Te
- 1 stainless steel float, Ø 200 mm with guiding rings
- 4 stainless steel cable clamps
- 1 PVC graduated ruler: length according request
- 2 stainless steel holders
- 1 counterweight, built-in magnet, with pulley
- 1 PVC plate 650 x 450 x 15 mm
- Stainless steel cable: length according the project

**Code** 583 850

**Reference** SFA/CR/PPH

PPH version, includes:

- 1 PPH float, Ø 100 mm with cable rings
- 1 PVC graduated ruler: length according request
- 2 stainless steel holders
- 1 counterweight, built-in magnet, with pulley
- 1 PVC plate 650 x 450 mm x 15 mm
- PP rope, Ø 3, length according the project

**Code** 583 890

**Reference** BRK 60/SFA/CR

Changeover contact to fit SFA/CR; SFA CN

See detailed information on data-sheets 585-02

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Level indicator, reduced path  
SFA / CR

22-03-2019

D-583.04-EN-AB

NIV

583-04/1

# Sets and kits

## SFA, modular series

- For tanks with large heights
- Easy carriage
- Short delivery time
- Level indicator protected by PVC tube
- All sets and kits for assembly on site

### PRINCIPLE

The float, suspended to a rope supported with 2 pulleys, drives a counterweight inside the external transparent tube; Liquid level is shown by counterweight. Counterweight has a built in magnet to actuate the level switches.

### COMPONENTS

#### Model: SFA

This set consists of a float and an indicator interconnected by a rope running on pulleys.

#### Model: SFA/E

For gastight protection: Pulleys are enclosed in PVC elbows with a non jump system ensuring a perfect guidance of the PP rope. Elbows are interconnected by a PVC tube (for solvent welding). Equipment fits the tank with a PVC loose flange ISO ND 100 (schedule PN 10/16).

#### Modular and extension kits:

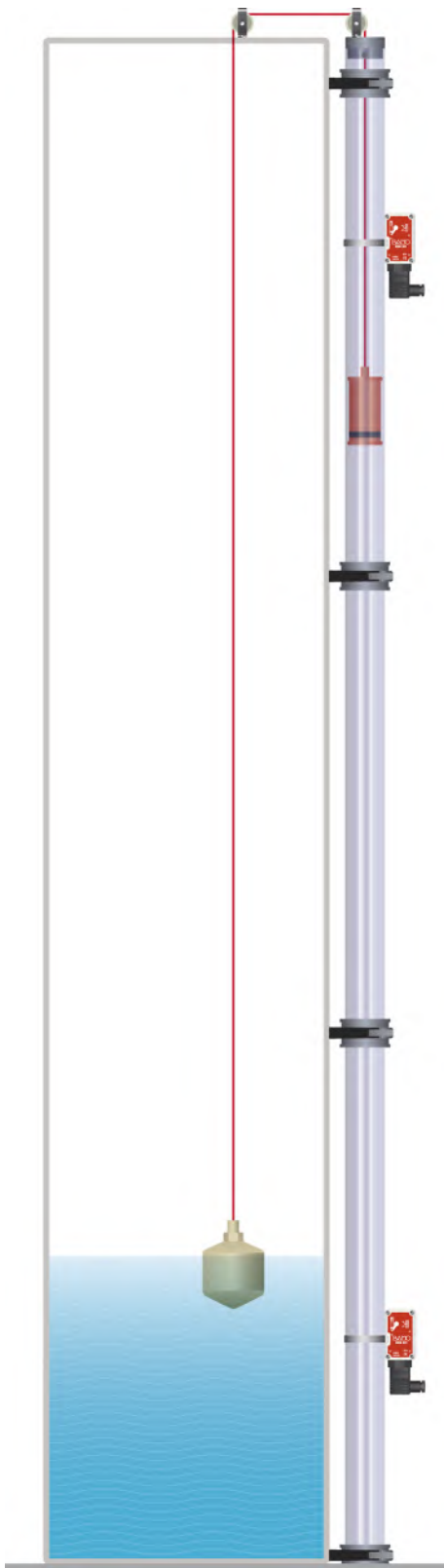
These kits are intended to reduce the cost of packing and carriage. Thus, to avoid manipulations of packs longer than 2 meters, we supply a modular system with special sleeve(s) for interconnection between modules. The standard modular kit: Basic module comes in 2 parts (total 3.2 m high) The basic kit may be extended by one or more extension kit(s), to install between parts of basic modular kit. The overall height is obtained by shortening the last tube at exact real dimension of tank.

#### Modular kits may be associated to:

- SFA sets
- SFA/E sets (gastight models)

The level switches BSM 501 can be fixed all along the tube, excepted where are the sleeves and collars.

The mounting of a graduated ruler can always be done, but the ruler may be supplied in various parts as for the guide tube (or a solution may be designed with our classic non-modular system, on request).



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Sets and kits  
**SFA, modular series**

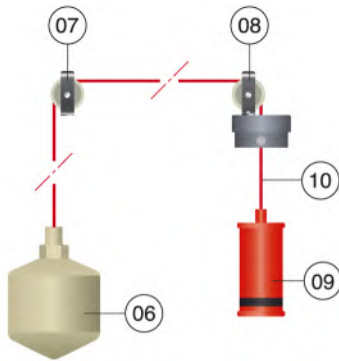
02-04-2019

D-583.05-EN-AA

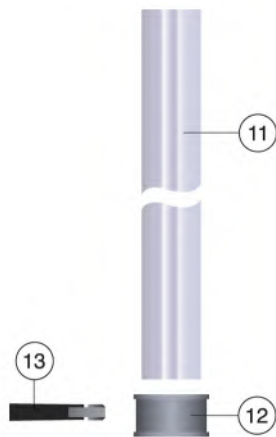
NIV

583-05/1

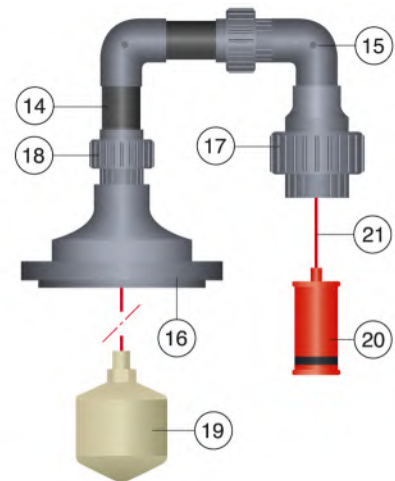
## CODE NUMBERS AND DESCRIPTIONS



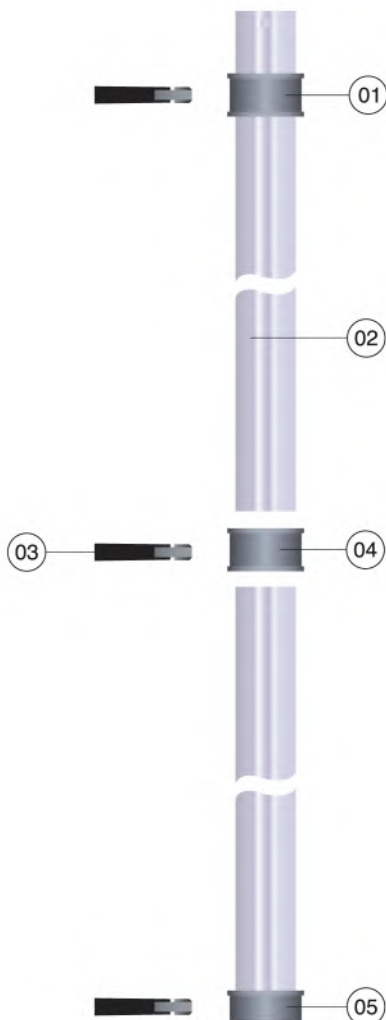
Code 583 020  
Set SFA, standard  
model



Code 583 581  
Extension modular kit



Code 583 701  
Set SFA/E/M, gastight model



### Code 583 580 → Kit SFA basic module (3.2 m), includes:

1 Adjustable fitting (top part), PVC	(Mark 01)
2 tubes, transparent PVC, Ø 57/63 mm, length 1600 mm	(Mark 02)
3 Fitting collars, PE, Ø 75 mm	(Mark 03)
1 Junction sleeve, PVC	(Mark 04)
1 Bottom end, PVC	(Mark 05)

### Code 583 581 → Kit extension of SFA basic module (1.6 m), includes:

1 tube, transparent PVC, Ø 57/63 mm, length 1600 mm	(Mark 11)
1 Junction sleeve, PVC	(Mark 12)
1 Fitting collar, PE, Ø 75	(Mark 13)

### Code 583 020 → PP level indicator set, includes:

1 PPH float, Ø 98 mm	(Mark 06)
1 Pulley for top of tank	(Mark 07)
1 Pulley for top of tube	(Mark 08)
1 Counterweight with built-in magnet	(Mark 09)
Cable/rope, PP, Ø 3 mm, (length according to the project)	(Mark 10)

### Code 583 701 → Gas-tight set, includes:

2 Transfer tubes, PVC, Ø 40 mm, length 1000 mm each	(Mark 14)
2 Gas-tight pulleys	(Mark 15)
1 Fitting top tank, PVC loose flange ND100 and butt	(Mark 16)
1 Union fitting for top of guiding tube Ø 63 mm	(Mark 17)
2 Union fittings, Ø 40 mm	(Mark 18)
1 PPH float, Ø 98 mm	(Mark 19)
1 Counterweight with built-in magnet	(Mark 20)
Cable/rope, PP, Ø 3 mm, (length according to the project)	(Mark 21)

### Options: Accessories

Code P41 576	Collar in PE, Ø 75 mm to fit guiding tube to the tank
Code 582 055	Adjustable tee (CTB)
Code 585 100	BSM 501, level switch, change-over, for SFA and SFA/E

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Sets and kits  
**SFA, modular series**

02-04-2019

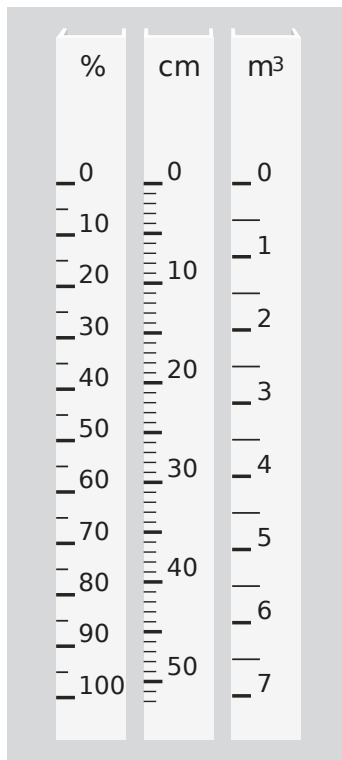
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NIV

583-05/2



# Graduated rulers RÉGLETTES



Examples: Graduated rulers for cable & pulleys level indicators

- High readability
- Weather and UV resistance
- Thermal transfer printed
- Scale units: %, litre, m<sup>3</sup>, cm, feet, etc.
- Black marks on white background
- White PVC profile, U shape 70 x 35 mm or L shape width 30 mm

## APPLICATIONS

For installation on:

- Level indicators with transparent tube, cable and pulleys indicators
- Level indicators with transparent tube for direct reading
- Transparent containers

## DESCRIPTION

Graduated rulers are manufactured to customer specifications and are subject to approval of a drawing.

We propose an optimal scale (marks and values) for an easy reading and feasibility.

Standard units are: %; volume in litres, m<sup>3</sup>; height in cm; mass.

### Supports:

For indicators SFA SFA/E or other indicators with transparent PVC tube Ø 63 mm, supports are of U-shaped 70 x 35 mm white PVC.

For direct reading indicators GNR5, FS4, supports are of L-shaped 30 mm width, white PVC.

### Graduated rulers longer than 2.3 m:

Unless otherwise specified, equipment with height greater than 2.3 m is supplied in two interlocking parts.

However, the equipment may be supplied in a single part not exceeding 4.6 m .

### Position of marks:

Unless otherwise specified, the scale marks are positioned on the left side of the ruler to fix it on the right side of the tube (Fig.1).

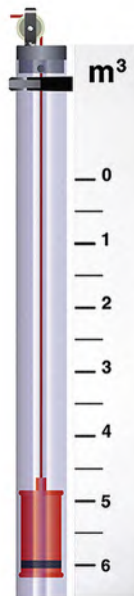


Fig. 1

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Graduated rulers  
RÉGLETTES

01-10-2019

D-583.20-EN-AB

NIV

583-20/1



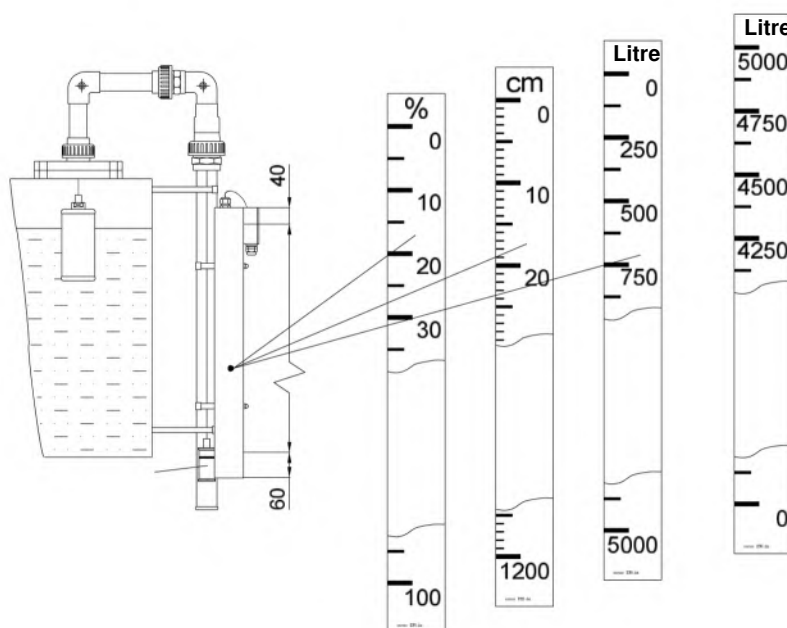
## CODE NUMBERS AND REFERENCES

### Graduated rulers, PVC, U shape, 70x35 mm

Code	Reference	Description
583 650	REG/SFA/cm	Graduated ruler, white PVC, U-70 Standard metric scale in [cm] - Cost according to real height
583 651	REG/SFA/%	Graduated ruler, white PVC, U-70 Standard scale 0 to 100 % (by step of 10 %) - Cost according to real height
583 652	REG/SFA/spe Lin	Specific scale: UNIT to confirm, white PVC, U-70; LINEAR SCALE - Cost according to real height
583 655	REG/SFA/spe N. Lin	Graduated ruler, white PVC, U-70; NON LINEAR SCALE Specific scale: UNIT to confirm, 50 marks or values per metre - Cost according to real height Extra-costs for each additional mark or number over 50 marks or numbers
583 654	Junction on U-shaped ruler	Supply of ruler in 2 parts (interlocking parts); Extra-cost per junction

### Graduated rulers, PVC, L shape, 30 mm width

Code	Reference	Description
570 135	REG/GNR/%	Graduated ruler, white PVC, L-30 Standard scale 0 to 100 % (by steps of 10 %) - Cost according to real height
570 136	REG/GNR/cm	Graduated ruler, white PVC, L-30 Standard metric scale in [cm] - Cost according to real height
570 137	REG/GNR/spe Lin	Specific scale: UNIT to confirm, white PVC, L-30; LINEAR SCALE - Cost according to real height
570 138	REG/GNR/spe N. Lin	Specific scale: UNIT to confirm, white PVC, L-30; NON LINEAR SCALE SPECIAL SCALE 50 marks or values - Cost according to real height Extra-cost for each additional mark or number over 50 marks or numbers
500 000	Junction on L-shaped ruler	Supply of ruler in 2 parts (interlocking parts); Extra-cost per junction



Examples of installation

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Graduated rulers  
**RÉGLETTES**

01-10-2019

D-583.20-EN-AB

NIV

583-20/2

# Tank top level indicator FS4



FS4 standard version

FS4 "Fût" (for drums)

- Direct reading
- Materials PVC, PPH
- Magnetic pointer for level switches
- For tanks and drums

## APPLICATIONS

- Level of clear chemicals or wasted liquids in opaque tanks, drums or underground tanks.
- Direct control of pumps, valves, alarm signals, with the use of level switches.

## DESCRIPTION

A float at the bottom of a stem moves a pointer inside a transparent PVC tube, outside the tank. The reading is direct through the transparent tube.

### • Model FS4 Standard:

The standard model is designed for tanks. For the float, the guiding tube has an O.D. of 63 mm. The mounting is on the top of the tank, with a loose flange ND 65.

### • Model FS4 fût:

Model "Fût" is designed for drums and tanks of height less than 1000 mm. There is no guiding tube for the float; fitting is threaded. Reading tube comes with a graduated scale (one mark each 1 cm).

Each indicator is designed according the density of the liquid and height to monitor.  
*Note: liquid surface is at 70 to 80% of float height.*

### Option: Level switch

The pointer with a built-in magnet allows actuation of level switches BSM 501 or BRK60/32 (data-sheets 585-01 & -02).

## TECHNICAL FEATURES

### Wet parts:

Float	PPH or PVC
Stem	PPH or PVC
Guiding tube	PPH or PVC

Temperature max. 60 °C --> PVC

80 °C --> PPH

Pressure max. Atmospheric

### FS4 Standard

Height max. 3000 mm (Depending of SG of the liquid)

Fitting Loose flange: PVC or PPH

### FS4 Fût

Height max. 1000 mm (Depending of SG of the liquid)

Fitting BSP thread 2" G; PPH

"Trisure" type 1 (Metric buttress thread); PPH

"Trisure" type 2 (Metric buttress thread); PPH

### Option:

- Level switches BSM 501 & BRK 60/32 (data-sheets 585-01 & -02)



Installation, example

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Tank top level indicator  
**FS4**

30-10-2018

D-584.01-EN-AE

NIV

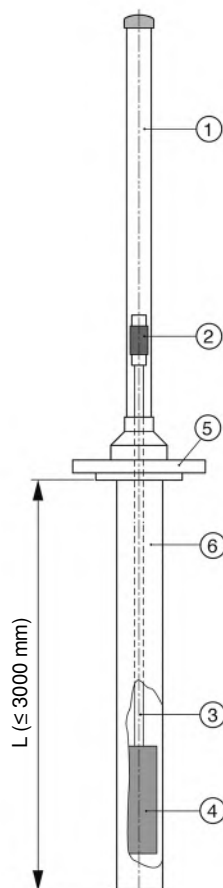
584-01 /1

## CODE NUMBERS AND REFERENCES

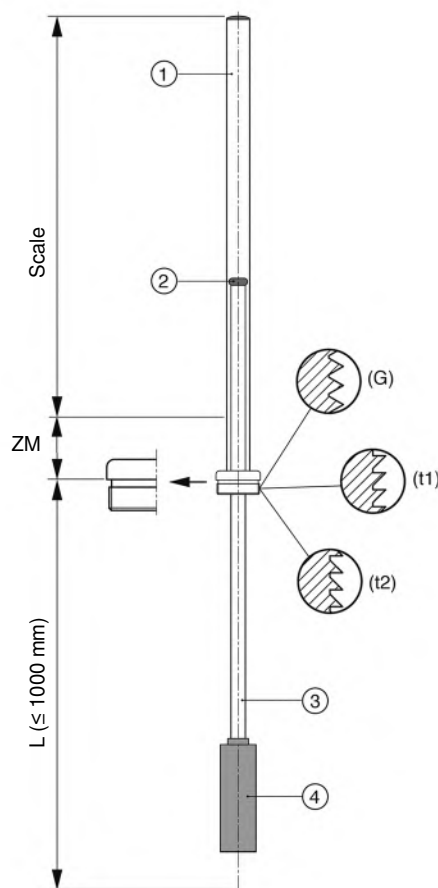
Code	Reference	Description
584 300	FS4 PP-PVC	Standard model, PPH (float & stem), PVC (guiding tube & flange)
584 310	FS4 PVC	Standard model PVC*
584 400	FS4 PP	Standard model PPH*
584 520	FS4 F PVC	FS4 Fût PVC* (fitting in PPH)
584 530	FS4 F PP	FS4 Fût, PPH*

## COMPONENTS

Details to provide to us for the design: Distance L; Liquid and its concentration; S.G.; Temperature



FS4 Standard



FS4 "Fût"

FS4 Standard		FS4 "Fût"	
(1)	Reading tube Ø 32, transparent PVC	(1)	Reading tube Ø 32, transparent PVC
(2)	Pointer (built-in magnet) PPH/ PVC	(2)	Pointer (built-in magnet), PVC
(3)	Stem, PVC or PPH	(3)	Stem, PVC or PPH
(4)	Float Ø 50 mm, PVC or PPH	(4)	Float Ø 50 mm, PVC or PPH
(5)	Loose flange ND 65, PVC or PPH	(G)	BSP 2", PPH
(6)	Guiding tube O.D. 63 mm, PVC or PPH	(t1)	"Trisure" type 1 (Metric buttress thread Ø M57; pitch 4 mm), PPH
-	-	(t2)	"Trisure" type 2 (Metric buttress thread Ø M57; pitch 4 mm), PPH
-	-	ZM	Blind zone 100 mm (zone morte)

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Tank top level indicator  
**FS4**

30-10-2018

D-584.01-EN-AE

NIV

584-01 /2

# Level controller SECURICUVE



- Lack of liquid detection (drop of level)
- Positive active detection
- Compact
- Easy to test its integrity on site
- Material: Or PPH or PVDF

## APPLICATION

- Level drop detection in tanks of surface-treating process
- Protection against overheating following evaporation or tank leaking, or default on chemical refilling

## DESCRIPTION

A float (1) at the bottom of a stem (2) moves a magnet (3) inside the head housing (4).

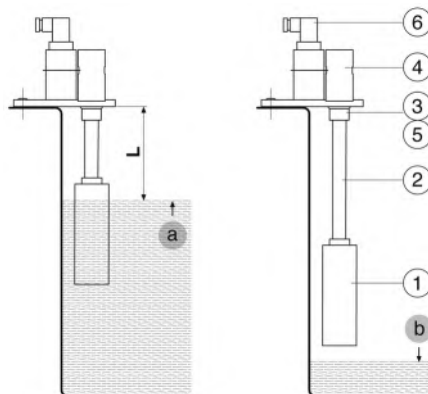
The fluid maintains the equipment (float, stem and magnet) in highest position "a" (normal status).

When the fluid level is going down, the equipment comes in lowest position, down to block on stopper (5), position "b".

The switch BSM (6) changes from normal status to alarm status (BSM: data-sheet 585-01).

To test the complete system, it is sufficient to push down the float to the lowest position or by draining part of the container.

For a safe operating condition it would be better to test regularly the complete system.



## TECHNICAL FEATURES

Float, stem, bracket, head	Or PPH, or PVDF
Temperature max.	PPH = 105 °C / PVDF = 140 °C
Pressure	Atmospheric
Fitting	Bracket in PPH or PVDF, 60x150 mm, 10 mm thick

### CONTACT BSM 501 (not included)

Rated voltage	4 ... 250 V AC; 4 V ... 30 V DC
Rated current	1 mA ... 3 A (AC or DC)
Switch	Microswitch bi-stable, change-over
Connector	Plug according DIN 43650
Cable	Cross section 1,5 mm <sup>2</sup> max.
Cable gland	PG 13.5
Ambient temperature	-20 ... +90 °C
Housing	Translucent polycarbonate, IP 65

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Level controller  
**SECURICUVE**

02-04-2019

D-584.02-EN-AA

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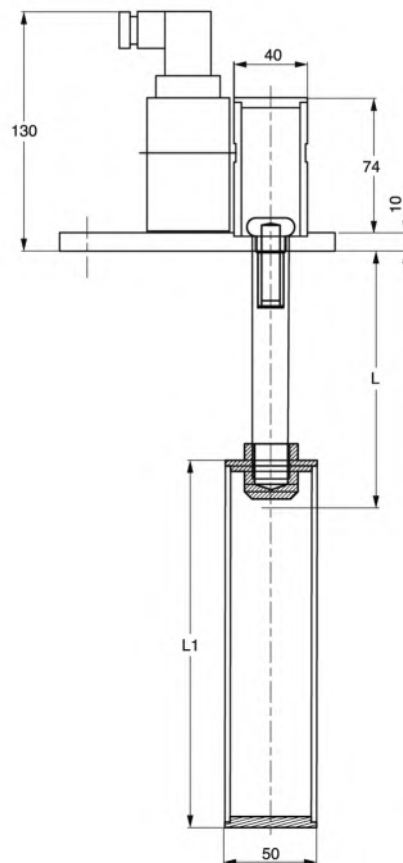
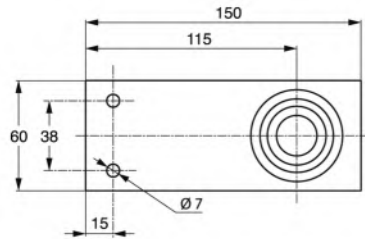
584-02/1

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
584 500	SECURICUVE-PPH	SECURICUVE, PPH Controller
584 550	SECURICUVE-PVDF	SECURICUVE, PVDF Controller
585 100	BSM 501	Level switch with collar

**Mandatory:** Ordering information must precisely fix the trigger point distance L (L = . . . mm)  
(L max. = 500 mm)

## DIMENSIONS



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Level controller  
**SECURICUVE**

02-04-2019

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584-02/2

# Level switches with micro-switch BSM 501 - BSM 515



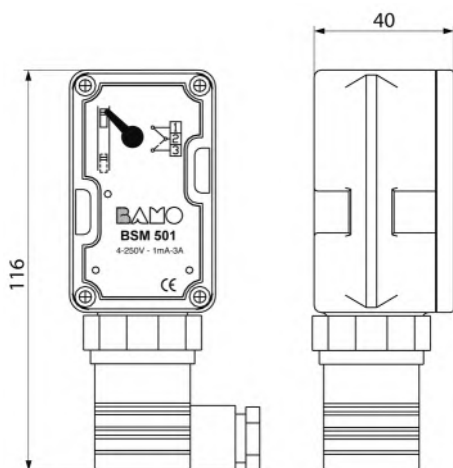
- High switching power
- Bistable switch
- Protection: IP 65

## PRINCIPLE

A magnetic handle is actuated by an external float or counterweight, it operates the micro-switch causing electrical contact. Components, such as screw terminal, are fitted on PCB; Device is rated IP 65; Connector is a 3-pole cable plug acc. DIN EN 175301, with PE terminal 13.5; Pipe clamps allow fitting on tube diameters 32 to 63 mm.

## TECHNICAL FEATURES

Rated voltage	4 ... 250 V AC; 4 ... 30 V DC
Rated current	1 mA ... 3 A (AC or DC)
Contact	Bistable micro-switch, change-over contact
Gap between 2 switches	40 mm, as a minimum, plans at 120°
Connector	Dismantable; 3-pole cable plug acc. DIN EN 175301
Electrical connection	Cable cross section: 1.5 mm <sup>2</sup> max.
Cable output	PG 13.5
Ambient temperature	-20 ... +90 °C
Housing	Polycarbonate
Fittings	Pipe clamps, or stainless steel or plastic acc. O.D.
Protection	IP 65 according to EN 60 529
CE Marks	Acc. to Guidelines 2006/95/EG (low Voltage), 89/336/EEC (EMV)



## ACTUATORS FOR BSM 501

Code	Reference	Description
570 075	GNR 51	PPH float for glass tube Ø 34.5 x 2.75 mm
570 080	GNR 52	PPH float for tube Ø 32 x 2.4 mm
570 082	GNR 53 PVDF	PVDF float for tube Ø 32 x 2.4 mm
570 085	GNR 62	PPH float for tube Ø 63 x 3 mm
583 403	CP63/SFA	Counterweight, red PVC, for tube Ø 63 x 3 mm
583 404	CP40/SFA	Counterweight, red PVC, for tube Ø 40 x 2 mm

## ACTUATORS FOR BSM 515

Code	Reference	Description
560 055	F-Magtop 1	AISI 316 Float; SG = 1; P. < 16 bar; -25...+160 °C
560 056	F-Magtop 0,8	AISI 316 Float; SG = 0.8; P. < 16 bar; -25...+160 °C

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
585 010	BSM 501 / J	Level switch for JAR
585 100	BSM 501	Level switch for SFA, SFA/E, GNR 6, GNR 5 & FS4
585 163	BSM 501 / 63	Level switch for SFA, SFA/E & GNR 6
585 515	BSM 515 MAG	Level switch for stainless steel MAGTOP

BSM 515 is not convenient for plastic MAGTOP series.

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Level switches with  
micro-switch  
**BSM 501 - BSM 515**

30-09-2017

D-585.01-EN-AC

585-01 / 1



# Magnetic level contacts BRK 60 - BRT 60



BRK 60 / 32

- **Switching power: 60 VA**
- **Bi-stable, change-over contact**
- **IP 55 casing, in ABS**
- **For tubes of O.D. 32 up to 63 mm**
- **High temperature version (BRT)**

## APPLICATIONS

Compatible with our counterweights and floats:

- Remote alarm signals: Rising or drop of liquid level
- Pump automation with 2 BRK and 1 Relay ES 2001

*These devices must not be used on vibrating machines or where there is a risk of shocks or vibrations.*

## DESCRIPTION

A Float or a counterweight with a built-in magnet, drives a Reed contact integrated to a PCB inside a casing in ABS, IP55. Electric connections are on screw connectors.

Level contacts BRK / BRT are fixed with a collar on the measuring tube of level indicators O.D. 32, 40, 60.3 or 63 mm. See the table Codes & references for compatibilities with actuators.

The contact is bi-stable, change-over with a switching capacity of 60 VA. The contact remains in position after the actuator (float or counterweight) passes in front of the BRK/ BRT. The contact returns to its original position only when the actuator passes back in the other direction.

### Accessories: Relay ES 2001 (data-sheet 250-01)

- Relay ES 2001 increases the switching power of equipment.
- Pump or valve for filling or draining with 2 level contacts BRK plus 1 relay ES 2001.



BRK 60 / MAG

## TECHNICAL FEATURES

Switching power	60 VA / 230 V AC / 1 A
Contact	Reed contact, bi-stable, change-over contact
Casing	BRK: ABS; BRT: Aluminum
Protection	IP 55
Temperature limits	BRK: -40 ... +80 °C BRT: -40 ... +200 °C
Collars	Standard is stainless steel for tubes O.D. 32, 40, 60.3 or 63 mm

**EC Conformity: The instrument meets the legal requirements of the current European Directives**

## CODE NUMBERS AND REFERENCES

Code	Reference	Compatibility
560 102	BRK 60 / MAG	For MAGTOP only
560 120	BRT 60 / MAG	For MAGTOP, high temperature
570 050	BRK 60 / 32	For GNR 5 and FS4
570 040	BRK 60 / 40	For tube O.D. 40 mm
583 050	BRK 60 / SFA	For tube O.D. 63 mm
583 890	BRK 60 / SFA/CR	For SFA/CR and CN, only



BRT 60 / 63

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**Magnetic level contacts  
BRK 60 - BRT 60**

03-04-2019

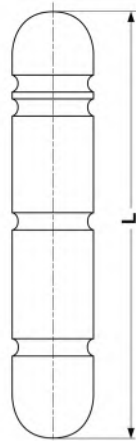
D-585.02-EN-AC

**NIV**

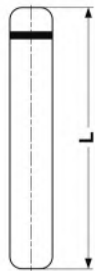
**585-02/1**

# Actuators for level switches

## FLOATS – COUNTERWEIGHTS



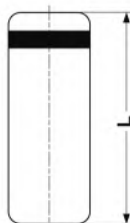
F-MAGTOP



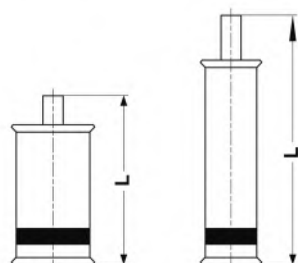
GNR 51



GNR 52



GNR 62



CP63/SFA



CP40/SFA

### PRINCIPLE

Our floats and counterweights have built-in magnets dedicated to actuate our level switches.

### CODE NUMBERS AND REFERENCES

Code	Reference	Description
560 055	F-Magtop 1	AISI float; d = 1, Pressure <16 bar, -25...+160 °C
560 056	F-Magtop 0,8	AISI float; d = 0,8, Pressure <16 bar, -25...+160 °C
570 075	GNR 51	PPH float for glass tube Ø 34,5 x 2,75
570 080	GNR 52	PPH float for tube Ø 32 x 2,4
570 081	S 32	PPH float for plastic tube Diam. 40 x 2 mm
570 082	GNR 53	PVDF float for tube Ø 32x2,4
570 085	GNR 62	PPH float for tube Ø 63 x 3
583 403	CP63/SFA	PVC counterweight, red, for tube Ø 63 x 3
583 404	CP40/SFA	PVC counterweight, red, for tube Ø 40 x 2

### TECHNICAL FEATURES

Reference	Ø [mm]	L [mm]	Mass [g]
F-Magtop 1	50	260	260
F-Magtop 0,8	50	260	260
GNR 51	27	160	55
GNR 52	25	180	50
S 32	34	150	95
GNR 53	27	185	80
GNR 62	52	132	170
CP63/SFA	50	95	185
CP40/SFA	32	140	155

### HYSTERESIS

Float	BRK 60	BSM 501	BSM 515	BRT
GNR 51	10 mm	35 mm	-	-
GNR 52	10 mm	28 mm	-	-
S 32	10 mm	30 mm	-	-
GNR 62	10 mm	30 mm	-	-
CP63/SFA	10 mm	30 mm	-	-
MAGTOP	10 mm	-	35 mm	10 mm

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Actuators for level switches  
**FLOATS – COUNTERWEIGHTS**

20-06-2018

D-585.03-EN-AB

NIV

585-03/1

# Continuous level transmitter RTM



- Output signal: or 4-20 mA or resistor
- Customized models
- Direct mounting on top of a tank
- Direct mounting on MAGTOP and SFA series

## APPLICATIONS

- Continuous level measurement on containers

## DESCRIPTION

The RTM transmitter consists of a Reed chain (REED contacts connected by resistors) switching when magnetic float passes in front. The resulting resistor value is directly in correspondence with the level. The necessary magnetic field is created by the MNR 6/7, MAGTOP floats or SFA counterweight.

The T2F transmitter in the head converts the resistor value into a 4-20 mA signal.

Manufactured according to your application; Installation and commissioning are simplified on site (factory calibration).

Measurement display: The RTM may be connected to a BAMOWIZ (data-sheet 217-01) or to an ITU unit (data sheet 222-03).

## TECHNICAL FEATURES

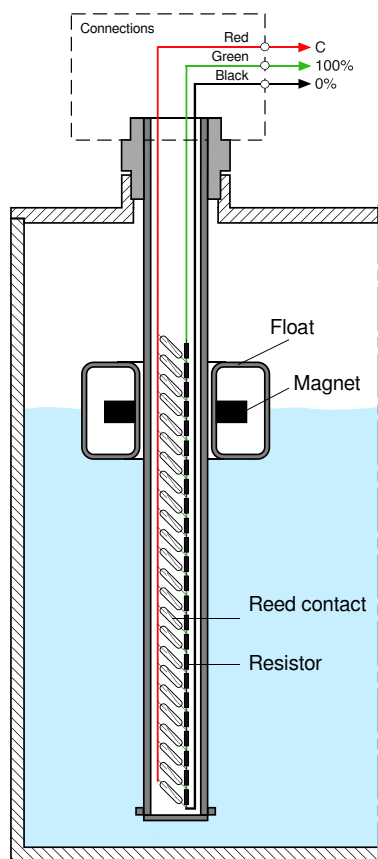
Measuring height	From 250 mm up to 2,000 mm <i>See table "Codes and References"</i>
Temperature	PVC-U: 0 ... +50 °C; PPH: 5 ... +80 °C PVDF: 0 ... +100 °C; AISI 316L: -10 ... +110 °C
Pressure	1 bar max. at 20 °C for plastic versions 20 bar max. at 20 °C for AISI 316L version

### Materials:

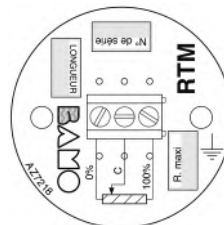
Stem and fitting	PVC, PP, PVDF, or AISI 316L
Float	PP, PVDF, or AISI 316L
Head housing	PBT for plastic versions, IP65 Aluminum for AISI 316L version, IP65

### Output signal:

Resistor output	from * xΩ to 10 kΩ
2-wire transmitter	4-20 mA; Power supply: 13 ... 30 V DC
Accuracy	By steps of 10 mm (resolution)



Principle



PCB: Potentiometric output

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## Continuous level transmitter RTM

12-02-2020

D-586.01-EN-AB

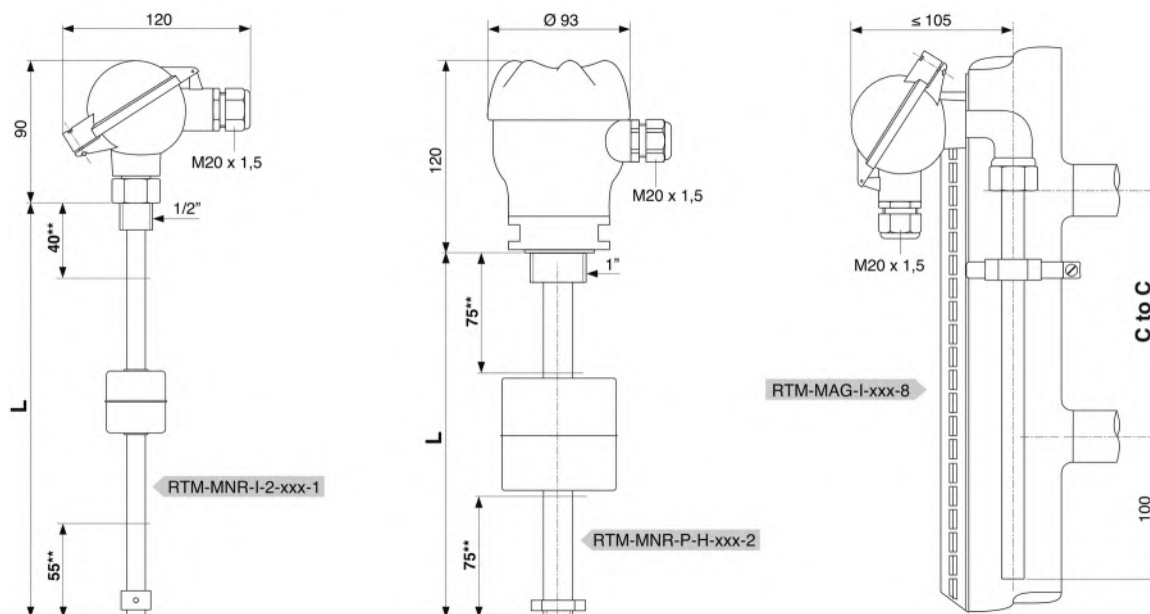
NIV

586-01 /1

## CODE NUMBERS AND REFERENCES

Code	Reference	Materials		Measuring distance (L)* [mm]	
		Stem and fitting	Float	Min.	Max.
586 051	RTM/MNR 6/I	AISI 316 L	AISI 316 L	500	1000
586 101	RTM/MNR 7/PVC	PVC	PP	250	1500
586 201	RTM/MNR 7/PP	PP	PP	250	1500
586 301	RTM/MNR 7/PVDF	PVDF	PVDF	250	1500
586 401	RTM/MNR 7/I	AISI 316 L	AISI 316 L	250	2000
586 501	RTM/MAG/SFA	AISI 316 L	-	<i>For MAGTOP or SFA equipment</i>	
Accessories					
601 333	T2FR-5333	2-wire transmitter; 4-20 mA			
600 002	MONT-T2F	Calibration and mounting of T2F on RTM			

## DIMENSIONS



Measuring height = (Total height L) - (Sum of dead zones) \*\*

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Continuous level transmitter  
**RTM**

12-02-2020

D-586.01-EN-AB

NIV

586-01 /2

# Hydrostatic level transmitter NIVAPRESS SGE-25

- Measuring ranges up to 500 m H<sub>2</sub>O
- Probe: AISI 316 L
- Diaphragm: Hastelloy
- Protection against overloads
- ATEX or DNV certification



## APPLICATIONS

Hydrostatic level transmitter NIVAPRESS SGE-25 is convenient for measuring clear liquids, stored in opened tanks and wells. It is recommended for monitoring and control of submersible pumps.

## DESCRIPTION

The NIVAPRESS SGE25 probe is immersed in the liquid. The pressure on the sensor increases proportionally with the depth of immersion.

The pressure is measured at the immersion depth of diaphragm, connected to atmosphere through a capillary inside the cable. The active sensing element is a piezoresistive type isolated by a very strong hastelloy diaphragm. An electronic amplifier operating in connection with the sensor, converts the measurement into a 4-20 mA or 0-10 V analog signal.

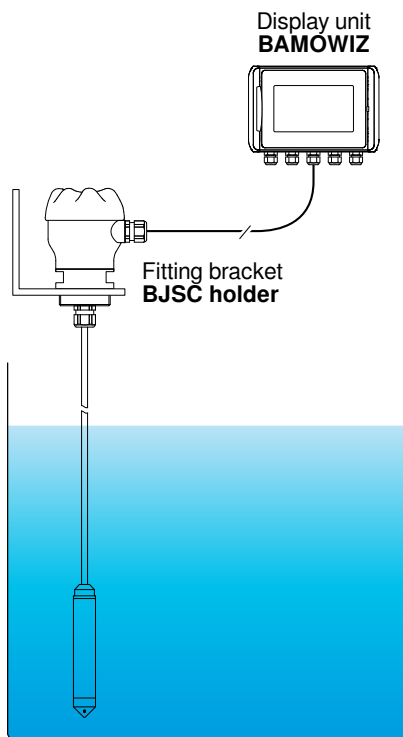
The anti-surge circuit protects the instrument from damages caused by atmospheric disturbances or high power devices.

### Precautions for installation:

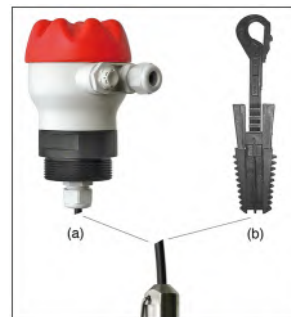
The installation of the NIVAPRESS SGE-25 is simplified by the use of a fastening system, such as a suspension clip (a) or/and a BJSC holder (b). The probe can hang freely at the end of the cable or lie down at the bottom of the tank.

The junction box BJSC with pressure compensation, allows to fix the sensor and ensures the balancing of atmospheric pressure through an integrated vent on the front of the housing. It significantly reduces the risk of entry of dust and moisture. It is also recommended to extend the life of the probe cable.

A cable extension could be done with a standard cable. For large cable distances it is necessary to use the box junction BPS102 (wall mount) with surge protection device.



Standard installation



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Hydrostatic level transmitter  
**NIVAPRESS SGE-25**

08-04-2019

D-590.03-EN-AD

NIV

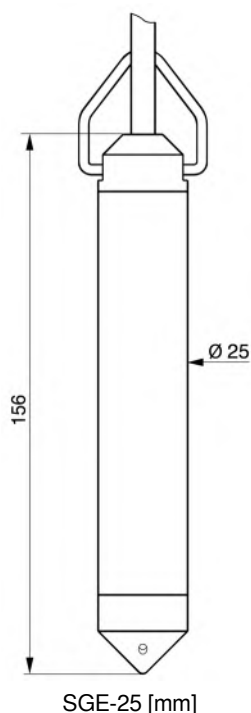
590-03/1

## TECHNICAL FEATURES

Measuring ranges	1 m WC	4 m WC	0...10 / 500 m WC
Acceptable override	40 times F.S.	25 times F.S.	10 times F.S. (700 m WC max.)
Accuracy	0.6 %	0.3 %	0.2 %
Temperature error	0.3 %/ 10 °C (average) 0.4 %/ 10 °C (max.)		0.2 %/ 10 °C (average) 0.3 %/ 10 °C (max.)
Long time stability	0.1 % or 1 cm WC/ year		
Hysteresis	0.05 %		
Temperature compensation	0... +40 °C		
Operating temperature	-25 ... +40 °C		
Output signal/ supply	Analogue 4-20 mA 2-wire; Supply: 8 to 36 V DC (9 to 28 V DC for EEx version)		
Protection	IP68		
Body	AISI 316 L		
Diaphragm	Hastelloy C276		
Cable	PUR (polyurethane)		
OPTIONS			
Version i.s. (4-20 mA)	<b>II 1G EEx ia IIC T4 / T5 / T6</b>		
Version 0-10 V	0-10 V 3-wire; Supply: 15 to 30 V DC; No anti-surge protection; Not available in EEx version		
Marine Certification (MR)	DNV GL		
Temperature compensation	-10 ... +70 °C		
Cable	PTFE		

CE Marks: EN 60079-02: 2006 – EN 50303: 2004 – EN 60079-26: 2007 – EN 60079-11: 2007

## DIMENSIONS



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Hydrostatic level transmitter  
**NIVAPRESS SGE-25**

08-04-2019

D-590.03-EN-AD

**NIV**

**590-03/2**



## CODE NUMBERS AND REFERENCES

- Standard models available from stock:

Code	Reference	Description
590 711	SGE-25-K-1-003	NIVAPRESS SGE-25, 4-20 mA output, range 0 ... 1 m WC, 3m long cable
590 721	SGE-25-K-2-004	NIVAPRESS SGE-25, 4-20 mA output, range 0 ... 2 m WC, 4m long cable
590 731	SGE-25-K-3-007	NIVAPRESS SGE-25, 4-20 mA output, range 0 ... 5 m WC, 7m long cable
590 741	SGE-25-K-4-012	NIVAPRESS SGE-25, 4-20 mA output, range 0 ... 10 m WC, 12 m long cable

### Accessories

590 799	BJSC	Holder (see data-sheet 590-04)
590 798	Bracket	PVC angle bracket
520 620	CE200 2"G PP	PP Counter-nut, 2" G
590 831	BPS 102	Extension box, surge protection
520 919	Cable clip	Suspension clip for 2 cables

- Customized models:

#### Model

##### Outputs

- K** 4-20 mA (2-wire)
- H** 0-10 V (3-wire)
- X** 4-20 mA (ATEX)

##### Measuring range

- 1** 0... 1 m WC
- 2** 0... 2 m WC
- 3** 0... 5 m WC
- 4** 0... 10 m WC
- 5** 0... 25 m WC
- 6** 0... 40 m WC
- 7** 0... 60 m WC
- 8** 0... 100 m WC
- 9** Other scale (500 m Water Column max.)

##### Cable length

- 00 1** 1 m
- 01 2** 12 m
- 1 0 0** 100 m

(Any length from 1 to 500 m, may be supplied, on request)

SGE-25 K 4 01 2

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Hydrostatic level transmitter  
**NIVAPRESS SGE-25**

08-04-2019

D-590.03-EN-AD

**NIV**

**590-03/3**

# Junction box, atmospheric pressure balanced BJSC



- Head housing in PBT
- Screwed tap
- Protection IP 65
- Filtering aerator for atmospheric pressure balance
- Fitting BSP 2"

## APPLICATIONS

BJSC is designed to hold cable suspended sensors; With its integrated atmospheric pressure balanced housing, it is convenient for hydrostatic level sensors NIVAPRESS, INTERNIV and BAMONIV.

## DESCRIPTION

The fixing of the suspended sensors is carried out by means of the cable gland, centered below the fitting. For aggressive chemicals, it is recommended to use the model BJSC-A with a PVDF cable gland.

A vent filter on the front of housing, insures a good balance with atmospheric pressure for hydrostatic level sensors.

BJSC includes inside the head:

- A cable tie to secure the cable.
- A terminal with screw connectors on a PCB to connect the sensor cable and the extension cable to PLC.

## TECHNICAL FEATURES

Head housing	PBT glass fiber reinforced
Protection	IP 65 (EN 60.529)
Fitting	BSP 2", polyethylene (black color)
Ambient temperature	-20 to +60 °C
Connections	Screw connectors, for cables 2.5 mm <sup>2</sup> max.
Cable glands	M20 x 1.5 (cable Ø 5 ... 9 mm); 2 cable glands
Materials:	
	BJSC: Polyamide with seal in elastomere (standard)
	BJSC-A: PVDF with seal in FPM (acid version)

**Aggressive chemicals: Standard BJSC is not recommended. Use the model BJSC-A with cable gland in PVDF (FPM seal).**

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
590 799	BJSC	Junction box BJSC, (polyamide cable gland)
590 797	BJSC-A	Junction box BJSC-A (PVDF cable gland)
755 501	SP/330	Stainless steel 316 support
590 798	SE/PVC/2"	Angle bracket, PVC
520 620	CE200 2"G PP	PP fixing nut, BSP 2"



Application example

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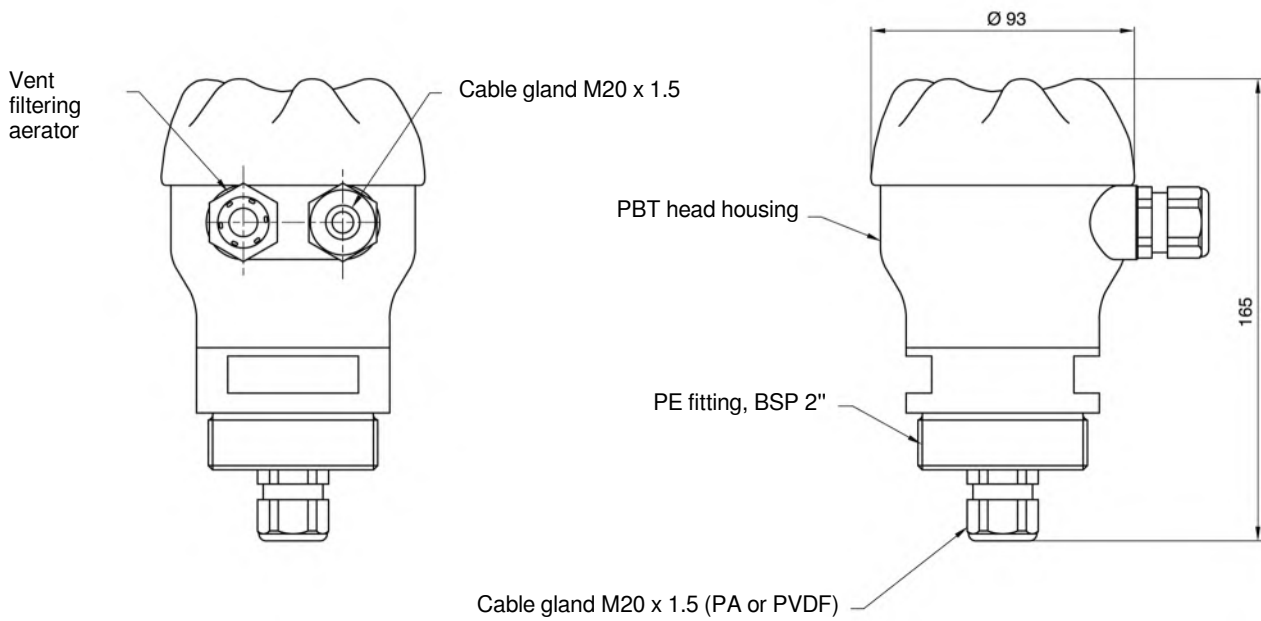
Junction box, atmospheric  
pressure balanced  
**BJSC**

09-04-2019

D-590.04-EN-AB

590-04 /1

## DIMENSIONS



### Accessories:

The stainless steel holder is designed for an horizontal surface and the PVC angle bracket for wall mounting.



**BJSC**  
Stainless steel holder



**BJSC**  
PVC angle bracket

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Junction box, atmospheric  
pressure balanced  
**BJSC**

09-04-2019

D-590.04-EN-AB

590-04/2

# Electronic gauge for diesel INTERNIV 590

- For storage tanks of diesel (fuel oils)
- Measuring ranges: Up to 3 m
- Output signal: 4-20 mA, power 8 ... 32 V DC
- Compact, robust probe (stainless steel)
- PVC cable compatible with diesel



## APPLICATIONS

The level gauge INTERNIV is dedicated for continuous level measurement of fluids in storage tanks, opened to atmosphere and with a fill height up to 3 m.

The gauge is perfectly adapted for monitoring and control of diesel level in storage tanks.

The optional display module allows the operator to read instant level and to set up level alarm thresholds.

## DESCRIPTION

The gauge INTERNIV 590, is in immersion in the liquid. The hydrostatic pressure is proportional to the depth of immersion.

Pressure is measured on the diaphragm, differential with atmospheric pressure is assumed through a capillary tube all along the cable. A built-in amplifier convert the measurement in a 4-20 mA signal.

This amplifier is protected against short circuits and reverse polarity for a safe installation.

### Precautions:

Installation of gauge INTERNIV 590 is simplest by use of a fitting on tank and/or a junction box BJSC.

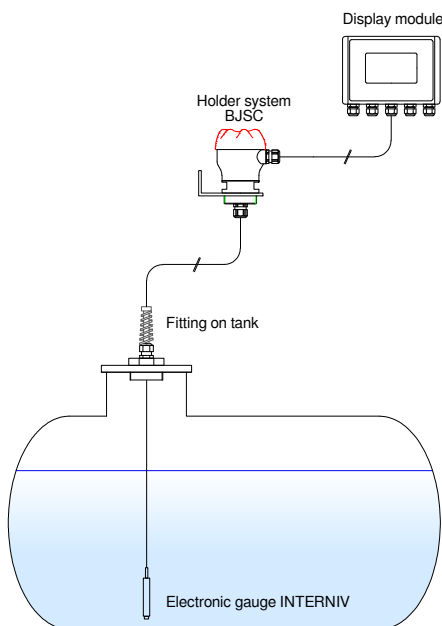
The probe may be freely suspended.

It is recommended not to let the probe laying down on the tank bottom to avoid deposits on the diaphragm.

Junction box BJSC, pressure compensated, hold the gauge (cable is secured) and a vent filter allows the balance with atmospheric pressure. BJSC is highly recommended to protect the gauge cable.

A complete measuring system includes:

- 1 Gauge INTERNIV
- 1 Display module:
  - BAMOWIZ: Digital and graphical display (data-sheet 217-01)
  - ITU: Versatile indicator (data-sheet 222-04)
  - BMG 72: Galvanometric indicator (data-sheet 206-01)
- 1 Tank fitting, and, 1 holder



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Electronic gauge for diesel  
**INTERNIV 590**

09-04-2019

D-590.06-EN-AD

**NIV**

**590-06/1**

## TECHNICAL FEATURES

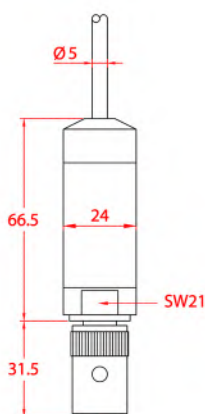
Measuring range	1 m WC (1190 mm of diesel)	1.6 m WC (1900 mm of diesel)	2.5 m WC (2975 mm of diesel)
Pressure	100 mbar	160 mbar	250 mbar
Overpressure limit	1 bar		
Accuracy	≤ ± 1 % F.S.		
Long term stability	≤ ± 0.2 % F.S./ year (standard operating conditions)		
Temperature limits	-10...+70 °C		
Temperature compensation	0...+70 °C		
Error due to temperature	≤ ± 0.3 % F.S./ 10 °C		
Output signal; Power supply	Analogue 4-20mA, 2-wire; Power supply: 8 ... 32 V DC		
Response time	≤ 10 ms		
Protection	IP 68		
Materials	Body: AISI 304; Diaphragm: AISI 316L; Seal: FPM		
Cable	PVC (compatible with diesel, 6 m long)		
CE conformity	Directive EMC: 2014/30/EU		

## CODE NUMBERS AND REFERENCES

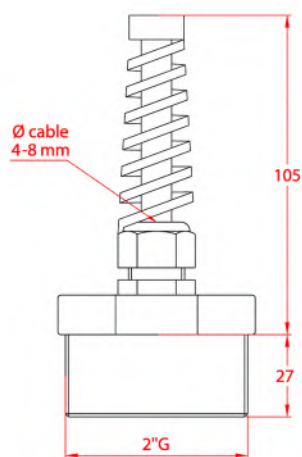
Code	Reference	Description
590 850	INTERNIV 590-6-100	Electronic gauge 100 mbar (1190 mm of diesel)
590 852	INTERNIV 590-6-160	Electronic gauge 160 mbar (1900 mm of diesel)
590 854	INTERNIV 590-6-250	Electronic gauge 250 mbar (2975 mm of diesel)
<b>Mounting accessories</b>		
590 799	BJSC	Junction box, gauge holder
590 798	Angle bracket PVC (2")	Angle bracket PVC 2" BSP F
520 620	CE200 PP 2" FG	Fixing nut PP 2" BSP F
590 860	RI20-PVC	Tank fitting PVC 2" BSP M
590 861	RI15-PVC	Tank fitting PVC 1" 1/2 BSP M
590 862	RI20-Inox	Tank fitting AISI 2" BSP M
520 919	PIN-ANC	Suspension clip

## DIMENSIONS

Electronic gauge



INTERNIV 590



Tank fitting  
590 860

Mounting accessories



Strength clip  
520 919

Junction box BJSC  
590 799

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Electronic gauge for diesel  
**INTERNIV 590**

09-04-2019

D-590.06-EN-AD

NIV

590-06/2

# Hydrostatic level transmitter, PVDF BAMONIV



- Level measurement on aggressive fluids
- Measuring cell: ceramic (96 %)
- Accuracy: 0.35 % F.S.
- Ranges from 0 ... 0.6 m up to 0 ... 10 m WC
- Fitting 1 1/2" in PVDF

## APPLICATIONS

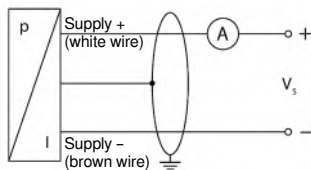
- Diesel, lubricating oils
- Viscous, pasty liquids
- Corrosive, acids and bases liquids

## DESCRIPTION

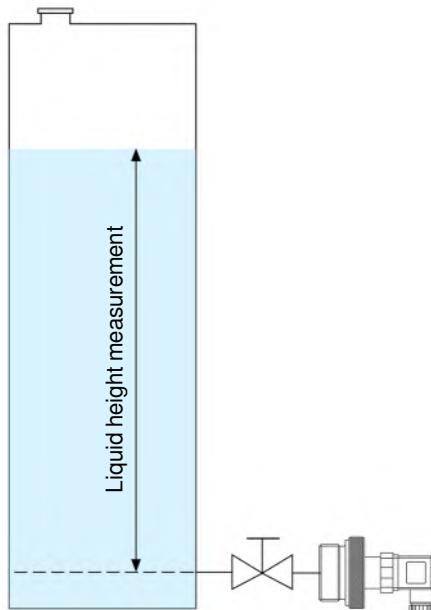
BAMONIV is designed for level measurement on aggressive, viscous or contaminated liquids in non-pressurized tanks.

It operates according to the principle of hydrostatic pressure measurement. The pressure on the sensor increases proportionally with the height of liquid. BAMONIV integrates ceramic cell and delivers a 4-20 mA signal proportional to the level.

To be mounted at the bottom of a non-pressurized tank; BAMONIV to be ordered or with a connector or with a cable output (PVC cable).



Electrical diagram



## TECHNICAL FEATURES

Measuring ranges	0... 0.6 / ... / 0 ... 10 m WC
Long term stability	$\leq \pm 0,1$ % FS / year
Accuracy	$\leq 0.35$ % FS

Materials:	
Measuring cell	Ceramic $Al_2O_3$ 96 %
Fitting	PVDF
Fitting type	BSP 1 1/2" - DIN 3852

Seal	FPM
Connection	Or on a connector ISO 4400, or with cable output (2 m long PVC cable)
Power supply	9 ... 32 V DC
Output signal	4...20 mA ; 2-wire
Load	At 20 mA, $R_{max.} = [(V_s - V_{s\ min}) / 0,02]$
Electrical protections	Reverse polarity, overload, short circuit
Emissions & interferences	In conformity with EN 61326
Response time	$\leq 7$ s
Overpressure	Less than 8 times the FS
Liquid temperature	-40 ... +125 °C
Temperature compensation	-20 ... + 80 °C
Temperature incidence	$\pm 0.1$ % FS / 10 K
Ambient temperature	-40 ... + 85 °C
Storage temperature	-40 ... +100 °C
Mass	About 200 g

**EC Conformity:** The instrument meets the legal requirements of the current European Directives

*For the electrical connection, a shielded cable is recommended.*

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Hydrostatic level transmitter,  
PVDF  
**BAMONIV**

19-02-2020

D-591.02-EN-AD

NIV

591-02/1



## CODE NUMBERS AND REFERENCES

Code	Description
591 400	BAMONIV, connector BSP 1 1/2"
591 500	BAMONIV, cable output; PVC cable, 2 m long

### Reference according the measuring scale

#### Model

#### Connection type

- 4** Connector ISO 4400
- 5** Cable output, 2 m

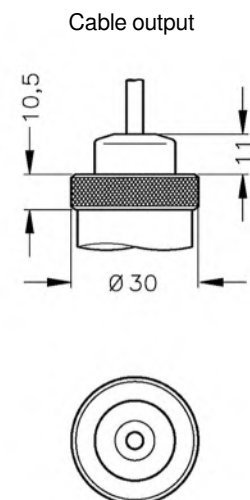
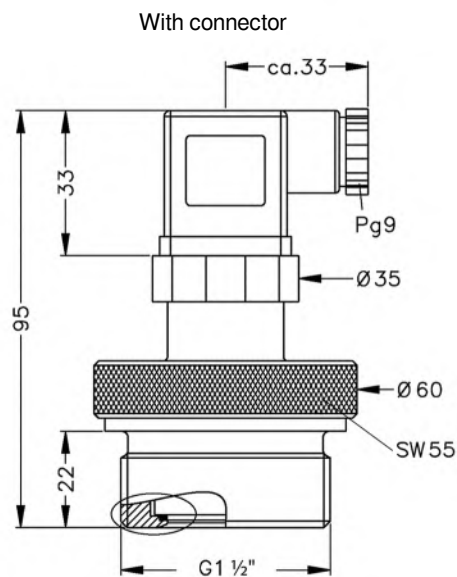
#### Measuring scales (Water Column)

- 01** 0... 0.06 bar / 0 ... 0.6 m WC
- 02** 0... 0.10 bar / 0 ... 1.0 m WC
- 03** 0... 0.16 bar / 0 ... 1.6 m WC
- 04** 0... 0.25 bar / 0 ... 2.5 m WC
- 05** 0... 0.40 bar / 0 ... 4.0 m WC
- 06** 0... 0.60 bar / 0 ... 6.0 m WC
- 07** 0... 1.0 bar / 0 ... 10 m WC

BAMONIV 4 03

## DIMENSIONS

### Assembly: hand tightening



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Hydrostatic level transmitter,  
PVDF  
**BAMONIV**

19-02-2020

D-591.02-EN-AD

NIV

591-02/2

# Hydrostatic level transmitter BAMONIV TPS

- Level measurement of aggressive liquids
- Measuring cell: ceramic (99.9 %)
- Accuracy: 0.35 % (option: 0.25 %)
- Measuring ranges up to 50 m Water Column
- Body: PVDF or PP

## APPLICATIONS

- Chemical industry
- Electroplating plants
- Waste water plants
- Neutralization process

## DESCRIPTION

BAMONIV-TPS is designed for hydrostatic level measurement in aggressive media that is clear or slightly contaminated. Wet parts are of PVDF or PP, the seal of FPM and the cable of FEP.

It measures the level according to the principle of hydrostatic pressure measurement. The probe is suspended with its cable, down to the tank bottom. The probe is in immersion in the liquid and delivers a 4-20 mA signal proportional to the immersion depth.

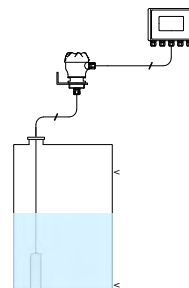
## TECHNICAL FEATURES

Power supply	9 ... 32 V DC
Output signal	4 ... 20 mA; 2-wire
Current limit	21 mA max.
Load limit	Rmax. = 450 Ω
Electrical protections	Against reversed polarity, short circuit
Accuracy	< ± 0.35 % F.S. - According IEC 60770
Temperature limits	-25 ... 100 °C (depends of configuration)
Temperature compensation	0 ... +70 °C
Temperature incidence	< ± 0.1 % FS / 10 K
Response time	≤ 0.2 s
Measuring cell	Ceramic Al <sub>2</sub> O <sub>3</sub> 99.9 % (aluminum oxide)
Measuring ranges	From 0...1 up to 0...50 m water column (See the table " Codes and references")
Body	PVDF or PP
Seal	FPM (EPDM on request)
Cable	FEP (standard; Limits: -25 ... 70 °C PUR; Limits: -25 ... 70 °C TPE; Limits: -25 ... 100 °C
Protection	IP 68

**EC Conformity** The instrument meets the legal requirements of the current European Directives



BJS junction box  
(recommended option)



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## Hydrostatic level transmitter BAMONIV TPS

13-03-2020

D-591.03-EN-AI

NIV

591-03/1

## CODE NUMBERS AND REFERENCES

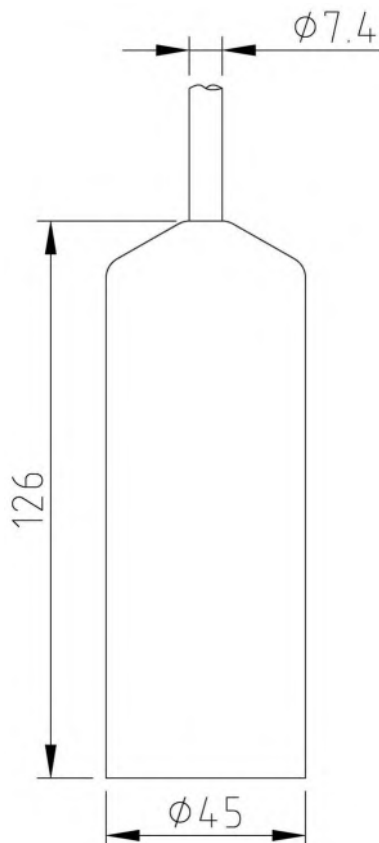
Code	Reference	Body	Range (Water Column)	Cable length
591 601	BAMONIV TPS 6 01	PVDF, FEP cable	0...1m	5m
591 602	BAMONIV TPS 6 02	PVDF, FEP cable	0... 1.6 m	5m
591 603	BAMONIV TPS 6 03	PVDF, FEP cable	0... 2.5 m	5m
591 604	BAMONIV TPS 6 04	PVDF, FEP cable	0...4m	6m
591 605	BAMONIV TPS 6 05	PVDF, FEP cable	0...6m	8m
591 701	BAMONIV TPS 7 01	PP, FEP cable	0...1m	5m
591 702	BAMONIV TPS 7 02	PP, FEP cable	0... 1.6 m	5m
591 703	BAMONIV TPS 7 03	PP, FEP cable	0... 2.5 m	5m
591 704	BAMONIV TPS 7 04	PP, FEP cable	0...4m	6m
591 705	BAMONIV TPS 7 05	PP, FEP cable	0...6m	10m

Other cable lengths on request.

### Accessories

Code	Reference	Description
590 797	BJSC-A	Holder BJSC-A (cable gland in PVDF)
590 799	BJSC2"	Holder BJSC
590 798	SE/PVC/2"	PVC angle bracket
520 620	CE 200	PP counter nut 2" BSP

## DIMENSIONS



Bottom view of the ceramic cell

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Hydrostatic level transmitter  
**BAMONIV TPS**

13-03-2020

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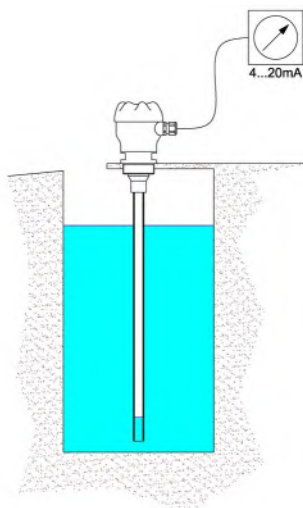
NIV

591-03/2

# Hydrostatic level transmitter MEMPRO



MEMPRO A (e.g. rigid tube version)



Application: Example

- Continuous level measurement
- The sensor is not in contact with liquid
- Reliable even with aggressive, viscous, dirty or crystallizing liquids
- Stable measurement with a venting module
- High measuring accuracy

## APPLICATIONS

Continuous level measurement for:

- Pressure-free containers
- Aggressive liquids
- Storage tanks
- And more ...

## DESCRIPTION

The MEMPRO works according to the hydrostatic pressure measuring principle. The output signal corresponds to the pressure of the atmosphere inside the measuring tube; The ceramic sensor is not touched by the liquid.

## TECHNICAL FEATURES

Power supply	12 ... 28 V DC; max. 5% effective ripple
Ambient temperature	-20 ... +60 °C
Liquid temperature	PVC: 0 ... +60 °C PP: 0 ... +90 °C
Output signal	4-20 mA; 2-wire transmitter
Head housing	PBT, glass fiber reinforced Protection: IP 65 according EN 60 529
Process connection	See ordering information
Measuring cell	Ceramic with EPDM sealing Capacitive type with temperature compensation Measuring ranges, turndown 1:5 available for the following scales (of WATER): 0- 1,000 mm 0- 2,500 mm 0- 4,000 mm 0- 10,000 mm
Accuracy	< 1% F.S.
Materials	Fitting BSP 2": PVC or PP Measuring tube: Same as fitting (or PVC or PP) Measuring hose: EPDM Sensor seal: EPDM
Connection for venting function	Female thread BSP 1/4" and hose nipple for Ø 4x1 mm hose
Accessories	Automated venting module MEMPRO BL

## EC Conformity

The instrument meets the legal requirements of the current European Directives

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Hydrostatic level transmitter  
**MEMPRO**

18-12-2019

D-592.01-EN-ABb

LEV

592-01 /1

## PRECAUTIONS

Due to the hydrostatic pressure measurement the reading depends on the liquids density; Therefore, the device may be not convenient when the density is strongly fluctuating. In such a case, the reading of level is affected; The use of an average value of the density may be a proper correction.

### Please note:

For osmosis and deionized water level measurements, where degassing phenomena occur, the MEMPRO must not operate without its ventilation function set up (see: MEMPRO BL venting unit).

For measurements close to the maximum of a scale and for liquids with density > 1 kg/dm<sup>3</sup>, the scale just above must be selected.



Vent valve



Venting unit MEMPRO BL

## ORDERING INFORMATION

Article-No. for all MEMPROs is: 592 700

### Hydrostatic level transmitter

#### Output signal

**A** 4-20 mA; 2-wire

#### Process connection

- R** Head with fixed measuring tube Ø20
- K** Head prepared for tube connection Ø20
- V** Head with hose fitting and mounting bracket

#### Material:

- 1** PVC
- 2** PP

#### Measuring scales:

- 1** 1,000 mm water column
- 2** 2,500 mm water column
- 4** 4,000 mm water column
- 10** 10,000 mm water column

#### Presetting:

**X** None

#### Fitting length/hose length:

**L=** mm

MEMPRO

(\*): Distance from sealing surface

Fittings BSP: 1", 1¼" or 1½" on request

MEMPRO A -R... : available on request as "silicone free version" (restrictions apply)

### Accessories:

#### Counterweights for EPDM flexible hose

- SW1** PVC counterweight
- SW2** PP counterweight

MEMPRO

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Hydrostatic level transmitter  
**MEMPRO**

LEV

592-01 /2

18-12-2019

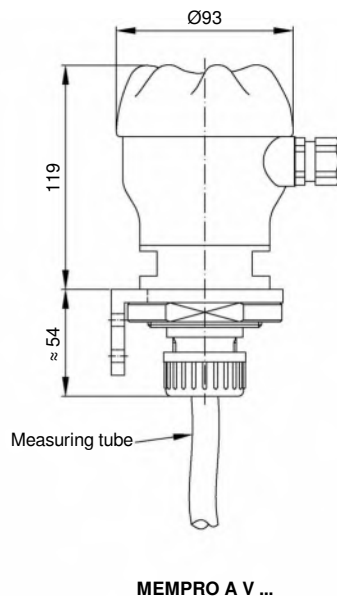
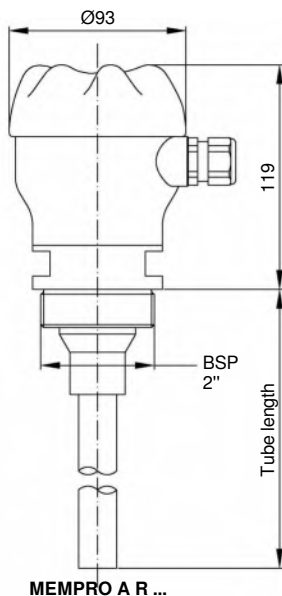
D-592.01-EN-ABb

## ORDERING INFORMATION (continued)

Code	Reference	Description
592 110	MEMPRO A R 1 1 X	PVC model BSP 2"; PVC measuring tube; Scale 1000mm Water column
592 130	MEMPRO A R 1 2 X	PVC model BSP 2"; PVC measuring tube; Scale 2500mm Water column
592 140	MEMPRO A R 1 4 X	PVC model BSP 2"; PVC measuring tube; Scale 4000mm Water column
592 210	MEMPRO A R 2 1 X	PP model BSP 2"; PP measuring tube; Scale 1000mm Water column
592 230	MEMPRO A R 2 2 X	PP model BSP 2"; PP measuring tube; Scale 2500mm Water column
592 240	MEMPRO A R 2 4 X	PP model BSP 2"; PP measuring tube; Scale 4000mm Water column

Please specify the required tube length with the order (from sealing surface)

## DIMENSIONS



## HOSE TYPE



Counterweights

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## Hydrostatic level transmitter MEMPRO

18-12-2019

D-592.01-EN-ABb

LEV

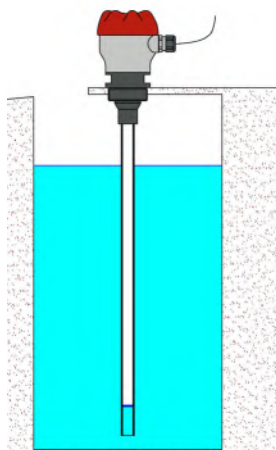
592-01 /3



# Hydrostatic level controller, 4 switching points MEMPRO S6.6



MEMPRO S6.6 (PVC tube version)



Example

- 4 Adjustable relay outputs, N.O. or N.C.
- The sensor is not in contact with liquid
- Adjustable hysteresis and delay time for each channel
- Automatic calibration for max. level
- Integrated timer for the venting function

## APPLICATIONS

- Universal level control for pressureless containers
- For aggressive fluids
- Storage container monitoring
- Batching operations
- And more ...

## DESCRIPTION

The MEMPRO S6.6 works according to the hydrostatic pressure measuring principle. The output signal corresponds to the pressure of the atmosphere inside the measuring tube.

The ceramic sensor is not touched by the liquid. On site, with the automatic calibration function, the instrument is paired to the tank size in a matter of minutes. Four trigger points can be assigned to level heights through the setting menu. All switching points have an adjustable delay time, an adjustable hysteresis and a switchable N.C./ N.O. function.

For a clogging or degassing liquid, or when the temperature fluctuates, the MEMPRO must be connected to a venting device (MEMPRO BL). The timer for venting function is integrated in the MEMPRO.

## TECHNICAL FEATURES

Power supply	24 V DC (9 ... 36 V)
Consumption	Max. 1 W
Ambient temperature	-20 ... +60 °C (MEMPRO S6.6) -15 ... +60 °C (MEMPRO C S6.6)
Liquid temperature	0... 60 °C, PVC version (MEMPRO S6.6) 0... 90 °C, PP version (MEMPRO S6.6) 0... 90 °C, AISI 316 version (MEMPRO C S6.6)
Output relays	3 contacts + 1 floating limit value contact (3 switches + 1; the fourth relay also usable as a timer output -venting function- )
Switching power	Rated: 250 V AC, 2A; 30 V DC, 1A

**Note: The contacts are not protected against overload. Provide external protective devices.**

Head housing	PBT, fibre-glass reinforced
Protection	IP 65 according EN 60 529
Electrical connection	Screw terminals, max. 1.5 mm <sup>2</sup>
Measuring cell	Ceramic with EPDM sealing (*)

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Hydrostatic level controller, 4  
switching points  
**MEMPRO S6.6**

13-03-2020

D-592.03-EN-AB

LEV

592-03/1

## TECHNICAL FEATURES (continued)

### (\*) Caution

The controller may only be used with fluids for which its vapours are compatible with the EPDM seal of the sensor. When EPDM is only partially resistant to the chemical, care must be taken that the seal never comes into direct contact with the liquid during operation, assembly and maintenance.

Accuracy	0.5% ± 0.5 Digit
Display in %	Resolution of 1 %
Reset hysteresis	Adjustable from 1 to 99 %
Signal filter	Adjustable from 1 to 9.9 s
Signaling on PCB	3 digits of 7 segments, LED display, 4 LEDs (relays)
Settings	Combined rotary / push switch
Connection for venting function	Through a hose (e.g. PVC 4x1mm) or by screwing a compressed air plug BSP 1/4" with tubing.

**EC Conformity: The instrument meets the legal requirements of the current European Directives**

## PRECAUTIONS

Due to the hydrostatic pressure measurement the reading depends on the liquid density; Therefore, the device may be not convenient when the density is strongly fluctuating.

In such a case, the reading of level is affected; The use of an average value of the density may be a proper correction.

### Please note:

For osmosis and deionized water level measurements, for process where degassing phenomena occurs, the MEMPRO must not operate without its ventilation function set up (see: MEMPRO BL venting unit).



Vent valve



Venting unit MEMPRO BL

## ORDERING INFORMATION

Article Nr: 5892800 for all MEMPRO S6.6

### Hydrostatic level controller, 4 trigger points

#### Process connection:

- R** Head with fixed measuring tube Ø20
- K** Head prepared for tube connection Ø20
- V** Head with hose fitting and mounting bracket

#### Materials

- 1** PVC
- 2** PP

#### Measuring scales

- 1** 1000mm Water column
- 2** 2500mm Water column
- 4** 4000mm Water column
- 10** 10000mm Water column

#### Presetting:

- None

#### Tube or hose length\*: for R & V types

**L=** mm

MEMPRO S6.6

(\*): Distance from sealing surface

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Hydrostatic level controller, 4  
switching points  
**MEMPRO S6.6**

13-03-2020

D-592.03-EN-AB

LEV

592-03/2

## ORDERING INFORMATION (Continued)

MEMPRO S6.6-R... and MEMPRO S6.6-K... are available on request as "out of silicone" version (restrictions apply).

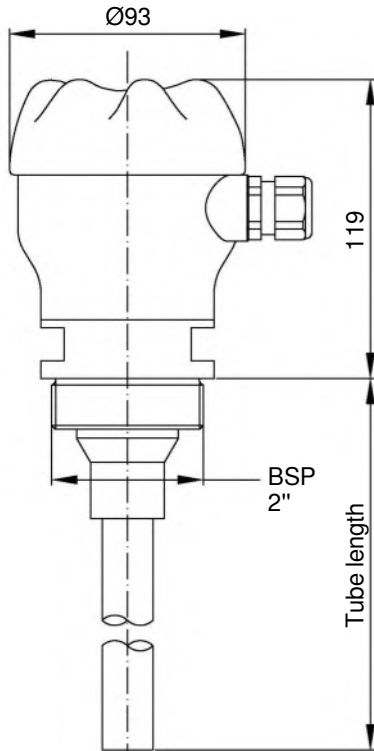
### Accessories:

#### Counterweights for EPDM flexible hose

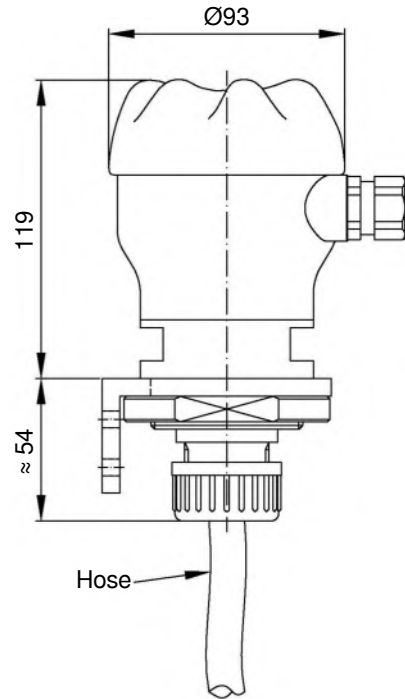
- SW1** PVC counterweight
- SW2** PP counterweight

MEMPRO

## DIMENSIONS



MEMPRO S6.6 R...



MEMPRO S6.6 V...

## HOSE TYPE



Counterweights

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Hydrostatic level controller, 4  
switching points  
**MEMPRO S6.6**

13-03-2020

D-592.03-EN-AB

LEV

592-03/3

# Ultrasonic level transmitter for liquids BAMOSONIC



- Measuring range from 0.2 to 8 m (liquids)
- Non-contact level measurement
- Power supply by 4-20 mA Loop
- IP67 Ingress protection
- Option : Plug-in display

## APPLICATIONS

BAMOSONIC measures continuously the level of liquid in a tank, without contact with the liquid.

- Storage tanks
- Weirs and open channels
- Waste water lifting units

## DESCRIPTION

BAMOSONIC is a high performance ultrasonic compact sensor with integrated transducer. This high reliable sensor is supplied by the 4-20 mA loop.

Installed on the tank roof, or above the liquid surface to be measured, the transmitters give analogue output proportional to liquid level  
BAMOSONIC is recommended for liquid level measurement in sumps or tanks, for tank contents measurement, or open channel flow measurement

Four keys provide for programming

With the help of the N-DIS plug-in display a full-parameter programming can be accomplished, the parameters of measurement and output can be set using the alphanumeric display module.

## TECHNICAL DATA

Transducer material	PP (Polypropylene) PVDF (Polyvinylidene fluoride)
Housing	Plastic PBT
Medium temperature	-30 °C ... +90 °C
Ambient temperature	-25 °C ... +70 °C
Pressure*	0.5 ... 3 bar (abs.)
Sealing	EPDM (PP model) FPM (PVDF model)
Ingress protection	Transducer IP 68 - Housing IP67
Accuracy	± (0,2% of measured distance + 0,05% of range) <i>Under optimal operating conditions and stabilized temperature</i>
Resolution	Depending on the measured distance < 2 m : 1 mm; 2...5 m : 2 mm; 5...8 m : 5 mm
Full beam angle	Between 5 et 7 °
Power supply	12...36 V DC / 48 ...720 mW
Output	Analogue 4-20 mA
Electrical connection	2 x M20 x 1.5 and 2x 1/2" NPT Cable : Ø6...Ø12 mm wire cross section: max.1.5 mm <sup>2</sup>
Electrical protection	Class III

\* For vacuum application please contact us

**EC Conformity:** The instrument meets the legal requirements of the current European Directives.



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Ultrasonic level transmitter for  
liquids  
**BAMOSONIC**

14-09-2018

D-597.06-EN-AF

**LEVEL**

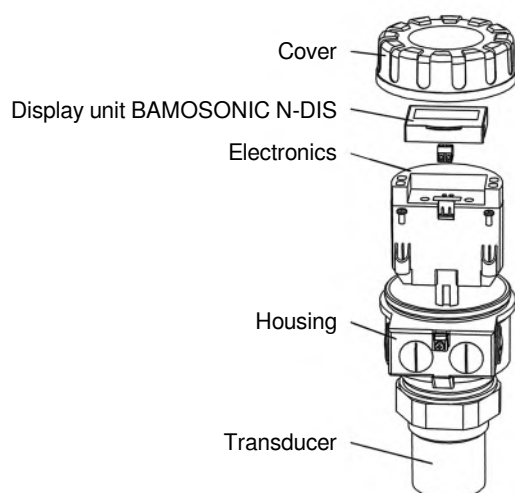
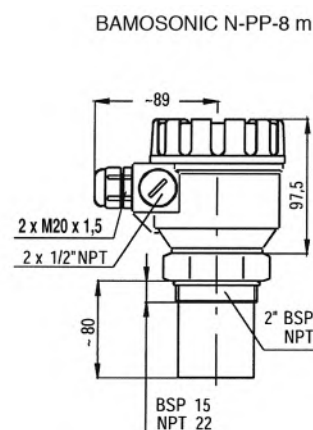
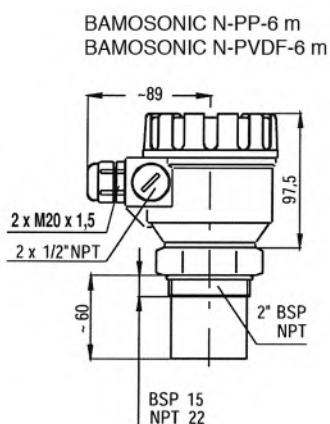
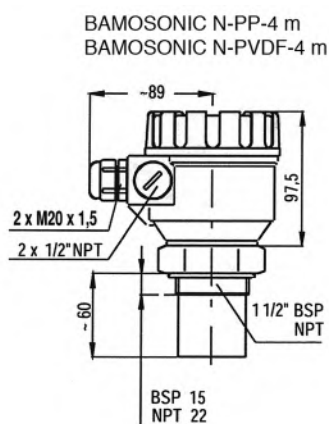
**597-06/1**

## CODE NUMBERS AND REFERENCES

Code	597 220	597 202	597 205	597 222	597 223
Designation (BAMOSONIC-N-xx-xx)	PP-4m	PP-6m	PP-8m	PVDF-4m	PVDF-6m
Transducer material	PP	PP	PP	PVDF	PVDF
Max. measuring range *	4 m	6 m	8 m	4 m	6 m
Min. measuring range*	0,2 m	0,25 m	0,35 m	0,2 m	0,25 m
Beam angle	6°	5°	7°	6°	5°
Connection	1 1/2"	2"	2"	1 1/2"	2"
<b>OPTION : Programming display BAMOSONIC DIS - N</b>					
Code	<b>597 902</b>				
Display	LCD, 6 digits, icons and graphic				

\*From transducer bottom end

## DIMENSIONS



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Ultrasonic level transmitter for liquids  
**BAMOSONIC**

14-09-2018

D-597.06-EN-AF

**LEVEL**

**597-06/2**

# Temperature probes Pt 100 (Standard on stock) TS Series



TS 111

## TS 111: Stainless steel probe, BSP 1/2"

Measuring range / Material	-50 ... +250 °C / AISI 316 L
Fitting	BSP-M 1/2"
Head housing	BAMO case, painted aluminum alloy
Stem	Ø 6 mm
Sensor	Pt 100 Ω at 0 ° C; 3-wire
Accuracy	Class B
Connections	On ceramic terminal block

Code	Stem length [mm]
610 113	50
610 114	100
610 115	150



TS 110

## TS 110: Stainless steel probe, without fitting

Measuring range / Material	-50 ... +250 °C / AISI 316 L
Fitting	None
Head housing	BAMO case, painted aluminum alloy
Stem	Ø 6 mm
Sensor	Pt 100 Ω at 0 ° C; 3-wire
Accuracy	Class B
Connections	On ceramic terminal block

Code	Stem length [mm]
610 050	150
610 100	300
610 150	500

### Options:

Compression fitting: AISI 316 L; BSP-M 1/2"; Code: 692 362  
 Compression fitting: AISI 316 L; BSP-M 1/4"; Code: 692 364



TS 131

## TS131: Plastic probe, BSP 1/2"

Measuring range / Material	-10 ... +105 °C / Stem in PPH -20 ... +140 °C / Stem in PVDF
Fitting	BSP-M 1/2"
Head housing	PP
Stem	Ø 12 mm; Length 500 mm
Sensor	Pt 100 Ω at 0 ° C; 3-wire
Accuracy	Class B
Connections	On ceramic terminal block

Code	Material
610 304	PPH
610 404	PVDF

### Options for all 3 types: Integrated 4-20 mA transmitter

Code	Fixed measuring range
601 157	0...+50 °C
601 158	0...+100 °C
601 159	0...+200 °C

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Temperature probes Pt 100  
(Standard on stock)  
**TS Series**

15-10-2020

D-610.02-EN-AB

TE

610-02/1



# Temperature probe with Pt 100 $\Omega$ sensor TS 11



- Sensor Pt 100  $\Omega$  at 0 °C
- Range from -50 to +250 °C
- Stem and fitting in AISI 316 L
- Head in aluminum alloy or in plastic

## REFERENCE TABLE

### Model

#### Fitting

- 0 None
- 1 BSP 1/2"
- 2 NPT 1/2"

#### Stem material

- I AISI 316 L

#### Stem length

xxx 50 ... 999 mm

#### Stem O.D.

- 06 6 mm (length max. 500 mm)
- 08 8 mm (length max. 800 mm)
- 10 10 mm (length max. 999 mm)

#### Sensor

- 3 Simplex 3 wires
- 4 Simplex 4 wires
- 6 Duplex 2 x 3 wires

#### Accuracy

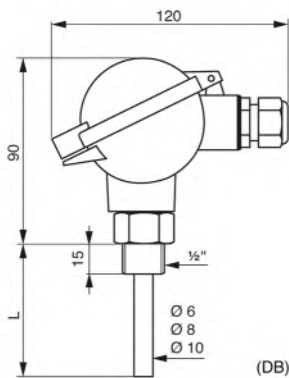
- A Class A
- B Class B

#### Connection

- C Ceramic terminal box
- T 4-20 mA Transmitter

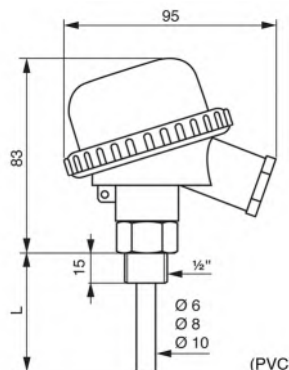
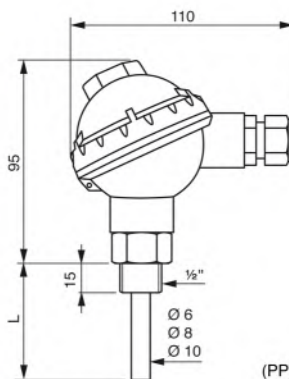
#### Head

- DB In aluminum alloy
- PVC In PVC
- PP In PP



TS 11 1 I 250 08 4 A T DB

(Example)



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Temperature probe with Pt  
100  $\Omega$  sensor  
**TS 11**

22-06-2018

D-611.01-EN-AB

TE

611-01 /1

# Plastic temperature probe, Pt 100 $\Omega$ TS 13



- Plastic probe
- Materials: PVC, PP, PVDF
- Sensor: Pt 100  $\Omega$  at 0 °C
- Range: from -20 °C up to 140 °C

## APPLICATIONS

Temperature measurements in aggressive fluids.  
Example: chemical industry, surface treatments, sewage / wasted water etc.

## DESCRIPTION

The TS13 probe is entirely designed with plastic materials.

Made to your application for aggressive environments, the TS13 probe reduces maintenance costs while maintaining the measurement quality of traditional metal probes.

## CODE NUMBERS AND REFERENCES

**Code** 613 000  
**Reference** See below to design your probe

### Model

#### Fitting

- 00** None
- 1** BSP 1/2"

#### Probe material (Stem & fitting)

- P** PVC (limits: -10 ... +60 °C)
- H** PPH (limits: -10 ... +105 °C)
- V** PVDF (limits: -20 ... +140 °C)

#### Stem length

**xxx** 50...999 mm

#### Stem O.D. in mm

**12** 12 mm

#### Sensor

- 3** Simplex 3-wire
- 4** Simplex 4-wire
- 6** Duplex: Two 3-wire

#### Accuracy

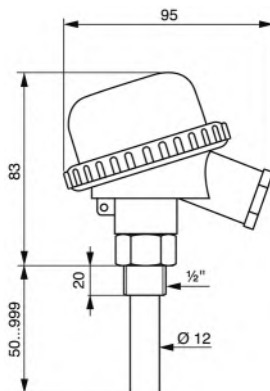
- A** Class A
- B** Class B

#### Connections

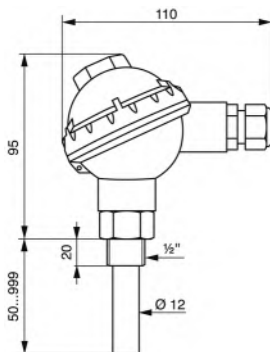
- C** Ceramic terminal
- T** 4-20 mA transmitter

#### Head housing

- PVC** PVC Head
- PP** PP Head
- PVDF** PVDF head (on request)



Example: Probe with PVC head housing



Example: Probe with PP head housing

TS 13 1 H 200 12 4 B T PP

(Example)

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Plastic temperature probe,  
Pt 100  $\Omega$   
**TS 13**

22-06-2018

D-613.01-EN-AD

TE

613-01 /1

# Ambient temperature probe TS 18



- Sensor: Pt 100  $\Omega$  at 0 °C
- Range: From -40 °C up to +75 °C
- Wall mount ABS housing
- Output signal: Or resistor or 4-20 mA

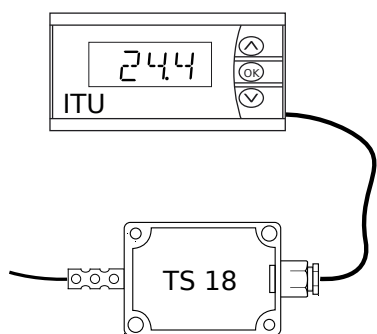
## APPLICATIONS

These probes are suitable for indoor, or for outdoor measurements of ambient temperature.

## DESCRIPTION

The sensor Pt 100  $\Omega$  at 0 °C is fixed inside a perforated housing in ABS for ambient temperature measurements. Connections on screw terminals 2, 3, 4-wire for resistor signal or 2-wire for 4-20 mA version.

To display the temperature we recommend our ITU units (data-sheet 222-03).



Display with ITU device (Option)

### Model

#### Measurement mode

- 0 Indoor
- 1 Outdoor

#### Accuracy

- A Class A
- B Class B

#### Connections

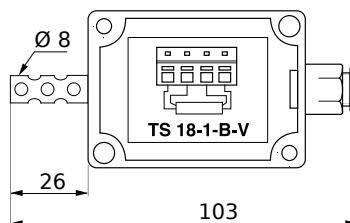
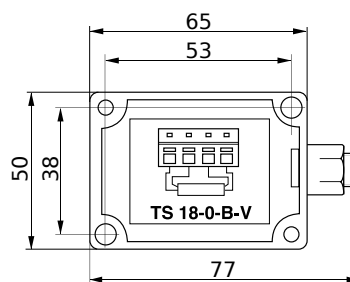
- V Screw terminals
- T Transmitter: 4-20 mA, 2-wire  
(Measuring range to confirm on P.O.)

TS 18 1 A V

## DIMENSIONS



ITU display unit (Option)



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Ambient temperature probe  
**TS 18**

04-10-2019

D-618.01-EN-AB

TE

618-01 /1

# Thermowells, welded body TWS

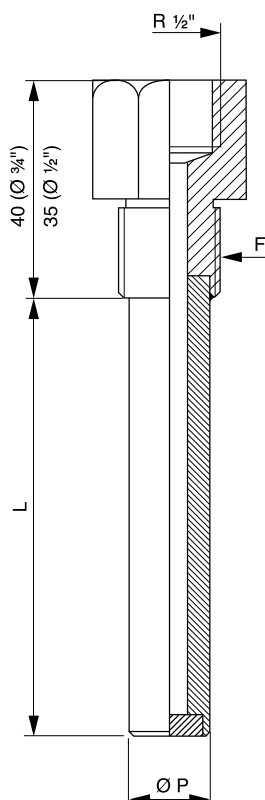


- Body: welded tube
- AISI 316 L, PVC, PPH, PVDF
- Fittings:  
Threads: BSP or NPT 1/2" ; NPT 3/4"  
Flanges: DN 32, 40 or 50

## APPLICATIONS

A thermowell is a tubular thermal conductor designed to isolate the temperature sensor from the liquid in process. Its use is recommended for the protection of a sensor against corrosive effects. It also, allows the replacement or maintenance/ calibration of an instrument without interrupting the process.

## TECHNICAL FEATURES - CODIFICATION



### Model

#### Fitting (F)

- |    |                                 |
|----|---------------------------------|
| 1  | Thread BSP 1/2" (27 mm wrench)  |
| 2  | Thread NPT 1/2" ((27 mm wrench) |
| 3  | Thread 3/4" (30 mm wrench)      |
| 31 | Flange DN 32 - PN 10/16         |
| 41 | Flange DN 40 - PN 10/16         |
| 51 | Flange DN 50 - PN 10/16         |
| 32 | Flange 1 1/4" ANSI 150 Lbs      |
| 42 | Flange 1 1/2" ANSI 150 Lbs      |
| 52 | Flange 2" ANSI 150 Lbs          |
| x  | (Others on request)             |

#### Materials

- |   |            |
|---|------------|
| I | AISI 316 L |
| P | PVC        |
| H | PPH        |
| V | PVDF       |

#### Stem length in mm (L)

xxx From 50 up to 500 mm

#### O.D. AISI stem (Ø P)

- |    |                 |
|----|-----------------|
| 10 | 10 x 1 mm       |
| 12 | 12 x 1 mm       |
| 13 | 13,71 x 2,24 mm |
| 14 | 14 x 1 mm       |
| 21 | 21,3 x 2,8 mm   |

#### O.D. plastic stem (Ø P)

- |    |             |
|----|-------------|
| 12 | 12 x 1,8 mm |
| 16 | 16 x 2 mm   |

TWS 1 I xxx 10 12

EC Conformity The instrument meets the legal requirements of the current European Directives

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## Thermowells, welded body TWS

TE

635-01 /1

15-11-2019

D-635.01-EN-AA

# Relative Humidity and Temperature HygroWiz



- Local or remote display
- Analogue output(s) 4-20 mA
- Relay output(s)
- Interface RS485 with MODBUS RTU

## APPLICATIONS

- For automation of HVAC network
- Storage areas, cool stores, greenhouses, animal husbandry
- Museums, Data centers, weather stations

## DESCRIPTION

Hygrowiz measures the temperature and relative humidity of the air. The temperature and humidity probe is integrated or cable connected to the housing. Standard version: the probe has a PTFE tap filter to limit the impact of water splashes (non-absorbent and anti-corrosion surface).

Choose the right version for your application, with remote signals, relay outputs, 4-20 mA signals, interface RS485 MODBUS protocole. Please, request more information when necessary.

HygroWiz is available as a blind version, without display. For an easy start-up, HydroWiz is set up by ourselves before shipment, according to your needs (to list them on P.O.).



Front view



QM 612

Front view	
1	1 or 2 outputs
2	Interface RS485 / MODBUS
3	Visual alarm indicator + acoustic alarm
4	Customizable graphic displays
5	To save settings or access to software
6	AISI 316 L probe (according model)
7	Temperature & humidity sensors; Max. 120 °C & 100 % RH
8	Not used
9	Not used
10	Housing, IP 65
11	Not used
12	LCD; 2.9" display
13	2 LED for status of outputs

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Relative Humidity and  
Temperature  
**HygroWiz**

29-06-2020

D-671.01-EN-AB

TE

671-01 /1

## TECHNICAL FEATURES

Power supply	24 V DC (11 ... 36 V DC) – Consumption maxi 2.5 W
Display	Backlit, graphic LCD – 128 x 64 pixels
Ambient temperature	-20 ... +70 °C (Version without display: -30 ... +80 °C)
Protection	IP 65 (Version without display: IP 67)
Housing	Wall mounting Dimensions: 120 x 90 x 50 mm Materials: ASA ( Luran® ) and polycarbonate

### Probe for QM-212 model:

Type	Integrated to the display unit
Dimensions	Height: 90 mm; O.D.: 18 mm
Materials:	AISI 316 L; PTFE tap filter
Temperature	-30 ... +105 °C ( $\pm 0,2$ °C from 10 to 60 °C) $\pm 0.4$ °C at 30 °C ; $\pm 0.7$ °C at 105 °C
Humidity	0to 100 % RH ( $\pm 1.8$ % RH from 20 to 80 % RH at 25 °C)

### Probes for QM-612 model:

Type	Output cable, to connect to the housing
Dimensions	Length: 90 mm; O.D. 18 mm
Materials	AISI 316 L; PTFE tap filter Cable with PUR coating: Max. 80 °C; Or TPE: Max. 120 °C
Temperature	-40 ... +120 °C ( $\pm 0.2$ °C from 10 to 60 °C) ( $\pm 0.4$ °C at -30 °C ; $\pm 0.7$ °C at 120 °C )
Humidity	0... 100 % RH ( $\pm 1.8$ % RH from 20 to 80 % RH at 25 °C )
Connections	Cable gland or connector type M12 - 4 pins

### Outputs (options):

Relay outputs	0, 1 or 2 relay outputs, N.O. Rated: 24 V AC / 35 V DC, 200 mA
Analogue outputs	0, 1 or 2 outputs: 0/4-20 mA (0/24 mA max.) Active signal, no galvanic insulation
Interface	RS485; 8N1 & 8N2; 1,200 ... 115,200 bit/s; MODBUS RTU; no galvanic insulation

**EC Conformity: The instrument meets the legal requirements of the current European Directives.**

### Examples of complete systems:

2 x Relays  
1 x RS485



2 x 0/4-20 mA  
1 x RS485



1 x 0/4-20 mA  
1 x Relay  
1 x RS485



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Relative Humidity and  
Temperature  
**HygroWiz**

29-06-2020

D-671.01-EN-AB

TE

671-01 /2



**TABLE TO BUILT A TRANSMITTER**

**Series**

**QM** QM Series

**Model**

**212** Transmitter with integrated probe O.D. 18 mm, 90 mm high

**612** Transmitter with cable output probe or with a M12 connector

**Cable length for 612 model**

- 00** Without cable
- 05** Cable length 0.5 m
- 10** Cable length 1 m
- 15** Cable length 1.5 m
- 20** Cable length 2 m
- 25** Cable length 2.5 m
- 30** Cable length 3 m

**Connections and cable types for 612 model**

- 0** None – Only for integrated probe (QM-212-00-0)
- 1** Cable gland with PUR coating; -30 ... +80 °C
- 2** M12 connector, with PUR coating for probe O.D. 18 mm; -30 ... +80 °C
- 3** Cable gland with TPE coating; -30 ... +120 °C
- 4** M12 connector with TPE coating for probe O.D. 18 mm; -30 ... +120 °C

**Input channel 1**

- 3** Probe with temperature and humidity sensors

**Input channel 2**

- 0** None

**Outputs**

- 00** None
- 11** 2 Relays
- 21** 1 Relay + 1 Analogue output 0/4-20 mA, active, no galvanic insulation;
- 22** 2 Analogue outputs 0/4-20 mA, active signal, no galvanic insulation

**Display**

- None**, blind version
- 1** LCD, resolution 128 x 64 pixels

**Cable glands, quantity**

- 3** 3 pieces

QM 212 00 0 3 0 00 1 10 3 3

671

671



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**Relative Humidity and  
Temperature  
HygroWiz**

29-06-2020 D-671.01-EN-AB

**TE**

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**671-01 /3**

## SPARE PARTS

### Output cable probe

#### Connector type

**2** Connector for operating temperature -30 ... +80 °C

#### Measurement types

**3** Temperature and humidity

PPQ-612-00 2 3

### Probe without cable

#### Cable length

**05** 0.5 m

**10** 1 m

**15** 1.5 m

**20** 2 m

**25** 2.5 m

**30** 3 m

#### Cable glands

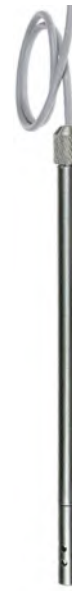
**1** Cable gland with PUR coating (-30 ... +80 °C)

**3** Cable gland with TPE coating (-30 ... +120 °C)

#### Measurement types

**3** Temperature and humidity

PPQ-612 XX X 3



#### PPQ-622-XX-X-X

Cable output probe, O.D. 12 mm; Length: 300 mm; AISI 316 L; Filter 25 µm, in stainless steel

#### PPQ-612-XX-X-X

Cable output probe, O.D. 18 mm; Length: 900 mm; AISI 316 L; Filter: FPQ-P350

#### PPQ-612-00-X-X

Probe without cable, O.D. 18 mm; Length 90 mm; AISI 316 L; Filter FPQ-P350



#### FPQ-P350

PTFE filter (limits the impact of water splashes), non-absorbent surface, anti-corrosion, -30 ... 120 °C



## MOUNTING ACCESSORIES – CONNECTORS

#### HPQ-FS12

Flat round flange AISI 316L, for probes O.D. 12 mm



#### HPQ-TS12

Adjustable fitting M20 x 1.5 AISI 316 L, for probes O.D. 12 mm



#### HPQ-W1218

Wall mount bracket AISI 316L, for probes O.D. 12 & 18 mm



#### HPQ-CGS18

Adjustable fitting M25x1.5, for probes O.D. 18 mm



#### CPQ-00

Connector M12 - 4 pins, for probes PPQ-612, -30 ... +80 °C



#### CPX-30

Cable 3 m long with connector M12 - 4 pins, for probes PPQ-612



**CPQ-30** : Cable: PUR coating, -30 ... +80 °C

**CPT-30** : Cable: TPE coating, -30 ... +120 °C

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Relative Humidity and  
Temperature  
**HygroWiz**

29-06-2020

D-671.01-EN-AB

TE

671-01 /4

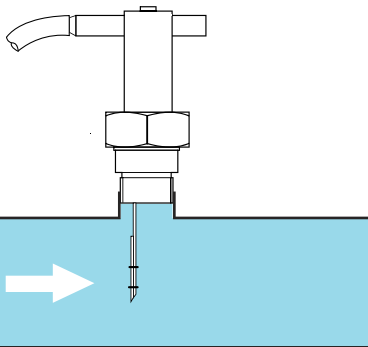
# Paddle flow controller CDP



CDP 10 to CDP 50



CDP 52



In operation

- 1 Reed contact N.O. / N.C.
- Stainless steel or brass versions
- Low pressure drop
- Fittings: On tee up to ND50 or BSP 1/2"

## APPLICATIONS

Detection of presence or absence of flow of a liquid in a pipe under pressure. The liquid must be free of magnetic particles.

## DESCRIPTION

The CDP operates a switch outside the liquid: The flow drives the paddle. A magnet on top of paddle actuates a Reed contact, located outside the fluid. The reverse movement of the paddle is generated by a leaf-spring.

These controllers offer a simple, reliable and inexpensive solution for flow monitoring in pipelines.

CDP controllers are mounted in-line, pipes up to ND 50 with a Tee, BSPF threads. For larger diameters, CDP must be mounted on-line, on an adaptor BSP 1/2" female thread.

### Accessories:

- The Reed contact has a low switching power:

The use of a relay ES 2001 (doc. 250-02) will protect the Reed and allows a remote loop signal with greater breaking capacity on a change-over relay output (500 VA/ 250 V A / 5A - 1A/ 125 V DC/ 40 W).

## TECHNICAL FEATURES

Body	AISI 316 Ti Brass
Seal	FPM on stainless steel version NBR on brass version
Temperature limit	110 °C (other on request)
Ambient temperature	70 °C
Pressure limit	25 bar
Fittings	DN 10 to DN 50: Tee with BSP female threads ND 50 and larger: male thread BSP 1/2"
Contact output	N.O. or N.C. according the Reed contact orientation
Switching power	230 V / 1.5 A / 80 W / 90 VA max.
Output cable	PVC; 3-wire; 1 mm <sup>2</sup> ; 1.5 m long
Trigger point adjustment	±15 % of table values, horizontal pipe; See next page
Protection	IP 65

### Caution:

Thresholds are for water at 20 °C and for a flow in horizontal pipe. Mounting could be on a vertical pipe with ascending flow; Then, threshold value will be greater than the one from the table. The pipe slope of a flowing down piping must be less than 40 %.

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Paddle flow controller  
**CDP**

DEB

710-01 /1

10-12-2019

D-710.01-EN-AC

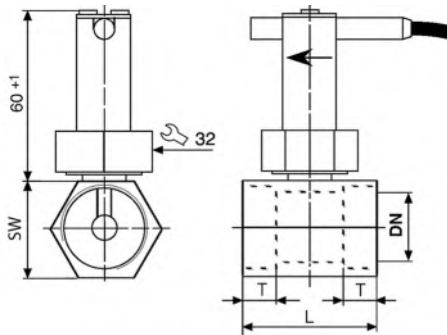
## CODE NUMBERS AND REFERENCES

Code	Description	ND	Fitting	Body	Switching flow ranges (Water)		Flow max. [ l/min ]
					Closing [ l/min ]	Opening [ l/min ]	
710 100	CDP-10 L 3/8"	10	3/8"	Brass	2.7 ... 4.5	1.7 ... 3.5	40
710 115	CDP-15 L 1/2"	15	1/2"		4.5 ... 6.6	3.0 ... 5.5	45
710 120	CDP-20 L 3/4"	20	3/4"		8.5 ... 12.0	6.5 ... 11.0	80
710 125	CDP-25 L 1"	25	1"		13 ... 20	11 ... 19	130
710 132	CDP-32 L 1 1/4"	32	1 1/4"		17 ... 26	15 ... 25	160
710 140	CDP-40 L 1 1/2"	40	1 1/2"		28 ... 45	27 ... 43	300
710 150	CDP-50 L 2"	50	2"		45 ... 58	43 ... 56	500
710 152	CDP-52 L 1/2"	> 50	1/2"		44 ... 65	40 ... 60	500
710 200	CDP-10 l 3/8"	10	3/8"	AISI	2.7 ... 4.5	1.7 ... 3.5	40
710 215	CDP-15 l 1/2"	15	1/2"		4.5 ... 6.6	3.0 ... 5.5	45
710 220	CDP-20 l 3/4"	20	3/4"		8.5 ... 12.0	6.5 ... 11.0	80
710 225	CDP-25 l 1"	25	1"		13 ... 20	11 ... 19	130
710 232	CDP-32 l 1 1/4"	32	1 1/4"		17 ... 26	15 ... 25	160
710 240	CDP-40 l 1 1/2"	40	1 1/2"		28 ... 45	27 ... 43	300
710 250	CDP-50 l 2"	50	2"		45 ... 58	43 ... 56	500
710 252	CDP-52 l 1/2"	> 50	1/2"		44 ... 65	40 ... 60	500

### Spare part:

710 370	CDP-370	Replacement contact for CDP series; Output cable, 1.5 m long
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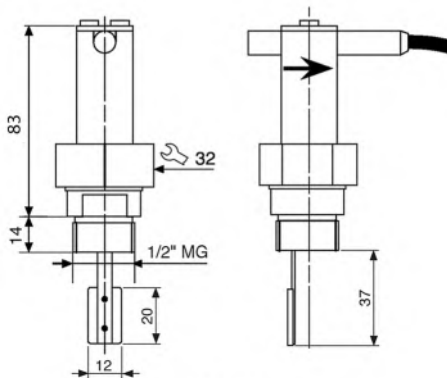
## DIMENSIONS



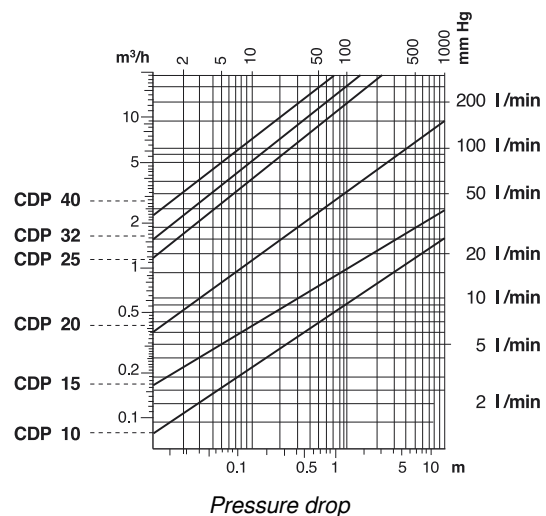
CDP 10 / 15 / 20 / 25 / 32 / 40 / 50

DN	10	15	20	25	32	40	50
T	11	11	11	15	15	15	15
<b>Brass version:</b>							
L	50	50	50	50	50	50	50
SW	30	30	30	37	46	52	70
<b>AISI 316 version:</b>							
L	50	50	50	62	64	70	110
SW	30	30	30	-	-	-	-

Dimensions in mm



CDP 52



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Paddle flow controller  
**CDP**

10-12-2019

D-710.01-EN-AC

DEB

710-01/2

# Paddle flow controller CDP-P



- For clear liquids
- Body in PPO, paddle in polypropylene
- For pipes ND 25 up to ND 65
- Mounting: On tee, or on-line with BSP 1/2" thread

## APPLICATIONS

The CDP-P is designed to control a flow-rate in water piping.

## DESCRIPTION

A pallet mounted perpendicular to the flow, actuates a changeover switch.

## MOUNTING

The threshold ranges listed are for water at 20 ° C with horizontal pipe. Mounting could be on a vertical pipe with ascending flow; Then, threshold value will be greater than the one of table. The pipe slope of a flowing down piping must be less than 40 %.

## CODE NUMBER AND REFERENCE

Code	Reference	Description
710 500	CDP-P	Paddle flow controller, in PPO

## TECHNICAL FEATURES

Materials	Body and fitting: PPO glass fiber reinforced; Seal: NBR Paddle: PP; Seal: Santoprene (Chemical resistance to Ozone; Other many disinfectants for water: On request)
Fitting	BSP 1/2"
Torque	7 N.m
Piping	From ND 25 up to ND 65
Temperature limits	Liquid: +5 ... +80 °C Ambient: +5 ... +50 °C
Pressure limit	1 MPa (PN 10) at 20 °C
Contact	Reed contact: N.O. without flow
Switching power	3 A / 250 V AC
Trigger point	See table, listed values ± 30 %
Connection	Cable (max. 50 °C): 3 0.75 mm <sup>2</sup> ; Length: 2 m
Protection	IP 65

**EC Conformity: The instrument meets the legal requirements of the current European Directives**

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**Paddle flow controller  
CDP-P**

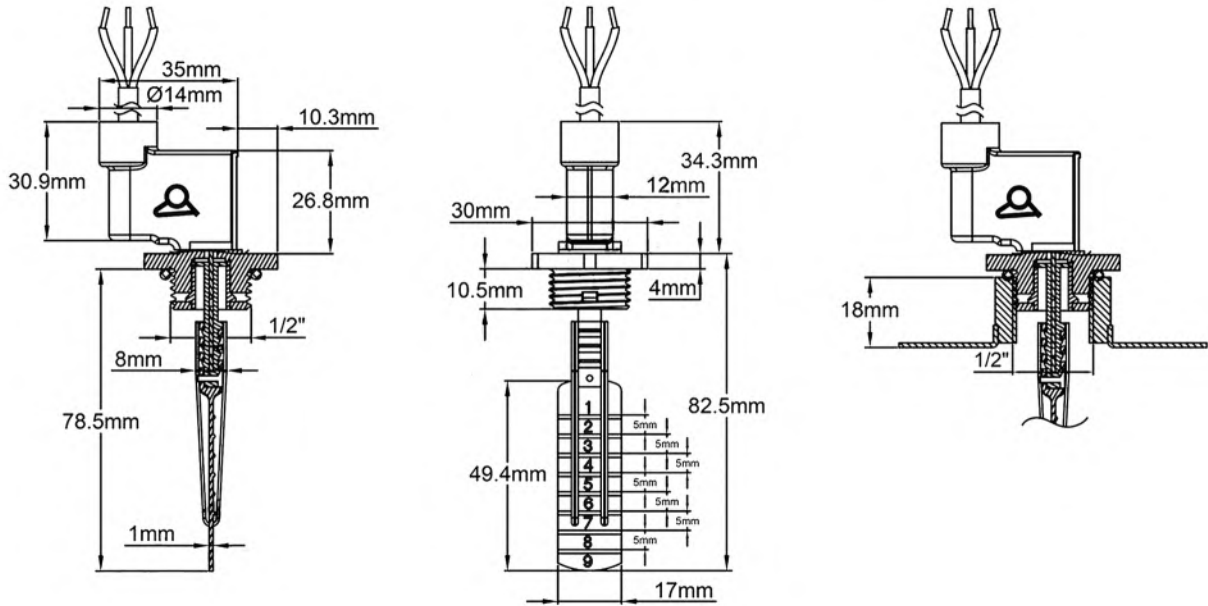
10-12-2019

D-710.03-EN-AA

**DEB**

**710-03/1**

## DIMENSIONS



Trimnable paddle; one mark each 5 mm (9 segments)

## TRIGGER POINTS

**Average values of threshold ranges [ l / min ] according inner diameter [ mm ] of pipe.**  
Indicative values for water at 20 ° C

Paddle	Inner diameter of pipe [ mm ]									
	Ø 25		Ø 32		Ø 40		Ø 50		Ø 63	
	Opening	Closing	Opening	Closing	Opening	Closing	Opening	Closing	Opening	Closing
	[ l / min ]		[ l / min ]		[ l / min ]		[ l / min ]		[ l / min ]	
1	34	32	67	63	123	113	225	200	506	424
2	23	19	50	48	98	93	173	153	389	324
3			40	38	76	73	143	128	321	271
4					61	58	110	106	220	200
5					49	46	89	84	200	178
6							73	68	165	150
7							62	58	152	138
8									133	123
9									113	108

**Closing contact** With increasing flow (N.O. contact without flow)  
**Opening** With decreasing flow (N.O. contact without flow)

(Flow-rate values are indicative: ±30 %)

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**Paddle flow controller  
CDP-P**

10-12-2019

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**710-03/2**



# Flap spring-loaded type flow-meters KFS



KFS

- For gases and liquids
- DN 25 to DN 600
- Carbon steel, Stainless steel, PVC, PPH, PVDF
- Horizontal or vertical mounting
- Independent of viscosity
- Outputs: 4-20 mA, contacts, totalizer, ATEX version

## APPLICATIONS

On-line visualization of the instantaneous flow rate in multiple fields: Water treatment, chemical industry, industrial processes, etc. The measurement is independent of viscosity and is suitable for indicating the flow of water, alkaline solutions and gases.

## DESCRIPTION

The flow indicator KFS is used to evaluate flows in piping from DN25 up to DN600. Each flow indicator is calibrated according to customer requirements and equipped with a scale specific to the medium.

The measuring cell includes a flap spring-loaded moved by the medium. The angle of rotation of the flap changes according to the flow. A magnetic coupling transfers the movement to a pointer on a dial (Fig. A).

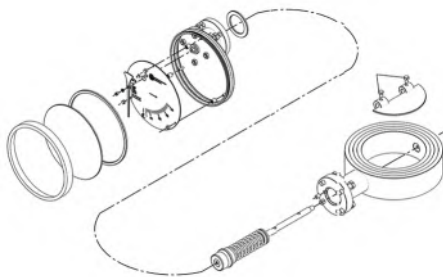
- The KFS series proposes two types of local indicators.
- KFS Standard: Stainless steel case with bayonet lock.
  - KFS-M40: M40 case with output: 4-20 mA and Totalizer

### Options: Contact outputs

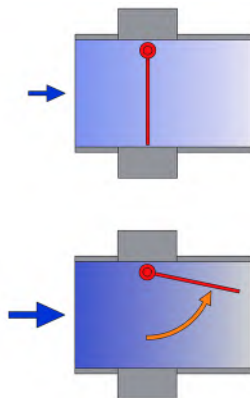
For process control purposes, the measuring device can be equipped with contacts, inductive or Reed type. Each contact (max. 2) is adjustable over the entire measurement range.

### Option: Analogue output 4-20 mA

A transmitter is added: 4-20 mA; 2-wire; Signal is proportional to the flow-rate. It is factory calibrated; no calibration needed on site. The calibration values are stored in a memory chip. The transmitter is protected against reverse polarity.



Pic. A



Operating principle



KFS-M40

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Flap spring-loaded type  
flow-meters  
**KFS**

05-02-2021

D-713.10-EN-AB

DEB

713-10/1

## THE DIFFERENT MODELS OF KFS Series

KFS Standard case, IP 66	Contact-s	4-20 mA	Totalizer	ATEX	Specificities	
KFS	---	--	---	---	Standard mechanical indicator	
KFS-IK1	Yes				+ 1 contact NAMUR, 2-wire; bistable, or N.O. or N.C.	
KFS-IK2	Yes				+ 2 contacts NAMUR, 2-wire; bistable, N.O. or N.C.	
KFS-IKS1	Yes				+ 1 inductive contact, 3-wire; bistable, or N.O. or N.C.	
KFS-IKS2	Yes				+ 2 inductive contacts, 3-wire; bistable, N.O. or N.C.	
KFS-RK1	Yes				+ 1 Reed contact, 2-wire; bistable, or N.O. or N.C.	
KFS-RK2	Yes				+ 2 Reed contacts, 2-wire; bistable, N.O. or N.C.	
KFS Ex	---				Yes	ATEX version, Standard mechanical indicator
KFS-IK1 Ex	Yes				Yes	+ 1 Inductive contact, ATEX version
KFS-IK2 Ex	Yes				Yes	+ 2 Inductive contacts, ATEX version

KFS-M40: Case M40, IP 68	Contact-s	4-20 mA	Totalizer	ATEX	Specificities		
KFS-M40	---	---	---	---	Mechanical indicator M40		
KFS-M40-EM	---	Yes			+ 4-20 mA output		
KFS-M40-EM-IK1	Yes	Yes			+ 4-20 mA output + 1 inductive contact		
KFS-M40-EM-IK2	Yes	Yes			+ 4-20 mA output + 2 inductive contacts		
KFS-M40-EMZ	---	Yes			Yes	+ Totalizer + LCD display	
KFS-M40-IK1	Yes	---			Indicator + 1 inductive contact		
KFS-M40-IK2	Yes				Indicator + 2 inductive contacts		
KFS-M40-Ex	---	Yes			---	Yes	Mechanical indicator M40, ATEX version
KFS-M40-EM Ex	---					Yes	+ 4-20 mA output, ATEX version
KFS-M40-EM-IK1 Ex	Yes					Yes	Yes
KFS-M40-EM-IK2 Ex	Yes		Yes	Yes		+ 4-20 mA output + 2 inductive contacts, ATEX version	
KFS-M40-EMZ Ex	---		Yes	Yes		Yes	Totalizer +LCD Display, Explosion proof version

## MATERIALS

DN	Fluid temperature Max.	Pressure Max.	Measuring cell	Wet parts	Wet seal <sup>2)</sup>
25 - 600	-70 ... +200 °C <sup>4)</sup>	PN 6/10 <sup>3)</sup>	S355	AISI 316 Ti (1.4571)	Sil 4400
25 - 600	-70 ... +200 °C <sup>4)</sup>	PN 6/10 <sup>3)</sup>	1.4571	AISI 316 Ti (1.4571)	Sil 8800
25 - 80	0... +20 °C	10 bar	PVC	AISI 316 Ti (1.4571) <sup>1)</sup>	EPDM
100 - 300	0... +20 °C	6 bar			
25 - 300	0... +40 °C	6 bar			
25 - 80	0... +20 °C	10 bar	PP	AISI 316 Ti (1.4571) <sup>1)</sup>	EPDM
100 - 300	0... +20 °C	6 bar			
25 - 300	0... +80 °C	1.5 bar			
25 - 80	-40 ... +20 °C	10 bar	PVDF	AISI 316 Ti (1.4571) <sup>1)</sup>	FPM
100 - 300	-40 ... +20 °C	6 bar			
25 - 300	-40 ... +140 °C	6 bar			

The liquid must not freeze.

<sup>1)</sup> : Hastelloy C4 as an option

<sup>2)</sup> : Others on request

<sup>3)</sup> : Option as PN 16/ 25/ 40

<sup>4)</sup> : KFS Ex, KFS-IK1 Ex et KFS-IK2 Ex: possibility to have a thermic insulation pipeline and instrument.

Indicator	KFS	KFS-M40-EM
Case	AISI 304 (1.4301)	Painted aluminum
Pointer	Painted aluminum	Painted aluminum
Dial	Coated aluminum	Coated aluminum
Window	PC (Glass as an option)	Glass

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Flap spring-loaded type  
flow-meters  
**KFS**

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713-10/2

## TECHNICAL FEATURES

Accuracy	5 % F.S.
Scale units:	l/h or m <sup>3</sup> /h or else on request
Scale factor	Minimum 1:10
Protection	Indicator: IP 66 (or IP 67 for KFS-EM)
Corrosion protection	Carbon steel version: Epoxy painted, kiln-dried, blue (RAL 5017), satin finish Corrosion class: C2
Wafer mounting	Standard body width: 50 mm 60 mm for PVC / PP / PVDF & DN 250-300
Fitting	Between flanges, type DIN EN 1092-1, PN 6/10/16/25/40 On request: ASME B16.5, JIS B 2220 (others on request)

### • Reed contacts, RK1 and RK2:

RK1	1 Reed contact, bistable, or N.O. or N.C.
RK2	2 Reed contacts, bistable, N.O. or N.C.
Switching power	Max. 5 VA ; 0.25 A / 50 V AC Maxi 3 W ; 0.25 A / 75 V DC
Ambient temperature	-25...+105 °C

The switching point is adjustable over the full measuring range. The pointer of the indicator activates a built-in inductive switch by means of a metal paddle. The switching point is indicated by a pointer on the flow-meter scale.

### • Inductive contacts, IK1 and IK2 (NAMUR, 2-wire):

The trigger points are adjustable over the entire measuring range. A maximum of two (2) contacts can be mounted.

IK1	1 Inductive contact, NAMUR, 2-wire, bistable, or N.O. or N.C.
IK2	2 Inductive contacts, NAMUR, 2-wire, bistable, N.O. or N.C.
Slot width	2.0 mm
Hysteresis	1.0 % v. E ... 10 % v. E
Accuracy	Repeatability: ≤ 2.0 %
Temperature drift	≤ ± 10 %
Ambient temperature	-25...+70 °C
Voltage	Nom. 8.2 V DC (via insulation switching amplifier KFA)
Switching frequency	≤ 2.5 kHz
Power consumption	Active area uncovered: ≥ 2.1 mA Active area covered: ≥ 2.1 mA
Protection	Against reverse polarity
Certification	KEMA 02 ATEX 1090 X
Inductance (Li)	266 µH
Capacitance (Ci)	* Values for pre-assembled cables up to 10 m
ATEX cert.	Ex II 1G Ex ia IIC T4...T6 Ga (Max. Ui = 20 V DC; li = 60 mA; Pi = 130 mW)
Option	Explosion proof version

### • Inductive contacts, IKS1 and IKS2 (3-wire):

IKS1	1 Inductive contact, bistable, or N.O. or N.C.
IKS2	2 Inductive contacts, bistable, N.O. or N.C.
Power supply	24 V DC
Current switched I(A)	≤ 100 mA
Power consumption	Open circuit: ≤ 10 mA
Ambient temperature	-25...+70 °C
Voltage drop (at I max.)	≤ 1.2 V

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Flap spring-loaded type  
flow-meters  
**KFS**

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713-10/3

05-02-2021

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• **Analogue output 4-20 mA (EM models):**

Power supply	24 V DC
Output signal	4 ... 20 mA
	For flow-rate from 0 to 100 %
	> 20.8 mA for alarm status
Power supply influence	< 0.1 %
External resistance dependence	< 0.1 %
Temperature incidence	< 5 µA/K
External resistance	
Ambient temperature	-25 ... +60 °C
Agreement	TÜV 15 ATEX 7805 X
Inductance (Li) / Capacitance (Ci)	~ 0 µH / 10 nF
ATEX cert.	EX II 2G Ex ia IIC T6...T1 Gb (Max. Ui = 30 V; li = 130 mA; Pi = 1 W)

• **Analogue output 4-20 mA + Totalizer (EMZ model)**

The EMZ flow totalizer in 2-wire technology is used in combination with the electrical current output EM. An LCD display indicates the total flow value (cumulated) and may be commuted for instant flow-rate display as 0 ... 100 %.

The EMZ has two galvanically insulated binary outputs which can be configured as a contact output or pulse output. The pulse output supplies for each displayed counter increment a number of pulses, which number is adjustable. If the voltage drops, an automatic backup takes place. If an indicator with totalizing function is to be used in potentially explosive areas, it must be connected to an intrinsically safe circuit.

2 binary outputs	Galvanically insulated, passive
Connection types	NAMUR (EN 60947-5-6) 2 wire or Transistor output (passive, open collector) 3-wire

**Open collector output:**

Power	24 V DC; Max. 30 V DC
Load, RL	250 ... 1000 Ω
Current	Max. 100 mA
P max.	500 mW

**NAMUR contact output:**

Uo	8.2 V DC
Ri 1)	1000 Ω
Signal current	> 3 mA: switching value reached < 1 mA: switching value not reached

1): Switching power amplifier with Uo = 8,2 V CC and Ri = 1000 Ω

**Pulse output:**

T on	setting from 50 to 500 ms
T off	Depending on flow-rate
f max.	10 Hz
Pulse value	Setting in flow units (e.g. 5 pulses per cubic meter)
Ambient temperature	-40...+70 °C

• **ATEX version**

Explosion protection according to Directive 2014/34/EU.

The following versions are also available in the type-tested explosion-proof variant for Zone 1 and 2 of device categories 2 and 3, atmosphere G, in compliance with Directive 2014/34/EU.

KFS Ex	Mechanical indicator
KFS-IK1 Ex	With one inductive limit value contact *
KFS-IK2 Ex	With two inductive limit value contacts *
KFS-M40-EM Ex	With 4-20 mA output *
KFS-M40-EMZ Ex	With totalizer *

(\*): Connection to intrinsically safe circuits only



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Flap spring-loaded type  
 flow-meters  
**KFS**

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**713-10/4**

## MEASURING RANGES

### Measuring ranges, scales for water at 20 °C

DN	Standard ranges in m <sup>3</sup> /h					
25	0.5 - 7	1 - 12				
32	0.5 - 8	1,8 - 18	3 - 30			
40	0.6 - 6	1 - 10	2 - 20	3 - 30	5 - 50	
50	0.8 - 8	2 - 20	3 - 35	5 - 50	7 - 70	
65	2 - 20	4 - 40	6 - 60	9 - 90	11 - 110	
80	2 - 20	4 - 40	6 - 60	10 - 100	12 - 120	20 - 200
100	4 - 40	8 - 80	12 - 120	16 - 160	20 - 200	25 - 250
125	5 - 55	8 - 80	12 - 120	14 - 140	20 - 200	35 - 350
150	6 - 60	10 - 100	14 - 140	18 - 180	22 - 220	35 - 350
200	5 - 50	9 - 90	12 - 120	15 - 150	20 - 200	25 - 250
250	18 - 180	25 - 250	30 - 300	40 - 400		
300	15 - 170	20 - 220	25 - 250	30 - 300	50 - 500	

DN	Specific ranges in [m <sup>3</sup> /h] of water at 20 °C					
200	40 - 400	60 - 600				
250	50 - 500	60 - 600				
300	60 - 650	90 - 900				
350	50 - 500	70 - 700	90 - 900	100 - 1000		
400	60 - 600	75 - 750	110 - 1100	400 - 1850		
500	70 - 700	100 - 1000	135 - 1350	200 -		
600	80 - 800	125 - 1250	165 - 1650			

### Measuring ranges for Air at 0 °C and 1013 mbar abs (standard conditions)

ND	Range Nm <sup>3</sup> /h (standard conditions)	
25	15 - 150	30 - 300
32	15 - 150	30 - 300
40	15 - 150	40 - 400
50	18 - 180	75 - 750
65	18 - 180	80 - 800
80	20 - 200	100 - 1000
100	25 - 250	220 - 2200
125	25 - 250	260 - 2600
150	30 - 300	300 - 3000
200	40 - 400	300 - 3000
250	100 - 1000	400 - 4000
300	150 - 1500	500 - 5000

Intermediate measuring ranges possible

The measuring ranges for the series KFS-EM/EMZ differ slightly from the above values.

Measuring ranges for other fluids and operating conditions: On request.

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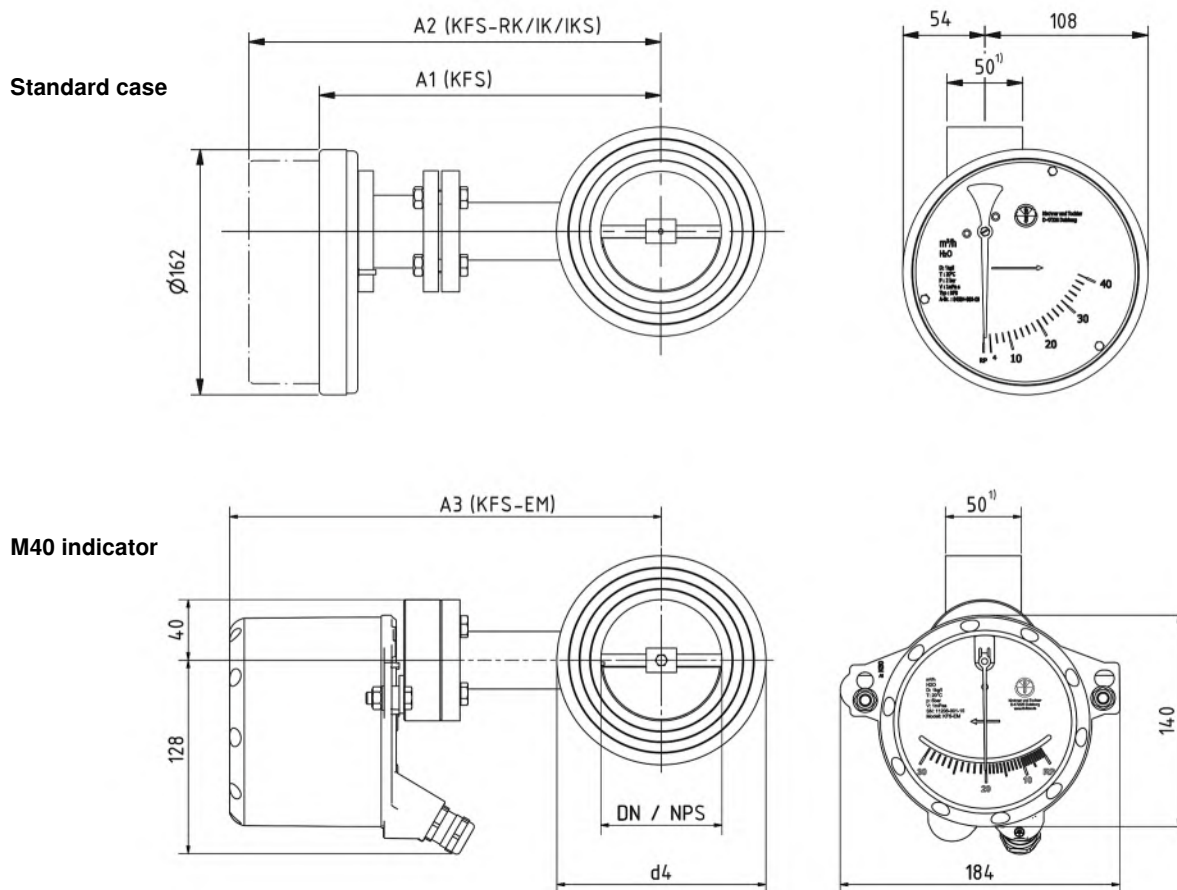
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**713-10/5**

## DIMENSIONS



DN	d <sub>4</sub>	Masse [kg]		ASME flange		KFS		KFS-RK/IK/IKS		KFS-M40-EM/EMZ	
		Steel	PVC <sup>1)</sup>	NPS	d <sub>4</sub>	A1 <sup>2)</sup>	A1 <sup>2)</sup> (ASME)	A2 <sup>2)</sup>	A2 <sup>2)</sup> (ASME)	A3 <sup>2)</sup>	A3 <sup>2)</sup> (ASME)
25	68	3.8	2.0	1"	51	202	199	249	246	242	242
32	78	3.8	2.0	1 1/4"	64	206	204	253	251	245	247
40	88	3.8	2.0	1 1/2"	73	206	206	253	253	251	249
50	102	3.9	2.1	2"	92	211	212	258	259	256	255
65	122	5.0	2.3	2 1/2"	105	219	217	266	264	262	260
80	138	5.6	2.5	3"	127	226	225	273	272	269	268
100	158	6.4	2.7	4"	157	236	237	283	284	279	280
125	188	8.0	2.8	5"	186	249	250	296	297	292	293
150	212	8.8	3.3	6"	216	261	263	308	310	304	306
200	268	11.4	3.7	8"	270	286	287	333	334	329	330
250	320	13.0	4.5	10"	324	311	313	358	360	354	356
300	370	22.0	4.9	12"	381	336	338	383	385	379	381
350	430	29.3	—	—	—	376	—	423	—	404	—
400	482	31.5	—	—	—	401	—	448	—	429	—
500	585	39.0	—	—	—	451	—	498	—	494	—
600	685	45.5	—	—	—	501	—	548	—	544	—

All dimensions are in mm ; Excepted for NPS inner diam. ASME flange fittings

<sup>1)</sup>: Models in PVC, PP, PVDF with DN 250 and 300: Thickness is 60 mm.

<sup>2)</sup>: PVC, PP and PVDF versions differ minimally from the standard.

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**Flap spring-loaded type  
flow-meters  
KFS**

**DEB**

**713-10/6**

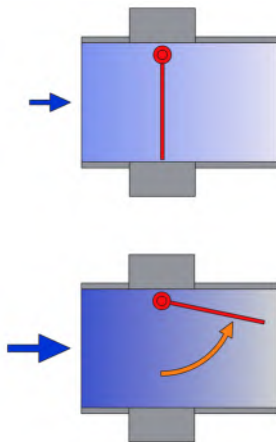
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# Flap-type flow-meters KLA

- For liquids
- From ND 15 up to ND 200
- Horizontal or vertical mounting
- Independent of viscosity
- Outputs: 4-20 mA, contacts; ATEX versions



Operating principle

## APPLICATIONS

A flap-type flow-meter is ideal wherever a rugged, reliable and economical device is required for visualization and monitoring of flows.

## DESCRIPTION

The KLA series flow-meter is based on the same operating principle as the KFS series. Inside the meter a flap moves up and down in analogy to the amount of liquid flowing through.

In the KLA-GS version the quantity is directly indicated by the flap; The flow meter is equipped with hard glass screens at the front and at the back. The flow-rate reading is done on an integrated scale into the front hard glass screen. The economical version KLA Standard provides a direct visual display.

In both versions a magnet transmits the movement of the flap to a pointer in the case.

For process control, the measuring device can be equipped with:

- 1 or 2 inductive contacts
- 1 analogue transmitter, 4-20 mA output: angular position transducer  
The signal must be linearized.

## MODELS

KLA	Magnet coupling with pointer
KLA-GS	With glass window
KLA-IK	With 1 inductive contact
KLA-IKS	With 1 contact, 3-wire PNP
KLA-EM	4-20 mA output: angular position transducer
KLA-V4A	Stainless steel AISI 316 Ti (1.4571)
KLA Ex	ATEX version
KLA-IK Ex	ATEX version with 1 inductive contact

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Flap-type flow-meters  
**KLA**

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DEB

713-12/1

## TECHNICAL FEATURES

Fittings	DN 15 - 200 / 1" - 8" Flanges DIN EN 1092-1 to 3 Option: ANSI B16.5 150 lbs
Nominal pressure	Standard: PN 10 (Specific version: PN 6)
Corrosion protection	Epoxy powder coating, glossy blue RAL 5017 Rubber lining: NR-isoprene quality Corrosion class : C3
Liquid temperature limits <sup>1)</sup>	Max. 100 °C Max. 90 °C with rubber lining On request: up to 150 °C <sup>1)</sup> : The liquid must not freeze
Ambient temperature	Max. 90 °C
Scale factor	1:10
Accuracy	5 % F. S.
Protection	IP 54 IP 53 with contacts

### Features of contacts: IK and IKS

<b>IK</b>	2-wire; Namur Adjustable
Type	Bistable (N.O./N.C.)
Power supply	NAMUR: 8.2 V DC (NAMUR) Other applications: Max. 8 ... 20 V DC
Consumption	≥ 2.1 mA ≤ 1.2 mA
Repeatability	≤ 2 % F. S.
Temperature drift	≤ ±10 %
Hysteresis	1 ... 10 %
Temperature stability	-25...+70 °C
Approval	According to KEMA 02 ATEX 1090X
Certification Ex	Ex II 2 G Ex ia IIC T6 Gb / II 1 D Ex ia IIIC T95 ° C Da
SIL	According to IEC 61508: SIL 3 and PL
Protection	IP 67
MTTF	According to SN 29500: 6,198 year (40 °C) (Ed. 99) 40 °C
Electrical connection	Cable Ø 3 mm, blue, Lif9YYW, PVC; 2 m long 2 x 0.14 mm <sup>2</sup>

<b>IKS</b>	3-wire PNP
Type	Bistable (N.O./N.C.)
Power supply	10 ... 30 V DC
Repeatability	≤ 2 % F. S.
Temperature drift	≤ ±10 %
Hysteresis	3 ... 15 %
Nominal current	DC ≤ 100 mA
No-load current	≤ 15 mA
Residual current	≤ 0.1 mA
Temperature stability	-25 ... +70 °C
Protection	IP 67
MTTF	According to SN 29500: 2,283 years (Ed. 99) 40 °C
Electrical connection	Cable Ø 3 mm, grey, Lif9Y-11Y, PUR; 2 m long 3 x 0.14 mm <sup>2</sup>

### Features of Analogue Output: EM

<b>EM</b>	4 ... 20 mA; 3-wire
Accuracy	± 1 %
Temperature drift	< 50 ppm/ °C
Operating temperature	-20 ... +70 °C
Operating voltage	Ub: 12 ... 36 V DC
Load impedance	300 Ω at Ub = 24 V 50 Ω at Ub = 12 V
Consumption	< 0.2 W, load-free output
Measuring cycle	250 ms
Lifetime	> 10 <sup>6</sup> cycles
Protection	IP 64

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Flap-type flow-meters  
**KLA**

24-11-2020

D-713.12-EN-AA

**DEB**

**713-12/2**

## MEASURING RANGES

DN	Range of water at 20 °C		Maximum operating pressure	
	Horizontal flow [m <sup>3</sup> /h]	Vertical flow [m <sup>3</sup> /h]	Standard version [bar]	Glass window version [bar]
15	0.2 - 1	0.2 - 1.5	10	10
	0.3 - 6	1 - 6.5		
20	0.3 - 1	0.5 - 1.5	10	10
	0.3 - 6	1 - 6.5		
25	0.2 - 1	0.2 - 1.5	10	10
	0.3 - 6	1 - 6.5		
32	0.5 - 4	0.5 - 4	10	9
	0.7 - 7	0.6 - 6		
	3 - 30	2.5 - 25		
40	0.5 - 4	0.5 - 4	10	9
	0.7 - 7	0.6 - 6		
	3 - 30	2.5 - 25		
50	0.5 - 4	0.5 - 4	10	9
	0.7 - 7	0.7 - 7		
	3 - 30	3 - 30		
65	1 - 8	2 - 15	10	10
	2 - 15	4 - 15		
	4 - 50	5 - 40		
80	1 - 10	2 - 10	10	10
	2 - 20	3 - 20		
	7 - 70	5 - 50		
100	1.5 - 15	1.5 - 15	10	10
	12 - 120	10 - 100		
125	2 - 20	2 - 20	10	7
	14 - 140	12 - 120		
150	2 - 25	4 - 25	10	6,5
	5 - 50	10 - 80		
	16 - 160	15 - 140		
	15 - 200 *)	-		
200	8 - 80	15 - 150	10	-
	25 - 300	20 - 300		

Min and Max flow-rate for each range according installation, with pressure drop of 20 to 30 mbar depending of the liquide.  
Intermediate measuring ranges are available on request.

\*) : Only with glass window and horizontal installation

## MATERIALS

Models	Fitting	Flap	Bearing	Disc	Blind flange / Ring	Seal	ND
KLA	EN-GJL-200	1.4571	1.4571	1.4571	EN-GJL-200 / S355	NBR	15 - 150
	S355, welded	1.4571	1.4571	1.4571	S355	NBR	200
KLA-V4A	1.4571, welded	1.4571	1.4571	1.4571	1.4571	FPM	25 - 100
KLA-GS	EN-GJL-200	1.4571	1.4571	Soda-lime glass <sup>1)</sup>	S355	NBR	15 - 25
KLA-GS-V4A	1.4571, welded	1.4571	1.4571	Borosilicate glass	1.4571	FPM	25 - 100
KLA - Rubber lined	EN-GJL-200 + isoprene	1.4571	1.4571	1.4571	EN-GJL-200 / S355 + isoprene	Sil-C8200	32 - 150
		Hastelloy C4	Hastelloy C4	1.4571 - PTFE		Sil-C8200	32 - 150
		PTFE	Hastelloy C4	1.4571 - PTFE		Sil-C8200	80 - 150
		PTFE	PTFE	1.4571 - PTFE		Sil-C8200	80 - 150

Others on request: Seals, cast bronze (CuSn)

<sup>1)</sup> : Option, with borosilicate glass

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Flap-type flow-meters  
**KLA**

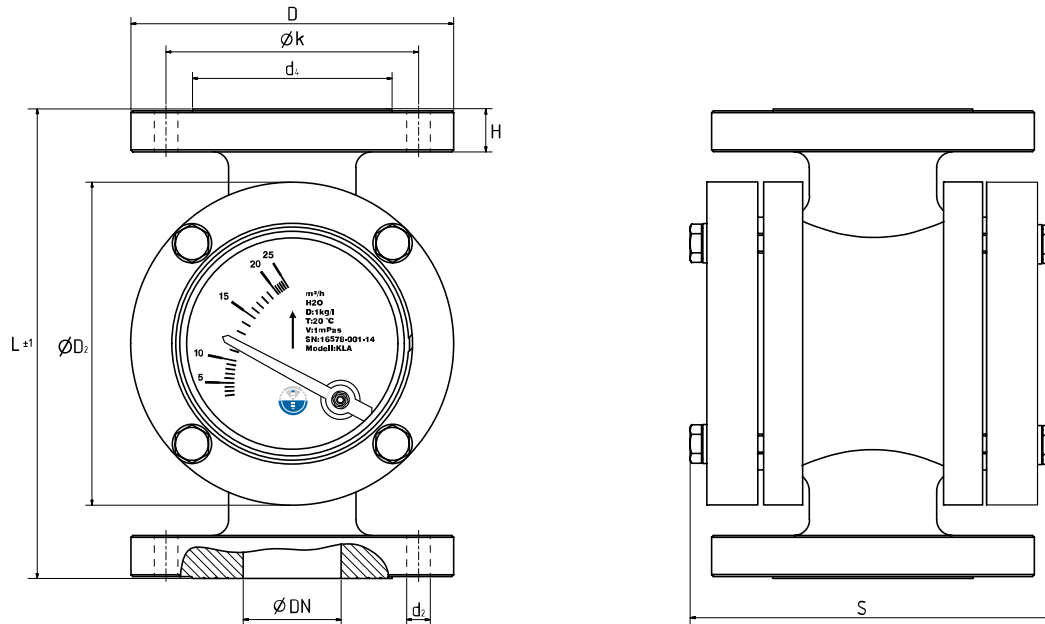
DEB

713-12/3

24-11-2020

D-713.12-EN-AA

## DIMENSIONS



DN	Ø D [mm]	Ø k [mm]	Ø d <sub>4</sub> [mm]	Ø H [mm]	L [mm]	Ø D <sub>2</sub> [mm]	d <sub>2</sub>	Screw	S /IK [mm]	GS [mm]	EM [mm]	[kg]
15	95	65	45	18	170	119	M12	x4	145	132	166	8
20	105	75	58	18	170	119	M12	x4	145	132	166	8.5
25	115	85	68	18	170	119	Ø 14	x4	145	132	166	9
32	140	100	78	21	240	165	Ø 18	x4	176	186	197	16
40	150	110	88	21	240	165	Ø 18	x4	176	186	197	16
50	165	125	102	21	240	165	Ø 18	x4	176	186	197	17
65	185	145	122	21	280	185	Ø 18	x4	201	217	222	22
80	200	160	138	22	320	225	Ø 18	x8	214	227	235	34
100	220	180	158	24	350	245	Ø 18	x8	267	278	288	43
125	250	210	188	25	380	285	Ø 18	x8	299	310	320	58
150	285	240	212	25	380	295	Ø 22	x8	299	310	320	64
200	340	295	268	27	550	370	Ø 22	x8	386	-	407	104

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Flap-type flow-meters  
**KLA**

**DEB**

**713-12/4**

24-11-2020

D-713.12-EN-AA

## INSTALLATION

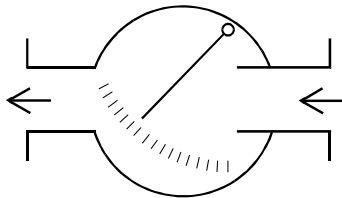
### Mounting:

With the order: flow direction to confirm.

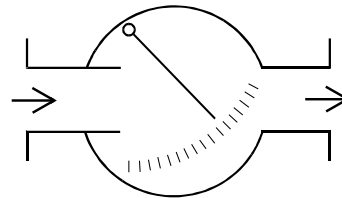
Screws, nuts and gaskets are not supplied.

Respect straight distances: as a minimum 3 times the pipe diameter.

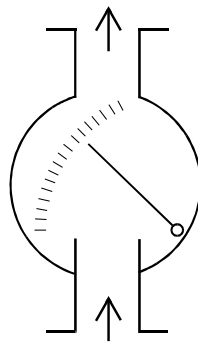
### Flow direction



Right to left



Left to right



Bottom to top

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Flap-type flow-meters  
**KLA**

24-11-2020

D-713.12-EN-AA

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**713-12/5**

# Flow indicator OPTIFLUX ECFV



- Direct view of the flow of a liquid
- Vertical or horizontal mounting
- Ranges up to 60 l/min
- Fittings: 1/4" ... 1" BSP F.
- Body: Nickel-plated brass

## APPLICATIONS

- Checking directly the circulation of a liquid
- Well adapted to piping with clean liquids, lubricating fluids, in heating and cooling systems, industrial water plants.

## DESCRIPTION

With its turbine, OPTIFLUX ECFV shows the circulation of a liquid through the transparent glass tube. For flow rates above the last half of the range, the indicator can be mounted either horizontally or vertically. For lower flow rates (first half of range) vertical mounting is recommended with rising fluid.

## TECHNICAL FEATURES

Range	1 ... 60 l/min (See the table below)
Temperature	-10 ... +90 °C
Pressure limits	Up to 5 ... 10 bar according the model
Fittings	BSP-F from 1/4" up to 1"

### Materials:

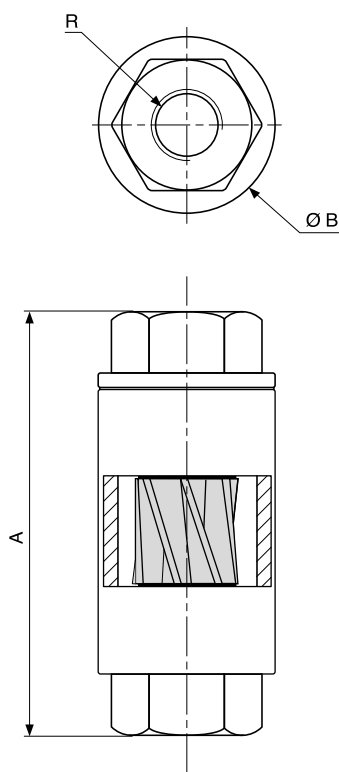
Body	Nickel-plated brass
Turbine	Hostaform (red)
Transparent tube	Borosilicate glass
Seals	Nitrile rubber

## CODE NUMBERS AND REFERENCES

Code	Reference	Flow range [l/min]	Pressure max. [bar]
719 150	ECFV 1BV	1...10	10
719 155	ECFV 2BV	2...20	8
719 160	ECFV 3BV	3...30	
719 165	ECFV 4BV	4...40	5
719 170	ECFV 5BV	6...60	

## DIMENSIONS

Reference	Fitting threads	A [mm]	Ø B [mm]	Mass [g]
ECFV 1BV	BSP-F 1/4"	59	25	125
ECFV 2BV	BSP-F 3/8"	71	30	130
ECFV 3BV	BSP-F 1/2"			160
ECFV 4BV	BSP-F 3/4"	106	47	675
ECFV 5BV	BSP-F 1"			572



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Flow indicator  
**OPTIFLUX ECFV**

20-11-2020

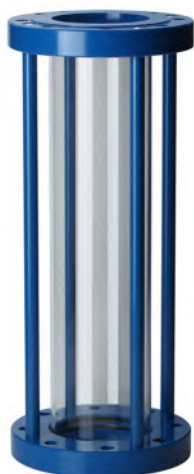
D-719.02-EN-AD

**DEB**

719-02/1



# In-line sight glass SGL



- Direct visualization of flows
- ND 50 to ND 250
- Borosilicate glass tube
- Pressure drop free
- Simple - Reliable - Maintenance free

## APPLICATIONS

The devices Visioflux SGL are used for the direct viewing of liquid in piping. SGL is useful for water, lubricating oil, alkaline or acid liquids. By selecting the appropriate material, the sight glass can be used with aggressive liquids.

## DESCRIPTION

The transparent tube is made of borosilicate glass, plus four spacers and two flanged fittings. Due to its simple design, the service is maintenance-free. With the external radial seals, there is no change in cross-section and thus, no pressure loss. The Visioflux SGL exists in two standard versions (Steel or stainless steel) and may be supplied with a plastique frame (PVC, PPH or PVDF) We also carry out special manufacturing, on specifications.

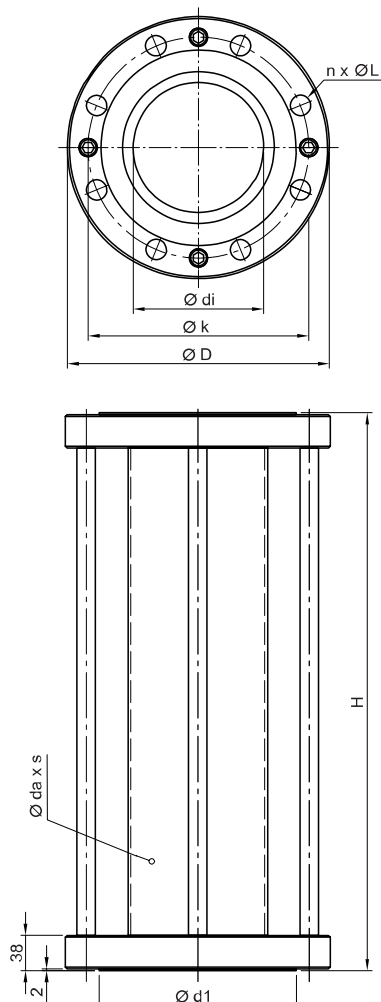
## TECHNICAL FEATURES

Operating temperature <sup>1)</sup>	Max. 70 °C
	<sup>1)</sup> The liquid must not freeze
Ambien temperature	Max. 70 °C
Fittings	Flanged type DIN EN 1092-1, PN10 (other on request)
Corrosion protection	Epoxy paint, kiln-dried, traffic blue (RAL 5017), satin finished
Protection class	C2

Materials	SGL	SGL-V4A
Sight glass	Borosilicate glass	Borosilicate glass
Spacers	S355	AISI 316 Ti (1.4571); Option: Hastelloy C4
Flanges	S355	AISI 316 Ti (1.4571); Option: Hastelloy C4
Seals	NBR	NBR (Option: FPM)

## DIMENSIONS

ND	Ø D	Ø k	Ø d1	n	Ø L	H	Ø da	s	Ø di	P max.
50	165	125	102	4	18	600	63.5	4.5	54.6	8 bar
65	185	145	122	8	18	600	77	5	67	9.7 bar
80	200	160	138	8	18	600	90	5	80	8.2 bar
100	220	180	158	8	18	600	115	5	105	6.4 bar
125	250	210	188	8	18	600	140	5	130	5.2 bar
150	285	240	212	8	22	600	170	5	160	4.2 bar
200	340	295	268	8	22	600	200	5	190	3.6 bar
250	395	350	320	12	22	600	270	5	260	2.6 bar



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In-line sight glass  
**SGL**

30-12-2020

D-719.10-EN-AA

**DEB**

**719-10/1**

# Variable Area Flowmeters RA 60 / FA 60



- Direct reading on calibrated tube
- Range: From 0.1 l/h up to 1,500 m<sup>3</sup>/h
- Accuracy  $\pm 2\%$
- For liquid or for gas
- Materials: Glass, Steel or Stainless Steel
- Adjustable contacts
- Analogue output 4-20 mA or 0-10 Volt
- ATEX version

## APPLICATIONS

Direct reading of flow-rate on gases or on liquids:

- Water treatment, Industrial process (paper mill, textiles etc.), Chemical and pharmaceutical industries, Heating and cooling plants

## DESCRIPTION

The measuring principle is that of the variable area flowmeter, the float is moved by the fluid inside a calibrated conical glass tube. The borosilicate glass conical is inside a steel case with a transparent reading window.

Versions:

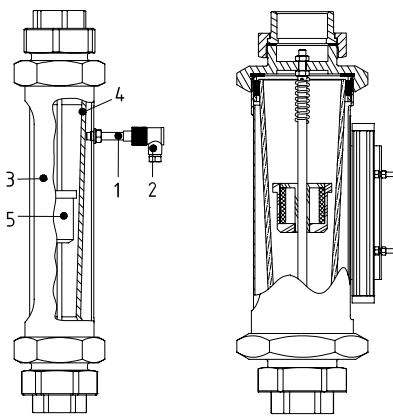
RA 60	Fittings: Unions BSP-F: 1/4" to G 3"
FA 60	Fittings: Flange ND 10 to ND 200
RA/ FA 60-MSK1	With N.C. bistable contact
RA/ FA 60-MSK2	With N.O. bistable contact
RA / FA 60-MSKW	With bistable changeover contact
RA / FA 60-EM *	With analogue output 4-20 mA or 0-10 Volt (Only on model sizes 100 and 110)
RA / FA 60... Ex	ATEX, explosion-proof version

### Contacts:

These flowmeters can be equipped with a magnetic float and Reed contacts, trigger points adjustable over the entire measuring range.

### Output 4-20 mA or 0-10 Volt:

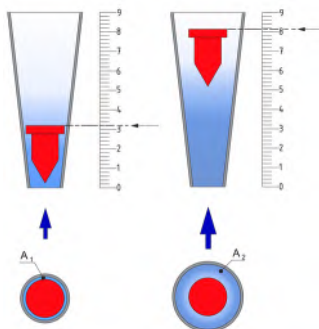
The transmitter is connected to a Hall effect, linear signal ruler. The analogue signal is the image of the float position. The transmitter is connected via an M12 connector. This output is useful for applications using a PLC. The device is compact with a high level of repeatability.



Contact output

- 1) : Reed contact
- 2) : Connector, elbow shape
- 3) : Flowmeter
- 4) : Measuring tube
- 5) : Magnetic float

4-20 mA output (Hall effect sensor)



Operating principle

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Variable Area Flowmeters  
**RA 60 / FA 60**

07-12-2020

D-727.01-EN-AC

DEB

727-01 /1

## TECHNICAL FEATURES

Nominal pressure	PN 10 at 20 °C
Pressure limits	See the table "Measuring ranges"
Operating temperature	Max. 80 °C depending of the version (Option: 100 °C)
Scale factor	1:10
Accuracy class	According to VDE/VDI 3513 page 2 (08/2008)
Error limit (G)	1.6 %
Linear limit (qG)	50 %
Fittings / RA 60	Union, 2 pieces Inner cylindrical insert, thread according to DIN EN 10226-1 (ISO 7-1)
Raccords / FA 60	Flange PN 10 according to DIN EN 1092-1, Other fittings on request
Corrosion protection	Epoxy coating, glossy blue (RAL 5017)
Corrosion class	C3

### Materials

Steel case	Steel Pipe, P235
Ends / RA 60	S355 (size 19), EN-GJL-200 (size 30 - 36), Cast aluminum from size 43 and larger
Threaded seal	Malleable cast iron, zinc plated
Flanges / FA 60	S355
Measuring tube	Borosilicate glass
Protective screen	Perspex
Seals	NBR (Options: FPM, EPDM, FFKM)
Floats for liquids <sup>1)</sup>	AISI 316 Ti (Options: PVC, PP, PVDF or PTFE with weighted core)
Floats for Gas <sup>1)</sup>	Anodized aluminum (Option: PVC, PP, PTFE, PVDF or AISI 316 Ti)
Floats for versions with contacts <sup>1)</sup>	For liquids: AISI 316 Ti with magnetic core For gas: PVC with magnetic core Other materials on request <sup>1)</sup> Small floats are not guided. With guide rod from size 30 and greater (Detailed description on request)

### Potential free contacts, features

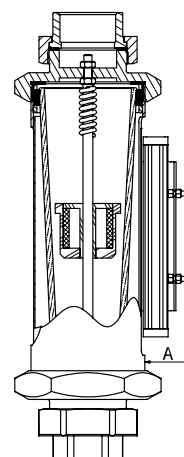
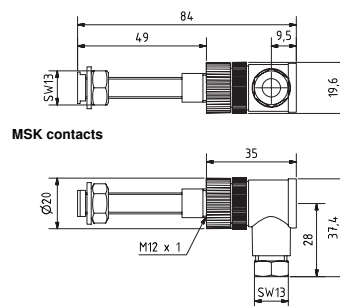
	MSK1	MSK2	MSKW
Operation	Bistable N.C.	Bistable N.O.	Bistable, changeover
Max. voltage	50 V AC / 75 V DC	50 V AC / 75 V DC	50 V AC/75 V DC
Max. current	0.5 A	0.5 A	0.5 A
Switching power	10 W/VA	10 W/VA	5 W/VA
Range T ° <sup>1)</sup>	-20...+90 °C	-20...+90 °C	-20...+90 °C

<sup>1)</sup> : Consider as well the the temperature limit of the flowmeter

### Features of transmitters 4-20 mA -- EM <sup>1)</sup>

Measuring scale [A...B]	160 mm
Repeatability	≤ 0.1% of measuring range ≤ depending on sensor position
Ambient temperature	-25...+70 °C
Output signal	4-20 mA or 0-10 Volt; 3-wire
Power supply	15...30 V DC
Electrical connection	M12 connector / elbow shape
Protection	IP 67
LEDs indication	Green: Power ON Yellow: Float position

<sup>1)</sup> 4-20 mA or 0-10 Volt outputs: Available only for size 100 and 110 models.



4-20 mA output  
Size 100: A = 47 mm  
Size 110: A = 47 mm

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Variable Area Flowmeters  
**RA 60 / FA 60**

07-12-2020

D-727.01-EN-AC

DEB

727-01 /2

## MEASURING RANGES

Size	Scale: Water at 20 °C	Scale: Air <sup>1)</sup>	RA 60 - Union Fittings	FA 60 - Flanges ND..	Max. P. at 20 °C [bar]
10	0.1 – 1 l/h 15 – 150 l/h	0.3 – 3 l/h 0.25 – 2.5 m <sup>3</sup> /h	Rp ¼"	10	10
			Rp ⅜"	15	
			Rp ½"	20	
				25	
19	12 – 120 l/h 0.12 – 1.2 m <sup>3</sup> /h	0.15 – 1.5 m <sup>3</sup> /h 1.6 – 16 m <sup>3</sup> /h	Rp ½"	10	10
			Rp ¾"	15	
			R 1"	20	
				25	
30	0.1 – 1 m <sup>3</sup> /h 0.3 – 3 m <sup>3</sup> /h	1.3 – 13 m <sup>3</sup> /h 3.6 – 36 m <sup>3</sup> /h	Rp 1"	25	10
			Rp 1 ¼"	32	
			Rp 1 ½"	40	
36	0.4 – 4 m <sup>3</sup> /h	4 – 40 m <sup>3</sup> /h	Rp 1 ¼"	32	8
			Rp 1 ½"	40	
			R 2"	50	
43	0.9 – 9 m <sup>3</sup> /h 1.6 – 16 m <sup>3</sup> /h	5 – 50 m <sup>3</sup> /h 16 – 160 m <sup>3</sup> /h	Rp 1 ½"	40	8
			Rp 2"	50	
			Rp 2 ½"	65	
100	1.6 – 16 m <sup>3</sup> /h 2 – 20 m <sup>3</sup> /h	12 – 120 m <sup>3</sup> /h 28 – 280 m <sup>3</sup> /h	Rp 2"	65	6
			Rp 2 ½"	80	
			R 3"	100	
110	2.5 – 25 m <sup>3</sup> /h 3 – 30 m <sup>3</sup> /h	14 – 140 m <sup>3</sup> /h 44 – 440 m <sup>3</sup> /h	Rp 2 ½"	65	5
			Rp 3"	80	
				100	
150	—	30 – 300 m <sup>3</sup> /h 100 – 1000 m <sup>3</sup> /h	—	80	4
				100	
				125	
				150	
180	—	30 – 300 m <sup>3</sup> /h 150 – 1500 m <sup>3</sup> /h	—	150	3
				200	

<sup>1)</sup> At Standard Temperature and Pressure: 0 °C at 1013 mbar Abs  
On request: Measuring ranges for other fluids and operating conditions

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Variable Area Flowmeters  
**RA 60 / FA 60**

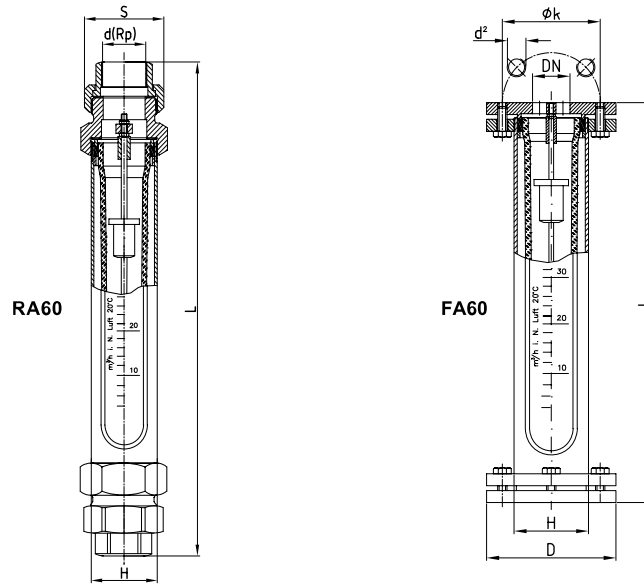
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727-01 / 3

## DIMENSIONS



RA 60						FA 60							
Size	Union	S [mm]	d' [mm]	L [mm]	H [mm]	Size	DN	L [mm]	H [mm]	D [mm]	k [mm]	x Vis	d²
10	Rp 1/4"	28	12	388	28	10	10	340	28	90	60	4	M12
	Rp 3/8"	32	16	390			15	95	65	4	M12		
	Rp 1/2"	39	20	393			20	105	75	4	M12		
19	Rp 1/2"	39	20	405	45	19	25	115	85	4	4	M12	
	Rp 3/4"	48	25	407			10	340	45	90	60	4	M12
	Rp 1"	55	32	415			15	95	65	4	M12		
30	Rp 1"	55	32	415	60	30	20	105	75	4	4	M12	
	Rp 1 1/4"	67	40	430			25	115	85	4	M12		
	Rp 1 1/2"	74	50	436			25	115	85	4	M12		
36	Rp 1 1/4"	67	40	430	75	36	25	340	60	115	85	4	M12
	Rp 1 1/2"	74	50	436			32	140	100	4	M16		
	Rp 2"	90	63	446			40	150	110	4	M16		
43	Rp 1 1/2"	74	50	440	95	43	32	340	75	140	100	4	M16
	Rp 2"	90	63	446			40	150	110	4	M16		
	Rp 2 1/2"	111	75	460			50	165	125	4	M16		
	Rp 3"	131	90	470			50	165	125	4	M16		
100	Rp 2"	90	63	446	115	100	65	340	115	185	145	4	M16
	Rp 2 1/2"	111	75	458			80	200	160	8	M16		
	Rp 3"	131	90	470			100	220	180	8	M16		
110	Rp 2 1/2"	111	75	462	133	110	65	340	185	145	4	M16	
	Rp 3"	131	90	474			80	200	160	8	M16		
							100	220	180	8	M16		
							150	250	210	8	M16		
180					219	180	150	640	178	220	160	8	M16
							100	180	8	M16			
							125	210	8	M16			
					295	180	150	285	240	8	M20		
				200			340	295	8	M20			

d' : For welding or solvent welding

<sup>1)</sup> : For installation, length: 655 mm

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**Variable Area Flowmeters**  
**RA 60 / FA 60**

07-12-2020

D-727.01-EN-AC

**DEB**

**727-01 /4**

# Low flow-rates area flowmeters SGK 1-3



- Direct reading on a calibrated tube
- Water: 0.1 – 1 l/h ... 1.2 m<sup>3</sup>/h
- Air: 0.3 – 3 l/h ... 16 m<sup>3</sup>/h
- Maxima: 10 bar or 100 °C
- Measuring glass tube: Conical (Pyrex®)
- Fittings: BSP ¼" or ½"
- OPTIONS :  
Pressure regulator  
Limit value switches  
Analogue output 4-20 mA  
ATEX version available

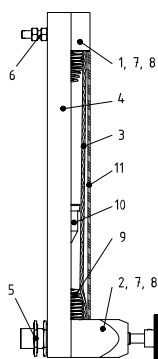
## APPLICATIONS

Flowmeters SGK 1-3 are used for direct reading and measuring of low flow-rates on liquids and gases. They are designed for reduced space, in laboratory, in technical rooms.

## DESCRIPTION

The measuring principle is that of the variable area flowmeter, the float is moved by the fluid inside a calibrated conical glass tube. The glass tube (3) is sealed at each end by an O-ring protected against damaged by a flat gasket (inserted in the parts 1 and 2).

These flowmeters can be equipped with an adjustment valve and they receive limit value switches. The signal output from limit value switches are easily connected to a PLC or monitoring device. The GK2 version can be fitted with a ruler with a 4-20 mA transmitter (Hall effect sensors).



- 1) Head (here: vertical outlet, model B1)
- 2) Adjustment valve (here: at bottom, type B1)
- 3) Conical measuring glass tube
- 4) Body
- 5) Fittings with nut BSP ¼" or ½"
- 6) Nut M5 or M8 for fastening heads
- 7) O-ring seals inside 1) & 2); Not shown
- 8) Gaskets inside 1) & 2); Not shown

Standard versions:

<b>SGK-1</b>	For smallest flows of air and water
<b>SGK-2</b>	For medium flows of air and water
<b>SGK-3</b>	Low flows of air and water
<b>...-MSK1</b>	With bistable Reed contact N.C.
<b>...-MSK12</b>	With bistable Reed contact N.O.
<b>...-MSKW</b>	With changeover Reed contact
<b>...-RC <sup>1)</sup></b>	With inductive limit value switch
<b>...-EM <sup>2)</sup></b>	With analogue output 4-20 mA or 10 V

<sup>1)</sup> Flow-rates < 2 l/h of water; < 80 l/h of air

<sup>2)</sup> Available only with SGK-2 version (other ranges on request)

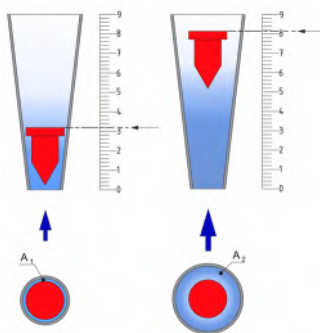
### Limit value switches:

These flowmeters can be equipped with a magnetic float and Reed contacts, triggerpoints adjustable over the entire measuring range. For small flows up to 30 l/h, detection by inductive contact series RC will be used.

### Analogue output 4-20 mA or 0-10 V:

The output signal is obtained by using a linear Hall effect displacement sensor. The output signal is proportional to the height of the magnetic float position. The sensor is plugged through a connector M12.

This output is useful for applications using a PLC. The device is compact with a high level of measurement repeatability.



Principle

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Low flow-rates area  
flowmeters  
**SGK 1-3**

11-03-2021

D-728.05-EN-AC

**DEB**

**728-05/1**



## TECHNICAL FEATURES

Fittings	Threads or male or female according DIN EN ISO 228 T1 Option : Hose couplings
Design	From "A" to "Do" types: Report to the table "DESIGN" (end of document)
Operating temperature	With NBR seals: Max. 80 °C With FPM seals: Max. 100 °C
Operating pressure	Max. 10 bar (Without water hammer event)

### Measuring tube

Reading scale	Engraved scale
Graduated scale length	SGK 1-2: ~150 mm SGK 3: ~220 mm
Accuracy class	VDE/VDI 3513, page 2
Error limit (G)	1.6 %
Linear limit (qG)	50 %
Calibration	According application specifications

### Materials

Body	Anodized aluminum
Fittings	Standard: Or anodized aluminum, or PVC Options: AISI 316 Ti or PVDF
Seals	Standard: NBR for Aluminum version FPM for AISI 316 Ti version Options: EPDM, Perlast® (FFKM)
Conical measuring tube	Borosilicate glass
Float	Aluminum, PVC, PP, AISI 316 Ti Option: PTFE
Pressure regulator	Needle: AISI 316 Ti

Other materials on request

	Reed contact features		
	MSK1	MSK2	MSKW
Function	Bistable NC	Bistable NO	Bist. Changeover
Max. Voltage	50 V AC / 75 V DC	50 V AC / 75 V DC	50 V AC/75 V DC
Max. Current	0,5 A	0,5 A	0,5 A
Switching capacity	10 W/VA	10 W/VA	5 W/VA
Temperature <sup>1)</sup>	-20...+90 °C	-20...+90 °C	-20...+90 °C

<sup>1)</sup> The thermal endurance of the flow meter is crucial.

	Inductive contacts features	
	RC 10-14-N3	RC 15-14-N3
Inner diameter	10 mm	15 mm
Rated voltage	8 V DC	8 V DC
Consumption	1 mA / 3 mA	1 mA / 3 mA
Max. speed (float)	≤10 m/s	≤10 m/s
Self-inductance	≤120 mH	≤120 mH
Temperature range	-20...+70 °C	-20...+70 °C
Switching function	NAMUR bistable	NAMUR bistable

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Low flow-rates area  
flowmeters  
**SGK 1-3**

11-03-2021

D-728.05-EN-AC

**DEB**

**728-05/2**

### Analogue output 4-20 mA - EM, features

Measuring range [A...B]	125 mm, 160 mm
Repeatability	≤ 0.1% F.S. ≤ dependent upon position sensor
Linearity deviation	≤ 1 % v.E.
Temperature drift	≤ ±0,03 % /K
Ambient temperature <sup>1)</sup>	-25....+65 °C
Operating voltage	15...30 V DC
Idle current	≤ 15 mA
Analogue output <sup>2)</sup>	4-wire transmitter
Load resistor on 4-20 mA	≤ 0,4 kΩ
Output 0-10 V	0...10 V
Load resistor on 0-10 V	≥ 4,7 kΩ
Sampling rate	200 Hz
Connection	Plug Connector, M12 x 1
Protection	IP 67
Signaling LED	Green: Operating Yellow: Position sensor in detection range

<sup>1)</sup> The thermal endurance of the flow meter is crucial.

<sup>2)</sup> 2-wire version available on request

### MEASURING SCALES

	Range for Air <sup>1)</sup>	Range for Water
<b>SGK-1</b>	0.3 - 3 l/h 0.25 - 2.5 m <sup>3</sup> /h	0.1 - 1 l/h 15 - 150 l/h
<b>SGK-2</b>	6 - 60 l/h 0.58 - 5.8 m <sup>3</sup> /h	0.5 - 5 l/h 20 - 200 l/h
<b>SGK-3</b>	0.15 - 1.5 m <sup>3</sup> /h 1.6 - 16 m <sup>3</sup> /h	12 - 120 l/h 0.12 - 1.2 m <sup>3</sup> /h

Measuring scales for other fluids and operating conditions: On request

<sup>1)</sup> For standard operating conditions at 0 °C and 1013 mbar ABS

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**Low flow-rates area  
flowmeters  
SGK 1-3**

11-03-2021

D-728.05-EN-AC

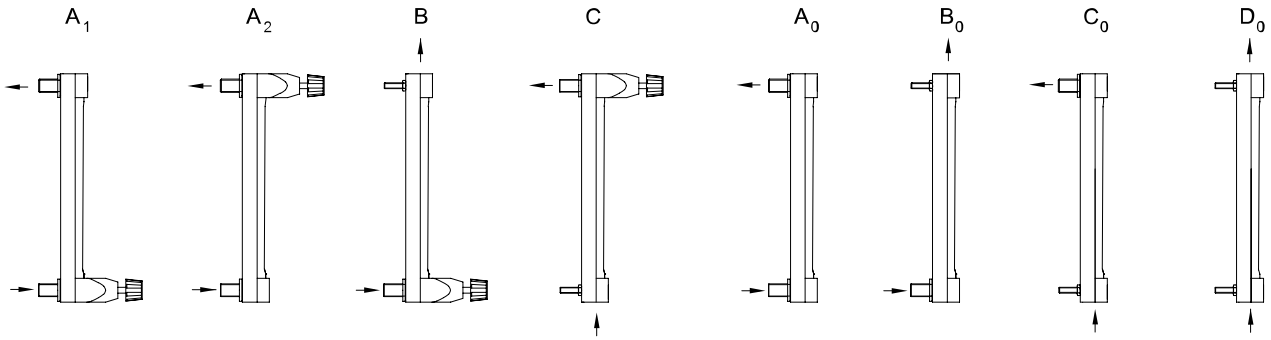
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**728-05/3**

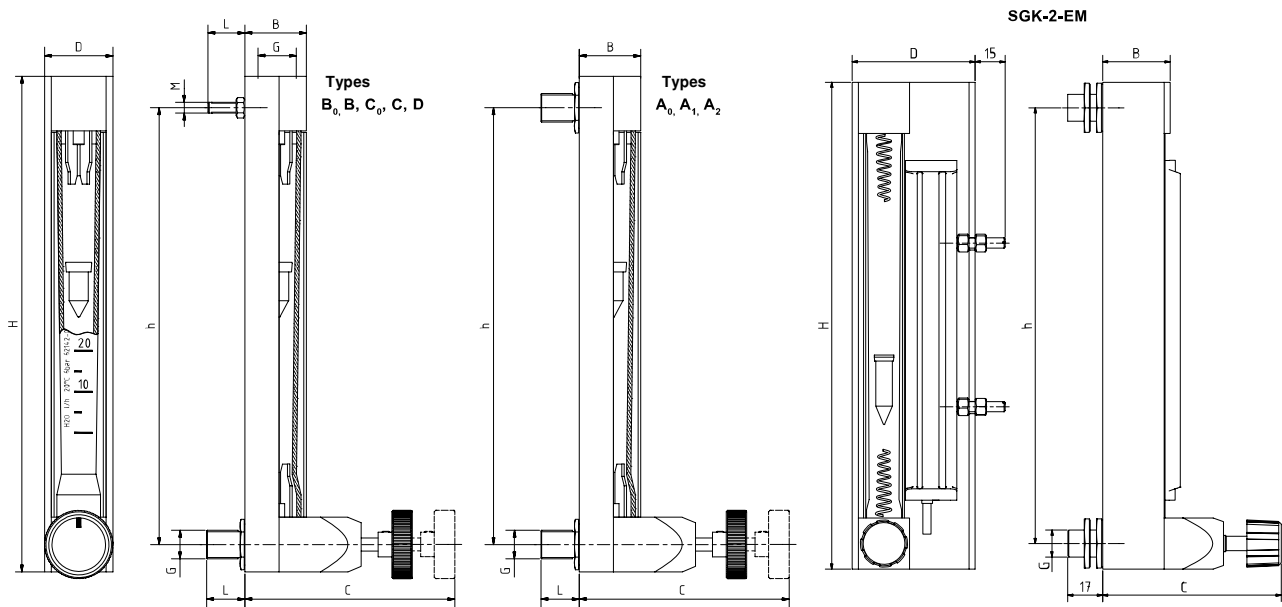
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## DESIGN



## DIMENSIONS



	G	Types	H [mm]	h [mm]	M	L [mm]	B [mm]	D [mm]	C maxi [mm]
SGK-1	1/4"	A <sub>1</sub> , A <sub>2</sub> , A <sub>0</sub>	238	213	-	~ 22.5	27.5	30	80 (Only: A <sub>1</sub> , A <sub>2</sub> )
SGK-2	1/4"	A <sub>1</sub> , A <sub>2</sub> , A <sub>0</sub>	238	213	-	~ 22.5	27.5	30	80 (Only: A <sub>1</sub> , A <sub>2</sub> )
		B, B <sub>0</sub> , C, C <sub>0</sub>	242	211	M5	~ 22.5	27.5	30	80 (Only: B, C)
	1/4" i	D <sub>0</sub>	246	209	M5	~ 22.5	27.5	30	-
SGK-2-EM	1/4"	A <sub>1</sub> , A <sub>2</sub> , A <sub>0</sub>	238	213	-	~ 17	33	60	85 (Only: A <sub>1</sub> , A <sub>2</sub> )
SGK-3	1/2	A <sub>1</sub> , A <sub>2</sub> , A <sub>0</sub>	363	323	-	~ 27	45	50	135 (Only: A <sub>1</sub> , A <sub>2</sub> )
		B, B <sub>0</sub> , C, C <sub>0</sub>	363	320	M8	~ 27	45	50	135 (Only: B, C)
	1/2 i	D <sub>0</sub>	363	317	M8	~ 27	45	50	-

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Low flow-rates area  
 flowmeters  
**SGK 1-3**

11-03-2021

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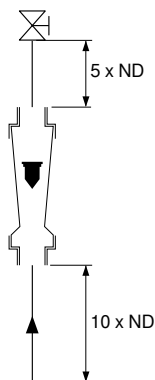
# Plastic flow indicator IDP



IDP: Variable area flow indicator



Contacts Z42 or Z40



Recommended mounting

- Direct reading
- All wet parts in plastics
- Measuring tubes: PVC or Polysulfone
- Ranges: Up to 60 m<sup>3</sup>/h
- Specific scales for Air, HCl, NaOH, etc.
- Options: Adjustable contacts, ruler with 4-20 mA transmitter

## APPLICATIONS

IDP series, flow-rate indicators are ideally suited for continuous monitoring of flow for air and neutral, basic or acid liquids.

## DESCRIPTION

IDP or PDP indicators use the principle of variable area flow-meter: the fluid flow raises a diver in a conical tube, expanding the cross section of the passage of fluid. The diver moves up proportionally to the flow-rate.

Standard equipment includes a graduated scale in l/h of water at 20 °C. In options there are specific scales; Air in Nm<sup>3</sup>/h (1 to 9 bar ABS); HCl at 30 / 33 %; NaOH at 30 % and at 50 %. See the data sheet 730-06

With magnetized versions, the Z60 transmission ruler converts the diver position into a 4-20 mA signal. See the data-sheet 730-07

### Mounting precautions:

Flow indicators must be installed vertically with rising fluid. It is recommended to have a length upstream of 10 x ND and a length downstream of 5 x DN.

## TECHNICAL FEATURES

Pressure	Max. 10 bar at 20 °C
Température limits at 1 bar	PVC: 0 ... +50 °C PSU: 0 ... +90 °C (or 60 °C with standard PVC fittings)
Graduated scale	l/h of water at 20 °C (standard)

### Materials

Measuring tubes	PVC or Polysulfon
Diver and stoppers	PVDF
Diver guide rod	PVDF-coated stainless steel (ND 50 and 65)
Seals	Standard: EPDM; FPM in option
Fittings:	Standard: PVC Unions for solvent welding Options: See the table "Fittings"

### Contacts Z42 and Z40

The flow indicator must have a diver with a built-in magnet (PVDF-A)

Switching power	Max. 10 W / 12 VA; 230 V AC; 0.5 A
Operating	Z42: N.O. without flow Z40: N.C. without flow

Protection	IP 65 - Pluggable terminal block
Ambient temperature	0... +55 °C

Overloads and inductive or capacitive loads may damage the contacts. It is recommended to use a contact protection like a relay ES 2001 (see data-sheet 250-02).

**EC Conformity:** The instrument meets the legal requirements of the current European Directives.

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Plastic flow indicator  
IDP

18-11-2019

D-730.05-EN-AG

DEB

730-05/1

## CODE NUMBERS AND REFERENCES

IDP Type	ND	D [mm]	R	Range Flow in [l /h]	$\Delta P$ [mbar]	Code			
						PVC	PVC-A	PSU	PSU-A
50	25	30	1"	50...500	23	730 700	730 740	730 720	730 760
100	25	30	1"	100...1 000	23	730 701	730 741	730 721	730 761
150	32	40	1 1/4"	150...1 500	23	730 702	730 742	730 722	730 762
250	32	40	1 1/4"	250...2 500	23	730 703	730 743	730 723	730 763
200	40	50	1 1/2"	200...2000	25	730 704	730 744	730 724	730 764
300	40	50	1 1/2"	300...3 000	25	730 705	730 745	730 725	730 765
600	50	63	2"	600...6 000	25	730 706	730 746	730 726	730 766
1 000	50	63	2"	1 000...10 000	25	730 707	730 747	730 727	730 767
1 500	50	63	2"	1 500...15 000	28	730 708	730 748	730 728	730 768
2 000	65	75	2 1/2"	2000...20 000	46	730 709	730 749	730 729	730 769
3 000	65	75	2 1/2"	3 000...30 000	46	730 710	730 750	730 730	730 770
8 000	65	75	2 1/2"	8 000...60 000	47	730 711	730 751	730 731	730 771

$\Delta P$ : Pressure drop (water at 20 °C)

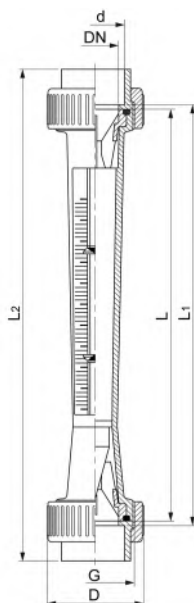
### FITTINGS and FPM SEALS:

ND	$\emptyset$	FPM Seals	Female threads			PPH unions	Flanged fittings	
			Cast iron	AISI 316	PVC		PVC	PPH
25	32	P53 959	730 300	730 305	730 301	730 302	730 306	730 307
32	40	P53 960	730 350	730 355	730 351	730 352	730 356	730 357
40	50	P53 961	730 400	730 405	730 401	730 402	730 406	730 407
50	65	P53 962	730 500	730 505	730 501	730 502	730 506	730 507
65	75	P53 963	730 600	-	730 601	730 602	730 606	730 607

### CONTACTS:

Code	Reference	Description
730 998	Z42 NO	Contact Z42, Max. 12 VA / 230 V / 0.5 A, Bi-stable N.O.
730 999	Z40 NF	Contact Z40, Max. 12 VA / 230 V / 0.5 A, Bi-stable N.C.

## DIMENSIONS



ND	d	R	G	D [mm]	L [mm]	L1 [mm]	L2 [mm]	Mass [kg]
25	32	1"	1 1/2"	60	350	356	400	0.5
32	40	1 1/4"	2"	72	350	356	408	0.6
40	50	1 1/2"	2 1/4"	83	350	356	418	1.2
50	63	2"	2 3/4"	103	350	356	432	1.7
65	75	2 1/2"	3 1/2"	122	350	356	444	2.9

Dimensions are for standard models with PVC unions.

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Plastic flow indicator  
**IDP**

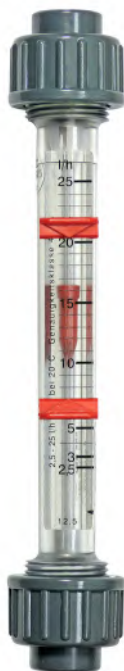
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18-11-2019

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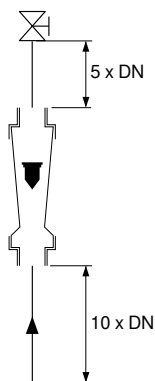
# Small plastic flow indicator PDP



PDP: Variable area flow indicator



Contacts Z42 or Z40



Recommended mounting

- Direct reading
- All wet parts in plastics
- Materials: PVC, PSU, PVDF, EPDM
- Scales from 2.5 up to 1,000 l/h of water  
Other scales: Air in Nm<sup>3</sup>/h, HCl and NaOH.
- Option: Adjustable contacts

## APPLICATIONS

PDP series are ideally suited for continuous measurement of flow for air and neutral, basic or acidic liquids.

## DESCRIPTION

PDP indicator applies the principle of variable area flow-meter: the flow raises a diver in a conical tube expanding the cross section of fluid passage. The diver moves up proportionally to the flow-rate (diver is commonly named "float").

Standard equipment includes a graduated scale in l/h of water at 20 °C. In options there are specific scales: Air in Nm<sup>3</sup>/h; HCl at 30...33 %; NaOH at 30 % & 50 %. See data -sheet 731-04

### Precautions for mounting:

Flow indicators must be installed vertically with rising fluid. It is recommended to have a length upstream of 10 x ND and downstream of 5 x ND.

## TECHNICAL FEATURES

Pressure limit	10 bar max. at 20 °C
Temperature limits at 1 bar	PVC: 0 ... +50 °C (Water) PSU (Polysulfone): 0 ... +90 °C (Max. 60 °C with PVC fittings) PVDF (option) on request
Graduated scales	l/h (Standard for water at 20 °C)
Specific scales	Air in Nm <sup>3</sup> /h (1 to 9 bar absolute pressure) HCl (30 ... 33 %); NaOH (30 % and 50 %)

### Materials

Measuring tubes	PVC or PSU (Polysulfone)
Diver and stoppers	PVDF
Seals	EPDM (standard) - FPM in option
Unions	PVC for solvent welding
Fittings	Standard: PVC Unions for solvent welding Options: See the table "Fittings"

### Contacts Z42 and Z40

The flow indicator must have a diver with a built-in magnet (PVDF-A)

Switching power	Max. 10 W / 12 VA; 230 V AC; 0.5 A
Operation	Z42: Change-over contact, N.O. without flow Z40: Change-over contact, N.C. without flow

Protection IP 65 - Pluggable terminal block

Ambient temperature 0... +55 °C

Overloads and inductive or capacitive loads may damage the contacts. It is recommended to use a contact protection like a relay ES 2001 (see data-sheet 250-02).

**EC Conformity:** The instrument meets the legal requirements of the current European Directives

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Small plastic flow indicator  
**PDP**

16-04-2019

D-731.03-EN-AE

DEB

731-03/1



## CODE NUMBERS AND REFERENCES

PDP Type	ND	D [mm]	R	Range Flow [l/h]	$\Delta P$ [mbar]	Code			
						PVC	PVC-A	PSU	PSU-A
2.5	10	16	3/8"	2.5 ... 25	4.5	731 700	731 750	731 800	731 850
5	10	16	3/8"	5...50	4.5	731 701	731 751	731 801	731 851
10	10	16	3/8"	10 ... 100	4.5	731 702	731 752	731 802	731 852
15	15	20	1/2"	15 ... 150	4.4	731 703	731 753	731 803	731 853
20	15	20	1/2"	20 ... 200	4.4	731 704	731 754	731 804	731 854
30	25	32	1"	30 ... 300	8.1	731 705	731 755	731 805	731 855
50	25	32	1"	50 ... 500	8.1	731 706	731 756	731 806	731 856
100	25	32	1"	100 ...1,000	8.1	731 707	731 757	731 807	731 857

$\Delta P$  : Pressure drop, water at 20 °C  
PVDF models: on request

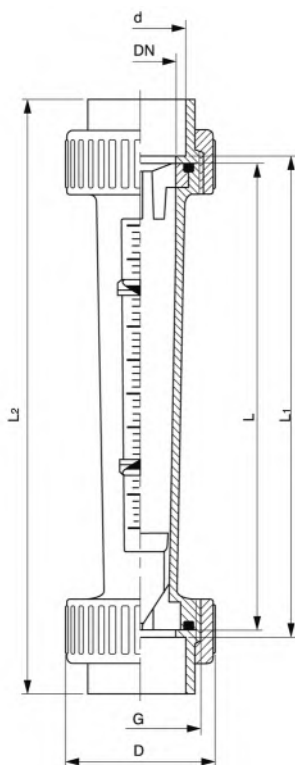
### Fittings:

ND	Ø	FPM seals	Female threads			PPH smooth couplings	Flanges	
			Cast iron	AISI 316	PVC		PVC	PPH
10	16	P53 955	730 195	730 105	730 101	730 102	730 106	730 107
15	20	P53 56	730 200	730 205	730 201	730 202	730 206	730 207
25	32	P53 959	730 300	730 305	730 301	730 302	730 306	730 307

### Contacts:

Code	Reference	Description
730 998	Z42 NO	Contact Z42, Max. 12 VA / 230 V / 0.5 A, Change-over, N.O.
730 999	Z40 NF	Contact Z40, Max. 12 VA / 230 V / 0.5 A, Change-over, N.C.

## DIMENSIONS



ND [mm]	d	R	BSP	D [mm]	L [mm]	L1 [mm]	L2 [mm]	Mass [kg]
10	16	3/8"	3/4"	35	165	171	199	0,08
15	20	1/2"	1"	43	185	191	223	0,13
25	32	1"	1 1/2"	60	200	206	250	0,24

Dimensions are for standard PDP with PVC unions.

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Small plastic flow indicator  
**PDP**

16-04-2019

D-731.03-EN-AE

DEB

731-03/2

# Flow-rate indicator for liquid G6/G5



- For liquids
- Various scales up to 63,000 l/h
- Diver: AISI 316 L or PTFE
- Fittings: Flanges or threads
- Options: 4-20 mA, contacts, Ex version

## APPLICATIONS

Local indication of instant flow of liquids.

## DESCRIPTION

The flow-rate is indicated on the front (magnetic coupling of the diver with the external indicator). The short distance of 250 mm between flanges allows an installation in reduced space. In addition, no straight pipe distances upstream and downstream are required.

### Operation:

Through the measuring tube (including a calibrated orifice and a conical diver), the flow lifts the diver (up to equilibrium height against its weight). The direct reading is on an analogue display, isolated from the liquid.

**This instrument must be installed for a vertical and upward flow.**

## TECHNICAL FEATURES

Turndown:	1 to 10
Scale length:	80 mm
Accuracy	± 1.5 % F.S (without transmitter) ± 1 % F.S. (with transmitter 4-20 mA)
Repeatability	0.5 % F.S.
Pressure limit	40 bar
Temperature limits	-10 ... +150 °C (without contacts) -10 ... +100 °C (with contacts) -10 ... +90 °C (with transmitter 4-20 mA) -30 ... +300 °C (Version high temperature)
Fittings	Flanges PN 16, UNI EN 1092-1 (standard G6), Threads DIN 11851 (standard G5); NPT on request
Protection	IP 67

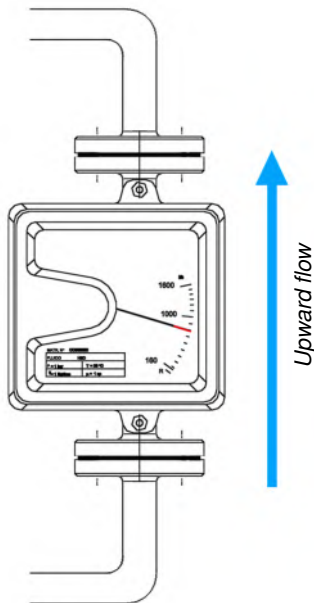
### Materials:

Housing	Cast aluminum; Epoxy painted
Wet parts	AISI 316 L Options : Titanium, Hasteloy C

### Options

- Alarms: 1 or 2 inductive contacts adjustable on full scale; Supply 8 V DC
- Transmitter 4-20 mA, 2-wire, LCD display (Flow-rate, %, Totalization); Power supply 24 V DC ±10 %
- Ex version: EEx ia IIC T6 (Intrinsic safety) or EEx d IIB T4 (Explosion-proof cabinet)

**EC Conformity:** The instrument meets the legal requirements of the current European Directives.



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Flow-rate indicator for liquid  
**G6/G5**

19-03-2020

D-741.01-EN-AB

**DEB**

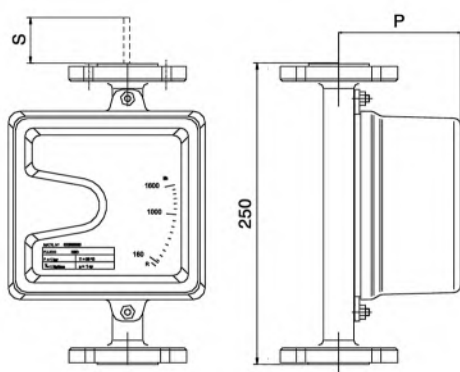
741-01 /1

## CODE NUMBERS AND REFERENCES

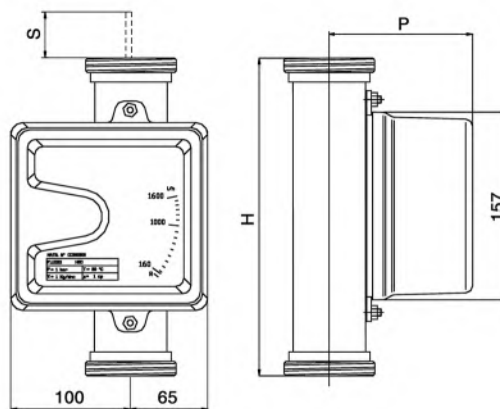
G6 with flanges UNI EN 1092-1 (Scale for water at 20 °C)

Type - ND	$\Delta P$ for AISI 316 [mbar]	Flow indicator; Wet parts AISI 316 L		Flow indicator; Wet parts: PTFE	
		Code	Flow-rate [l / h]	Code	Flow-rate [l / h]
2600 - ND 15	150	741 215	2.5 ... 25	-	-
		741 216	4...40	741 415	2.5 ... 25
		741 217	6.3 ... 63	741 416	4...40
	160	741 218	10...100	741 417	6,3...63
	170	741 219	16...160	741 418	10...100
	180	741 220	25...250	741 419	16...160
	190	741 221	40...400	741 420	25...250
2800 - ND 25	110	741 222	63...630	741 421	40...400
		741 225	100 ... 1 000	741 425	63...630
	140	741 226	160 ... 1 600	741 426	100 ... 1 000
	170	741 227	250 ... 2 500	741 427	160 ... 1 600
3100 - ND 50	210	741 228	400 ... 4 000	741 428	250 ... 2 500
	230	741 250	630 ... 6 300	741 450	400 ... 4 000
	250	741 251	1 000 ... 10 000	741 451	630 ... 6 300
3300 - ND 80	250	741 252	1 600 ... 16 000	741 452	1 000 ... 10 000
3400 - ND 100	260	741 253	2 500 ... 25 000	741 453	1 600 ... 16 000
		741 280	4 000 ... 40 000	741 480	3 000 ... 30 000
		741 290	6 300 ... 63 000	741 490	4 000 ... 40 000

## DIMENSIONS [mm]



G6 model



G5 model

Type	G6: flange fittings				G5: Threaded fittings				
	UNI EN 1092-1	S [mm]	P [mm]	Mass [kg]	DIN 11851	H [mm]	S [mm]	P [mm]	Mass [kg]
2600	DN 15	39	103	3.8	1"	265	31.5	123	2.7
2800	DN 25	55	110	4.9	1 ½"		45.5	130	3.3
3100	DN 50	67	128	9.9	2 ½"		60.5	148	5.7
3300	DN 80		141	13.5	4"	274	53	168	8.2
3400	DN 100		157	16.5	-	-	-	-	-

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Flow-rate indicator for liquid  
**G6/G5**

19-03-2020

D-741.01-EN-AB

DEB

741-01/2

# Variable area flowmeters SGM - 250



- **Magnetic transmission**
- **Ranges from 2.5 l/h up to 100 m<sup>3</sup>/h (Water)**
- **Body and float: AISI 316; PTFE; PVC; PPH**
- **Fittings: Flanges or threaded BSP**
- **Outputs: Contacts; 4/20 mA + totalizer**
- **ATEX Version**

## APPLICATIONS

- Direct reading of flow-rate on gases or on liquids: - Water treatment, Industrial process (paper mill, textiles etc.), Chemical and pharmaceutical industries, Heating and cooling plants

The SGM flowmeters are suitable when glass or plastic reading tubes are not useful because of fluid opacity or their high temperature and pressure or for safety reasons. These flowmeters can be calibrated on our benches, according to each fluid and according to the operating conditions.

The small distance between fittings (250 mm) allows an installation in a small space; Straight unimpeded pipe runs should have a length equal to 5x DNupstream and 3x DN downstream of the installation location.

## DESCRIPTION

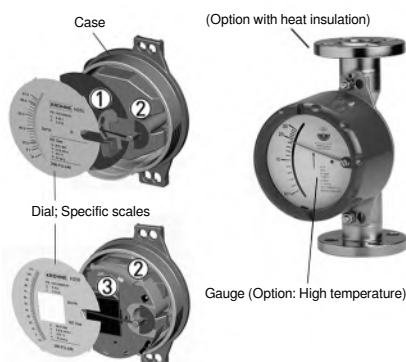
The measuring principle is that of the variable area flowmeter, the float is moved by the fluid inside a calibrated conical measuring tube. The vertical position of the float is transmitted magnetically to a dial gauge. The circulation of the fluid lifts the float to the point of equilibrium resulting from its weight, the pushing force and the free passage section. Bodies and floats are available in various materials to provide excellent resistance in adequation with dangerous, hot or aggressive fluids and for total safety.

The SGM - 250 indicator is a case, modular, to accommodate all electrical options and the graduated scale. The electrical accessories are plugged-in onto a rack. So, they can be replaced or upgraded without stopping the process and without having to remove the pointer. The HT version of SGM -250 is suitable for use in extreme temperatures.

The flowmeter can be ordered with magnetic filter and/or float damper. These can also be retrofitted at any time.

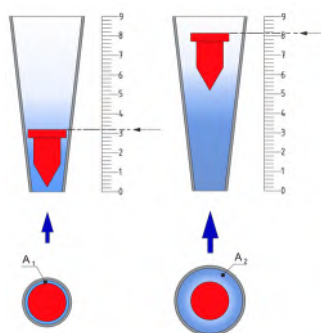
In the case of variable or pulsating flow, a damper can additionally be installed for the pointer. SGM - 250 can be equipped with a limit value switch and/or measuring transmitter with electrical analog output for a PLC or a totalizer.

**These flowmeters are only suitable for vertical installation, with the direction of flow being from bottom to top.**



- (3) : Flow totalizer (EMZ)
- (1) : Contacts, IK1, IK2, IKS1, IKS2
- (2) : Output signal (EM)

Fig A : Modules



Principle

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Variable area flowmeters  
**SGM - 250**

01-06-2021

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**DEB**

**741-10/1**

## TECHNICAL FEATURES

	AISI 316 L version		PVC or PP versions	
<b>Accuracy</b>	VA/C4 (Standard) PTFE/ Ceramic *	1.6 acc. VDI/VDE 3513 pt. 2 2.5 acc. VDI/VDE 3513 pt. 2	SG-PP-/PVC	2.5 acc. VDI/VDE 3513 pt. 2
<b>Pressure</b>	DN 15, 25, 50 DN 80 , DN 100	PN 40 PN 16	DN 25, DN 50 DN 65, DN 80, DN 100	PN 16 PN 10
<b>Fittings</b>	Flanges BSP-M	According to EN-1092-1 ANSI B 16.5, JIS B 2220 <sup>1)</sup> DIN 11851, DIN EN ISO 228	Flanges Spigot ends or PP or PVC	According to EN-1092-1 ANSI B 16.5, JIS B 2220 <sup>1)</sup> DIN 11851, DIN EN ISO 228 <sup>1)</sup>
<b>Indicator</b>	Scale: l/h; m <sup>3</sup> /h; Graduated along 90 mm; Scale factor 1:10 Case, pointer: Painted aluminum; Dial: Sheath aluminum; Window: Glass			

\* : Alternative (on request) ----- <sup>1)</sup> : Option

Model	Tube / Float	Temperature	Ambient	Version	Tube / Float	Temperature	Ambient
SGM/VA	AISI 316 L	-70...+300 °C	-40...+120 °C	SGM-PP	PP	0...+80 °C	0...+80 °C
SGM/C4	Hastelloy C4	-70...+300 °C	-40...+120 °C	SGM-PVC	PVC	0...+40 °C	0...+40 °C
SGM/PTFE	PTFE <sup>1)</sup> /PTFE	-70...+70 °C	-40...+70 °C	<----- <sup>1)</sup> : Tube of AISI 306 L with lining			
SGM/PTFE/K	PTFE <sup>1)</sup> / Ceramic	-70...+150 °C	-40...+70 °C				
SGM / TFM / K	TFM <sup>1)</sup> / Ceramic	-70...+250 °C	-40...+120 °C				

### Models

#### Materials

<b>VA</b>	Stainless steel 316 L
<b>C4</b>	Hastelloy C4
<b>PTFE</b>	PTFE <sup>1)</sup> /PTFE
<b>PTFE/K</b>	PTFE <sup>1)</sup> / Ceramic
<b>TFMK</b>	TFM <sup>1)</sup> / Ceramic
<b>PP</b>	Polypropylene
<b>PVC</b>	Polyvinyl chloride

#### Inductive contacts

<b>O</b>	Without contact
<b>IK1</b>	With 1 inductive contact (SC3,5-NO-Y)
<b>IK2</b>	With 2 inductive contacts (SC3,5-NO-Y)
<b>IKS1</b>	with one electronic switch (SB3,5-E2)
<b>IKS2</b>	With two electronic switches (SB3,5-E2)

#### Analogue output 4-20 mA

<b>O</b>	Without transmitter
<b>EM</b>	With output 4-20 mA
<b>EMZ</b>	With output 4-20 mA + totalizer

#### Contact-s + output 4-20 mA

<b>O</b>	Without
<b>IK-EM</b>	With 1 inductive contact + output 4-20 mA
<b>IK1-EMZ</b>	With 1 inductive contact + output 4-20 mA + totalizer
<b>IK2-EM</b>	With 2 inductive contacts + output 4-20 mA
<b>IK2-EMZ</b>	With 2 inductive contacts + output 4-20 mA + totalizer
<b>IKS1-EM</b>	With 1 electronic contact + output 4-20 mA
<b>IKS1-EMZ</b>	With 1 electronic contact + output 4-20 mA + totalizer
<b>IKS2-EM</b>	With 2 electronic contacts + output 4-20 mA + totalizer
<b>IKS2-EMZ</b>	

#### ATEX, Explosion-proof design

<b>O</b>	Standard
<b>EEx</b>	Explosion-proof version, all metal
<b>EM-EEx</b>	Explosion proof version, with output 4-20 mA
<b>IK1-EEx</b>	Explosion proof version, with 1 inductive contact
<b>IK2-EEx</b>	Explosion proof version, with 2 inductive contacts
<b>IK1-EM EEx</b>	Explosion proof version, with 1 inductive contact + output 4-20 mA
<b>IK2-EM EEx</b>	Explosion proof version, with 2 inductive contacts + output 4-20 mA

SGM VA O EM O O

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Variable area flowmeters  
**SGM - 250**

01-06-2021

D-741.10-EN-AA

DEB

741-10/2

## MEASURING RANGES

Stainless steel versions				
Fittings	H <sub>2</sub> O scale / AISI 316 float	Δ P [mbar]	Air scale at 0 °C and 1013 mbar ABS	Δ P [mbar]
DN 15 or ½"	2.5 - 25 l/h	26	65 - 650 l/h	21
	4 - 40 l/h	26	100 - 100 l/h	21
	6.3 - 63 l/h	26	150 - 1500 l/h	21
	10 - 100 l/h	26	220 - 2200 l/h	21
	16 - 160 l/h	26	360 - 3600 l/h	21
	25 - 250 l/h	26	550 - 5500 l/h	21
	40 - 400 l/h	28	1 - 10 m <sup>3</sup> /h	21
	63 - 630 l/h	32	1.4 - 14 m <sup>3</sup> /h	22
	70 - 700 l/h	38	1.8 - 18 m <sup>3</sup> /h	38
	100 - 1000 l/h	50	2.8 - 28 m <sup>3</sup> /h	50
	160 - 1600 l/h	85	5 - 50 m <sup>3</sup> /h 85	85
DN 25 or 1"	63 - 630 l/h	32	1.4 - 14 m <sup>3</sup> /h	24
	100 - 1000 l/h	33	2.3 - 23 m <sup>3</sup> /h	24
	160 - 1600 l/h	34	3.5 - 35 m <sup>3</sup> /h	25
	250 - 2500 l/h	38	5 - 50 m <sup>3</sup> /h	26
	400 - 4000 l/h	45	9.5 - 95 m <sup>3</sup> /h	30
	630 - 6300 l/h	103 <sup>2)</sup>	11 - 110 m <sup>3</sup> /h 18 - 180 m <sup>3</sup> /h	78 103 <sup>2)</sup>
DN 50 or 2"	630 - 6300 l/h	74	8 - 80 m <sup>3</sup> /h	13
	1 - 10 m <sup>3</sup> /h	77	11 - 110 m <sup>3</sup> /h	13
	1.6 - 16 m <sup>3</sup> /h	84	15 - 150 m <sup>3</sup> /h	13
	2.5 - 25 m <sup>3</sup> /h	104	23 - 230 m <sup>3</sup> /h 35 - 350 m <sup>3</sup> /h 70 - 700 m <sup>3</sup> /h	60 69 104
DN 80 or 3"	2.5 - 25 m <sup>3</sup> /h	68	35 - 350 m <sup>3</sup> /h	16
	4 - 40 m <sup>3</sup> /h	89	40 - 400 m <sup>3</sup> /h	16
	6.4 - 64 m <sup>3</sup> /h	125	100 - 1000 m <sup>3</sup> /h 180 - 1800 m <sup>3</sup> /h	95 125
DN 100 or 4"	6.3 - 63 m <sup>3</sup> /h	120		
	10 - 100 m <sup>3</sup> /h	220		

<sup>2)</sup> : 300 mbar with damper

The float damping system is recommended for use with gases.

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Variable area flowmeters  
**SGM - 250**

01-06-2021

D-741.10-EN-AA

**DEB**

**741-10/3**



PTFE versions				
fittings	H <sub>2</sub> O scale / PTFE float	Δ P [mbar]	Air scale at 0 °C and 1013 mbar ABS	Δ P [mbar]
DN 15 or ½"	2.5 - 25 l/h	65	70 - 700 l/h	65
	4 - 40 l/h	66	110 - 1100 l/h	66
	6.3 - 63 l/h	66	180 - 1800 l/h	66
	10 - 100 l/h	68	280 - 2800 l/h	68
	16 - 160 l/h	72	480 - 4800 l/h	72
	25 - 250 l/h	86	700 - 7000 l/h	86
	40 - 400 l/h	111	1,000 - 10,000 l/h	111
DN 25 or 1"	63 - 630 l/h	70	1.6 - 16 m <sup>3</sup> /h	70
	100 - 1000 l/h	80	3 - 30 m <sup>3</sup> /h	80
	160 - 1600 l/h	108	4.5 - 45 m <sup>3</sup> /h	108
	250 - 2500 l/h	158	7 - 70 m <sup>3</sup> /h	158
	400 - 4000 l/h	290	12 - 120 m <sup>3</sup> /h	194
DN 50 or 2"	400 - 4000 l/h	81	11 - 110 m <sup>3</sup> /h	81
	630 - 6300 l/h	110	18 - 180 m <sup>3</sup> /h	110
	1 - 10 m <sup>3</sup> /h	170	25 - 250 m <sup>3</sup> /h	170
DN 80 or 3"	1.6 - 16 m <sup>3</sup> /h	81		
	2.5 - 25 m <sup>3</sup> /h	95		
DN 100 or 4"	4 - 40 m <sup>3</sup> /h	100		

The float damping system is recommended for use with gases.

Ceramic versions				
Fittings	H <sub>2</sub> O scale / Ceramic float	Δ P [mbar]	Air scale at 0 °C and 1013 mbar ABS	Δ P [mbar]
DN 15 or ½"	3 - 30 l/h	62		
	5 - 50 l/h	64	180 - 1800 l/h	64
	7 - 70 l/h	66	240 - 2400 l/h	66
	13 - 130 l/h	68	400 - 4000 l/h	68
	20 - 200 l/h	70	650 - 6500 l/h	70
	25 - 250 l/h	72	900 - 9000 l/h	72
DN 25 or 1"	50 - 500 l/h	55	1,8 - 18 m <sup>3</sup> /h	55
	70 - 700 l/h	60	2,2 - 22 m <sup>3</sup> /h	60
	110 - 1100 l/h	70	3 - 30 m <sup>3</sup> /h	70
	160 - 1600 l/h	82	5 - 50 m <sup>3</sup> /h	82
	250 - 2500 l/h	100	7,5 - 75 m <sup>3</sup> /h	100
DN 50 or 2"	450 - 4500 l/h	70	14 - 140 m <sup>3</sup> /h	70
	630 - 6300 l/h	80	20 - 200 m <sup>3</sup> /h	80
	1.1 - 11 m <sup>3</sup> /h	110	35 - 350 m <sup>3</sup> /h	110
DN 80 or 3"	1.6 - 16 m <sup>3</sup> /h	70		
	2.5 - 25 m <sup>3</sup> /h	85		

The float damping system is recommended for use with gases.

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01-06-2021

D-741.10-EN-AA

**DEB**

**741-10/4**

PVC and PP versions				
Fittings	H <sub>2</sub> O scale / PVC or PP float	Δ P [mbar]	Air scale at 0 °C and 1013 mbar ABS	Δ P [mbar]
DN 15 or ½"	10 - 100 l/h	15	0,4 - 4 m <sup>3</sup> /h	25
	16 - 160 l/h	15	0,6 - 6 m <sup>3</sup> /h	25
	25 - 250 l/h	15	1 - 10 m <sup>3</sup> /h	25
	40 - 400 l/h	15	1,6 - 16 m <sup>3</sup> /h	25
	60 - 600 l/h	15	2 - 20 m <sup>3</sup> /h	25
DN 25 or 1"	16 - 160 l/h	10	0,6 - 6 m <sup>3</sup> /h	20
	25 - 250 l/h	10	1 - 10 m <sup>3</sup> /h	20
	40 - 400 l/h	10	1,6 - 16 m <sup>3</sup> /h	20
	60 - 600 l/h	10	2,5 - 25 m <sup>3</sup> /h	20
	100 - 1000 l/h	10	4 - 40 m <sup>3</sup> /h	20
	160 - 1600 l/h	10	6 - 60 m <sup>3</sup> /h	20
	240 - 2400 l/h	10	9 - 96 m <sup>3</sup> /h	20
DN 40 or 1 ½"	150 - 1500 l/h	20	5 - 50 m <sup>3</sup> /h	25
	250 - 2500 l/h	20	8 - 80 m <sup>3</sup> /h	25
	400 - 4000 l/h	20	14 - 140 m <sup>3</sup> /h	25
DN 50 or 2"	250 - 2500 l/h	15	9 - 90 m <sup>3</sup> /h	25
	400 - 4000 l/h	15	15 - 150 m <sup>3</sup> /h	25
	600 - 6000 l/h	15	20 - 200 m <sup>3</sup> /h	25
	1,000 - 10,000 l/h	15	35 - 350 m <sup>3</sup> /h	25
DN 65 or 2 ½"	800 - 8000 l/h	15	25 - 250 m <sup>3</sup> /h	25
	1 - 10 m <sup>3</sup> /h	15	40 - 400 m <sup>3</sup> /h	25
DN 80 or 3"	1 - 10 m <sup>3</sup> /h	15	40 - 400 m <sup>3</sup> /h	25
	1.6 - 16 m <sup>3</sup> /h	15	60 - 600 m <sup>3</sup> /h	25
DN 100 or 4"	1.6 - 16 m <sup>3</sup> /h	20	60 - 600 m <sup>3</sup> /h	25
	2 - 20 m <sup>3</sup> /h	20	100 - 1000 m <sup>3</sup> /h	25
DN 125 or 5"	3 - 30 m <sup>3</sup> /h	20	150 - 1500 m <sup>3</sup> /h	30
	4 - 40 m <sup>3</sup> /h	20	200 - 2000 m <sup>3</sup> /h	30
	6 - 60 m <sup>3</sup> /h	20	220 - 2200 m <sup>3</sup> /h	30
DN 150 or 6"	8 - 80 m <sup>3</sup> /h	25	250 - 2500 m <sup>3</sup> /h	35
	10 - 100 m <sup>3</sup> /h	25	300 - 3200 m <sup>3</sup> /h	35

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Variable area flowmeters  
**SGM - 250**

01-06-2021

D-741.10-EN-AA

**DEB**

**741-10/5**

## OUTPUTS FEATURES

### SC3,5-N0-Y (2-wire); IP 67 (EN 60529/IEC 529)

Function	NC (normally closed) - NAMUR
Rated current $U_0$	8 V
Consumption	$\geq 3$ mA when pointer vane not sensed $\leq 1$ mA when Pointer vane sensed
Ambient temperature	-25...+100 °C
EMV	According to NE 21
SIL	According to IEC 61508
Agreement	PTB 99 ATEX 2219X (only with isolation switching amplifier)

### SB3,5-E2 (3-wire); IP 67 (EN 60529/IEC 529)

Function	PNP / NO (normally open)
Rated current $U_0$	10...30 V DC
Consumption	$\leq 0,3$ V DC UB -3 V DC
Ambient temperature	-25...+70 °C
Continuous current, Max.	100 mA
No load current	IO $\leq 15$ mA
EMV according to	EN 60947-5-2

### 4-20 mA output, transmitter EM

Power supply	12...30 V DC (HART®: Min. 20 V DC)
Consumption	4...20 mA (0 to 100 % measuring scale)
NAMUR failure signal	> 21 mA
Repeatability	< 0,1 % F.S.
Linearity error	< 0,1%
Influence of supply power	< 0,1%
External resistance dependence	< 0,1%
Temperature effect	<10 $\mu$ A /K
Max. load impedance	Max. 0 (250 *) ...800 $\Omega$ maxi
Certificate	PTB 00 ATEX 2063

\* With HART®-communication, this value is the minimum value.

For use in potentially explosive areas: Built-in equipment may only be connected to separate intrinsically safe circuits.

### Counter / Totalizer EMZ

#### Outputs: Two binary outputs, passive, galvanically isolated

Power	Rated voltage: 24 V DC (Max. 30 V DC)
Load RL	250...1000 $\Omega$
Continuous current, Max.	100 mA
Pmax.	500 mW

#### Connection types: 2 off NAMUR (EN 60947-5-6) <sup>1)</sup> or Transistor output (passive, open collector)

$U_0$	8.2 V DC
$R_i$	1000 $\Omega$
Signal current	> 3 mA (Switching value reached) < 1 mA (Switching value not reached)

#### 2 pulse outputs

T on	Set up between 50 and 500 ms
T off	Depending on flow rate
Frequency Max.	10 Hz
Pulse output	Set up in flow units e.g. 5 pulses per m <sup>3</sup>
Ambient temperature	-40...+70 °C

<sup>1)</sup> Switching amplifier with  $U_0 = 8,2$  V DC and  $R_i = 1000 \Omega$

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Variable area flowmeters  
**SGM - 250**

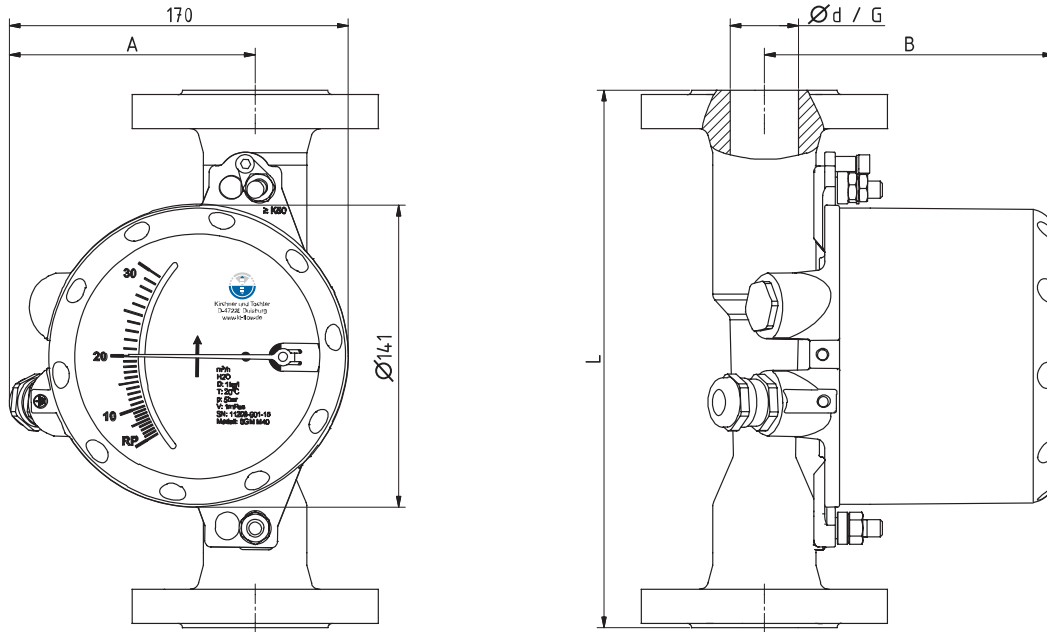
01-06-2021

D-741.10-EN-AA

DEB

741-10/6

## DIMENSIONS



### Flanged stainless steel version

DN	PN	L [mm]	A [mm]	B [mm]	Ø d [mm]	AISI 316 [kg]	Ceramic/ PTFE [kg]
15	40	250	104	114	20	3.5	3.5
25	40	250	104	127	32	5	5
50	40	250	117	139	65	8,2	10
80	16	250	117	155	89	12.2	13
100 <sup>1)</sup>	16	250	117	164	114	14	15

<sup>1)</sup> Only with PTFE lining

Overall length for devices with internal thread to DIN EN ISO 228: 300 mm; To ANSI B 16.5 (from 3"/ 300 Lbs and over): 300 mm  
Other fitting types on request

### Female threads fittings, stainless steel version

DN	G	L [mm]	A [mm]	B [mm]	Ø d [mm]	Mass [kg]
15	G ½"	300	104	114	20	3.5
15	½" NPT	300	104	114	20	3.5
15	¾" NPT	300	104	114	20	3.5
15	G 1"	300	104	114	20	3.5
25	G 1"	300	104	127	32	5
25	1" NPT	300	104	127	32	5

### Plastic versions, PVC or PP

DN	PN	L [mm]	A [mm]	B [mm]	Ø d [mm]	PP [kg]	PVC [kg]
15	16	250	104	153	25	1.6	1.8
25	16	250	104	158	40	1.8	2
50	10	250	104	171	60	2.8	3.2
65	10	250	104	185	75	3.6	4
80	10	250	117	188	90	4.2	4.9
100	10	250	117	200	114	4.8	5.6

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**Variable area flowmeters**  
**SGM - 250**

01-06-2021

D-741.10-EN-AA

**DEB**

**741-10/7**

# V-notch weir systems DEBITBAC

- Flow-rate from 1 to 80 m<sup>3</sup>/h
- Custom made on request, in PP
- Ready to use
- NF X10-311 compliance



## APPLICATIONS

- Flow measurement for effluent monitoring
- Monitoring before discharge in natural environment or to a sewer
- Gravity flow measurement

## DESCRIPTION

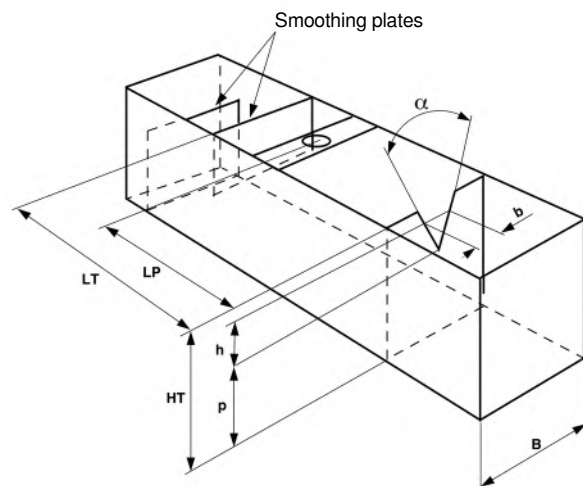
Choice of a weir plate must consider the maximum flow-rate and the lieu of installation. Specific dimensional requirements such as minimum width, minimum height, minimum weir load and other parameters must be observed.

On request, we realize customized weir adapted to your needs and in conformity with the standard NF X10-311. Each instrument is delivered with its table "flow rate vs. height".

Our instruments can be fitted with accessories like level transmitter holder, probes holder, etc. to allow an easy start up and full compliance with standard.



DEBITBAC with measuring instruments



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V-notch weir systems  
**DEBITBAC**

29-05-2020

D-755.02-EN-AC

**DEB**

755-02/1

## CODE NUMBERS AND REFERENCES

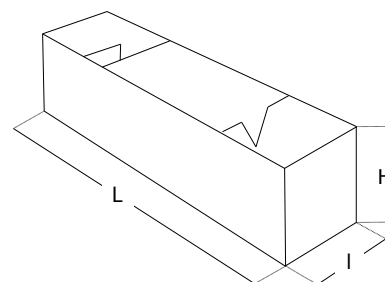
Standard models are listed below.

Code	Reference	Minimum flow		Maximum flow		Overflow	
		[ mm ]	[ m <sup>3</sup> /h ]	[ mm ]	[ m <sup>3</sup> /h ]	[ mm ]	[ m <sup>3</sup> /h ]
755 428	E0035 - V $\acute{e}$ 28°4	60	1.21	200	22.98	250	39.92
755 429	E0036 - V $\acute{e}$ 28°4	60	1.21	100	4.18	150	11.30
755 453	E0037 - V $\acute{e}$ 53°8	60	2.29	165	27.70	215	53.45
755 454	E0038 - V $\acute{e}$ 53°8	60	2.29	100	8.02	150	21.00
755 490	E0039 - V $\acute{e}$ 90°	60	4.49	100	15.88	150	43.40

Other ranges: on request

## DIMENSIONS

Reference	Length ( L )	Width ( I )	Height ( H )
E0035 - V $\acute{e}$ 28°4	1920	520	900
E0036 - V $\acute{e}$ 28°4	1250	520	500
E0037 - V $\acute{e}$ 53°8	2330	520	755
E0038 - V $\acute{e}$ 53°8	1730	520	500
E0039 - V $\acute{e}$ 90°	2700	520	500



## ACCESSORIES

Our level transmitters allow the measurement of flow-rate, record of data such as flow-rate and totalization; Examples:



### BAMOSONIC

Ultrasonic level transmitter  
(data-sheet 597-06)



### BAMOBUL

Air bubbling level transmitter  
(data-sheet 758-02)



### BAMOPHAR 759

Flow calculator, recorder  
(data-sheet 759-03)



### NANODAC

Multichannel recorder  
(data-sheet 212-02)

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## V-notch weir systems DEBITBAC

29-05-2020

D-755.02-EN-AC

## DEB

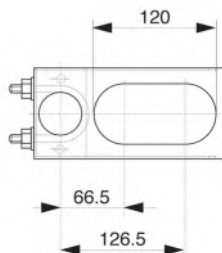
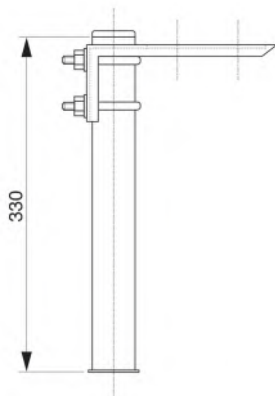
755-02/2



# Level transmitter for Open Channels BAMOSONIC



Support avec capot de protection (Option)



- Level monitoring for Open Channels
- Range: up to 4 m
- No contact with the liquid
- Powered through the loop 4-20 mA; 2-wire
- Protection: IP 67

## APPLICATIONS

BAMOSONIC is used to continuous monitoring of liquid level in open channels (Venturi or weir, data-sheets 755-01 & 755-02).

With a US beam angle of 6° it is perfectly suited for level measurement on exponential section channels (see date-sheet 755-30).

## DESCRIPTION

BAMOSONIC is a high performance ultrasonic transmitter with integrated transducer and electronic processing module. Compact, this transmitter is powered by the loop (4-20 mA; 2-wire) and stands out for its reliability and high accuracy.

Positioned above the surface of the liquid, the BAMOSONIC provides an output signal proportional to the liquid level.

The stainless steel holder facilitates the positioning of the device over an open channel, particularly convenient for flow measurements in wastewater treatment plants.

## TECHNICAL FEATURES

Measuring range	Up to 4 m (Upper dead zone of 20 cm)
Transducer	PP
Head housing	PBT
Fitting	BSP 1 1/2"
Liquid temperature	-30 ... +90 °C
Ambient temperature	-25 ... +70 °C
Pressure	0.5 ... 3 bar (absolute)
Seals	EPDM
Protection	Transducer: IP 68; Housing: IP67
Accuracy	± (0.2% of measured distance +0.05% of scale) <i>Under optimal conditions and stabilized temperature</i>
Resolution	< 2 m: 1 mm; from 2 to 4 m: 2 mm
Beam measuring angle	6°
Power supply	12 ... 36 V DC; 48 ... 720 mW
Output signal	4-20 mA; 2-wire
Electrical connection	Cable glands: 2 of M20x1.5 and 2 of NPT 1/2" For cable: Ø 6 to 12 mm Wire cross section: Max. 1.5 mm <sup>2</sup>
Electrical protection	Class III
OPTION	Protective cover

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
597 220	BAMOSONIC N-PP 4m	Ultrasonic level transmitter
597 902	BAMOSONIC N-DIS	Programming module
755 501	SP/BAMOSONIC	BAMOSONIC Holder
755 504	CAP/BAMOSONIC	Protective cover to fix on BAMOSONIC holder

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Level transmitter for Open Channels  
**BAMOSONIC**

18-03-2021

D-755.03-EN-AC

755-03/1

# Open channels with exponential section VENTURI CHANNELS DEBITFLO



- 7 channels in composite material, with approach channels
- Flow rate ranges from 0.22 m<sup>3</sup>/h up to 1440 m<sup>3</sup>/h
- Easy civil engineering

## APPLICATIONS

Measurement of flow-rate in open channel for sewage treatment plants, washing treatment and water treatment in industry etc.

## DESCRIPTION

The Venturi of exponential section is designed to measure flow-rate in a straight linear open channel.

This Venturi add to the advantages of a classic channel, a larger measuring range. With the parabolic shape of the restriction, the Venturi is more accurate at low flow-rates.

This Venturi allows a scale factor from 1 to 100 (to compare to 1 to 20 on classic Venturi).

Example: Measurement from 3.6 m<sup>3</sup>/h up to 360 m<sup>3</sup>/h for channel type 5 with exponential section.

The table flow-rate vs. height of liquid is supplied with each Venturi, and the limnietric scale on stainless steel ruler comes with the approach channel.

An extended version of ISO 4359 includes the Venturi with exponential section.

### Strength and resistance of the channels:

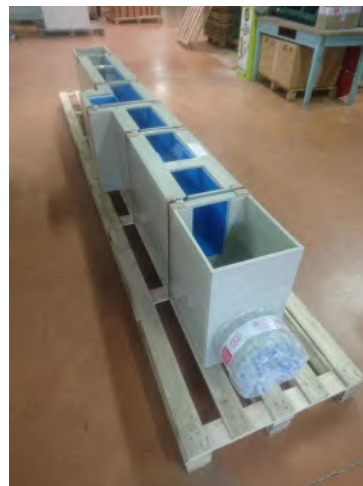
These glass fiber reinforced polyester channels have an extremely reduced roughness coefficient and resistance to aggressive and charged effluents. The solidity is ensured by transverse stiffeners allowing their direct installation in formwork.

### Simplified installation:

On request, we supply assemblies (approach channel + Venturi) integrated in a plastics housing allowing a simple and mobile installation.



Example: Channel with level/flow-rate and pH monitoring



Complete channel in a plastic housing, ready to install.

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Open channels with  
exponential section

VENTURI CHANNELS DEBITFLO

03-06-2020

D-755.30-EN-AC

DEB

755-30/1

## CODE NUMBERS AND DIMENSIONS

Below: Scales available with corresponding overall dimensions [mm] and internal widths of the approach channels.

**Important: Refer to commissioning recommendations (straight lengths, measuring point, etc.)**

Code	Description	Length	Width	Height	Internal width
<b>Flow-rate: 0.22 to 22 m<sup>3</sup>/h</b>					
755 615	VENTURI, exponential, Type 1	750	158	230	-
755 616	LARGE approach channel, Type 1	950	158	230	90
755 617	LARGE approach channel, Type 1, with sided measurement well	950	308	230	90
755 618	Limnometric scale, spare part ruler type 1	-	-	-	-
<b>Flow-rate: 0.43 to 43 m<sup>3</sup>/h</b>					
755 625	VENTURI, exponential, Type 2	1000	198	280	-
755 626	LARGE approach channel, Type 2	1300	198	280	130
755 627	LARGE approach channel, Type 2, with sided measurement well	1300	348	280	130
755 629	Limnometric scale, spare part ruler type 2	-	-	-	-
<b>Flow-rate: 0.90 to 90 m<sup>3</sup>/h</b>					
755 634	VENTURI, exponential, Type 3	1350	270	345	-
755 636	LARGE approach channel, Type 3	1900	270	345	190
<b>Flow-rate: 1.80 to 180 m<sup>3</sup>/h</b>					
755 644	VENTURI, exponential, Type 4	1800	390	430	-
755 646	LARGE approach channel, Type 4	2800	390	430	280
<b>Flow-rate: 3.60 to 360 m<sup>3</sup>/h</b>					
755 654	VENTURI, exponential, Type 5	2500	534	510	-
755 656	LARGE approach channel, Type 5	4200	534	510	420
<b>Flow-rate: 7.20 to 720 m<sup>3</sup>/h</b>					
755 664	VENTURI, exponential, Type 6	3150	666	650	-
755 666	LARGE approach channel, Type 6	5500*	666	650	550
<b>Flow-rate: 14.40 to 1440 m<sup>3</sup>/h</b>					
755 674	VENTURI, exponential, Type 7	4200	860	855	-
755 676	LARGE approach channel, Type 7	7300*	860	855	730

(\*): Approach channel in 2 parts

Our level probes and converters make it possible to measure the flow and, if necessary, to record the data (flow and totalization). Example of instrumentation:



**BAMOSONIC**  
Ultrasonic level transmitter  
(data-sheet 597-06)



**BAMOBUL**  
Air bubbling level transmitter  
(data-sheet 758-02)



**BAMOPHAR 759**  
Flow calculator / recorder  
(data-sheet 759-03)



**NANODAC**  
Multichannel recorder  
(data-sheet 212-02)

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Open channels with  
exponential section

**VENTURI CHANNELS DEBITFLO**

03-06-2020

D-755.30-EN-AC

**DEB**

**755-30/2**

# Air bubbling level transmitter BAMOBUL



- Level measurement on open channel
- For wastewater
- Direct interface to BAMOPHAR 759
- Range: 0 to 500 mm Water Column
- Output: 4-20 mA

## APPLICATIONS

- Level measurement for Venturi or weir plates.

## DESCRIPTION

This application requires a highly accurate level measurement due to an exponential relation between flow and water level. BAMOBUL combines an air generator with a highly accurate pressure transmitter. On the air circuit, the sensor measures the pressure necessary for an effective escape of air bubbles. The pressure measured is then equal to the hydrostatic pressure of the column of liquid at the point of evacuation of the air.

In order to minimize the measurement error due to a variation in the air flow between the high and low levels, the injection pump includes a micro-valve. End-user has access to the adjustment of "0 flow rate" and to full measurement scale. The BAMOBUL delivers an analogue signal of 4-20 mA.

BAMOBUL is wall mount; Protection IP 55. The air tubing fits through instant fittings for rilsan tube Ø 6x4 (between main unit and the probe). Electrical connections: through screw terminals, protected inside the IP55 cabinet. The probe is in AISI 316 L, adjustable in depth by a sliding fitting. A stainless steel plate may be fixed on the channel.

## TECHNICAL FEATURES

### Pressure sensor - Level ranges

Measuring ranges 0... 100 / 0 ... 300 / 0 ... 500 mm WC  
(measuring range to specify when ordering)

Temperature limits: 0... +50 °C

Accuracy ≥ 1 %

Response time < 1 s

### Air compressor

Flow rate Empty channel: 250 l/h

Pressure limit: 50 mbar (about 500 mm WC)

Pump body ABS

Air flow adjustment: From 0 to 100 %; Regulated for a constant flow rate

Power supply: 230 V - 50/60 Hz - 8 VA

### Specifications

Settings of 0 and F.S. Push button and LED indicator

Default detection Clogged or cut tubing

Alarm output: Changeover contact; 230 V / 5 A

Sensor supply Through the main unit

Analogue output 4-20 mA (active signal); Max. 600 Ω; Limited to 23 mA

Main power supply 230 V - 50/60 Hz

Cabinet IP 55 - Wall mounting

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Air bubbling level transmitter  
**BAMOBUL**

19-03-2020

D-758.02-EN-AB

**DEB**

**758-02/1**

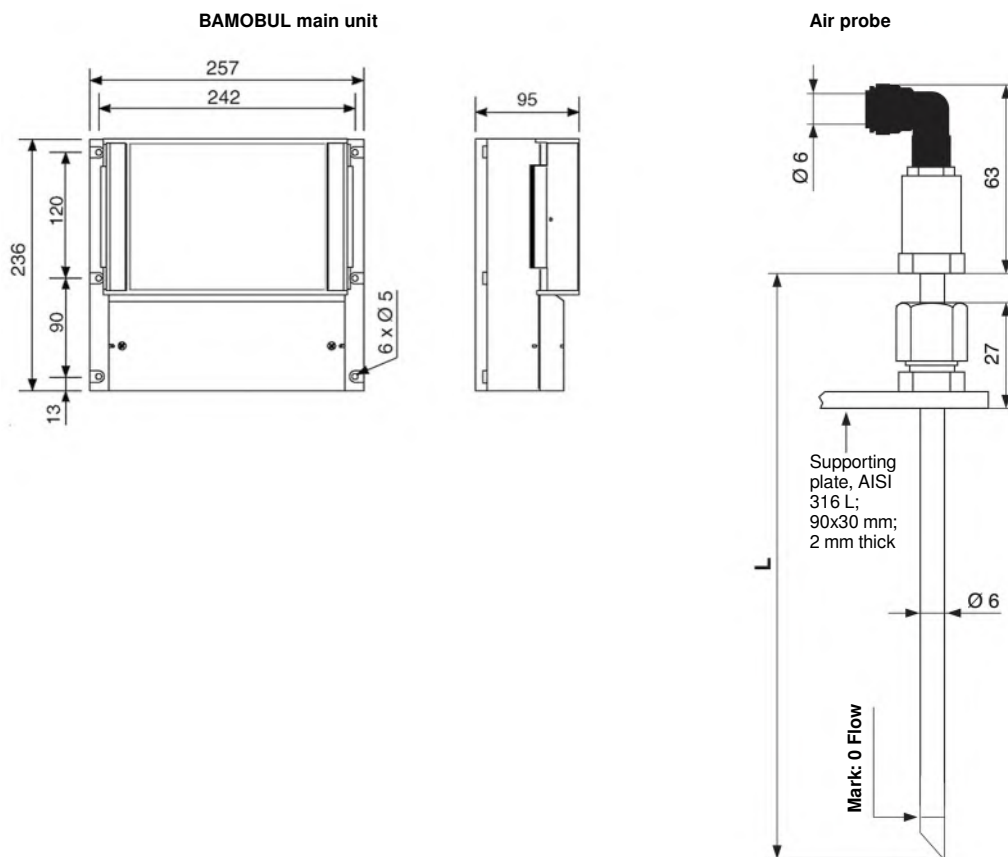
## Air probe:

AISI 316 L; Channel mounting with its supporting plate, adjustable fitting, BSP 1/2", secured by counter-nut.  
The height is adjusted on site (position mark).  
Air tubing fitting for Rilsan tube  $\varnothing$  6x4

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
758 121	BAMOBUL 758 MA	Blind wall cabinet - 4-20 mA output
758 010	CAB1	Air probe AISI 316 L; $\varnothing$ 6 mm; L = 220 mm
758 011	CAB2	Air probe AISI 316 L; $\varnothing$ 6 mm; L = 400 mm
758 012	CAB3	Air probe AISI 316 L; $\varnothing$ 6 mm; L = 515 mm
758 013	CAB4	Air probe AISI 316 L; $\varnothing$ 6 mm; L = 690 mm
758 014	CAB5	Air probe AISI 316 L; $\varnothing$ 6 mm; L = 870 mm
758 017		Rilsan tube $\varnothing$ 6x4 (per meter, at requested length)

## DIMENSIONS



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Air bubbling level transmitter  
**BAMOBUL**

19-03-2020

D-758.02-EN-AB

DEB

758-02/2



# Flow calculator for open channels BAMOPHAR 759

Wall mount model



- Color touch screen
- Display of level, flow-rate, daily volume and totalization
- Flow-rate tables for Venturi and weir plates
- 1 Input 4-20mA and 1 input Pt 100 Ohm
- 2 analogue outputs 0/4-20 mA
- 4 programmable relay outputs; 2 as alarms, 1 for sampler, 1 for pulse output)
- **OPTIONS:**  
RS 422 /J-BUS + LOGGER  
Extension terminal for a second measurement input

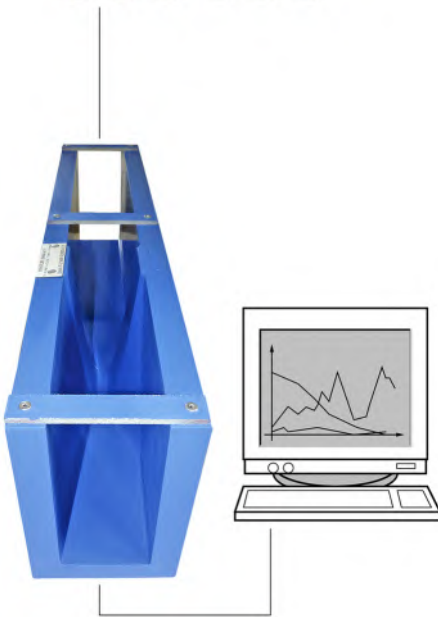
## DESCRIPTION

The reading is easy on the 4.3" color touch screen for flow-rate or height of liquid, as well as for totalization. Through a user friendly menu, settings are easy for thresholds, alarms, sampler monitoring and all parameters.

BAMOPHAR 759 converts the input signal directly into flow-rate, through a calculator and using formulas and calibration tables of our Venturi channels (ISO 4359) and our standard V or U channel weirs.

### Extension terminal (panel, wall or DIN rail mounting):

- Allows a second measurement (Turbidity, pH, Conductivity, etc.)
- Data from this blind unit are displayed on the main device
- Connected to main unit with a 2x2-wire shielded cable (Cable length between both devices: max. 500 m)
- Extension terminal uses the RS 422 and data logger of main unit



Panel mount model  
(main unit + Extension terminal)

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Flow calculator for open  
channels  
**BAMOPHAR 759**

07-01-2020

D-759.03-EN-AE

DEB

759-03/1



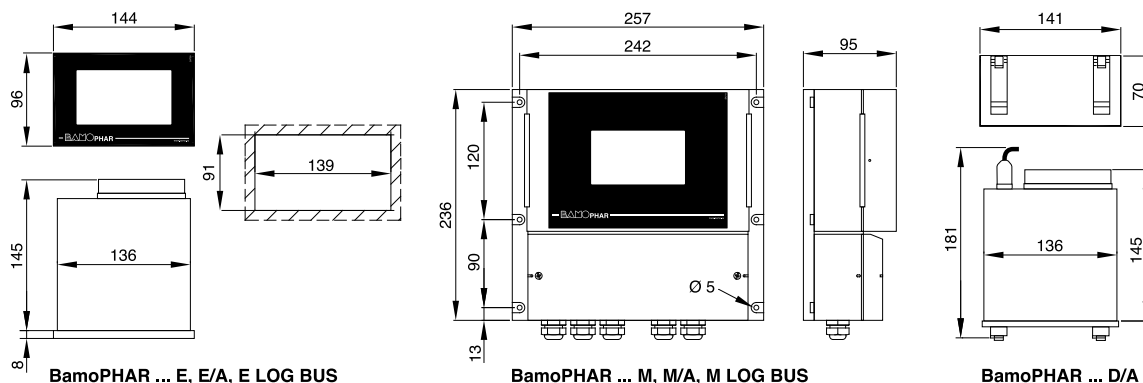
## TECHNICAL FEATURES

End-user interface	Color touch screen 4.3", resolution 480x272 pixels Display of measurements, flow rate, temperature, height of liquid, daily volume and totalization, status of relays Settings - Configuration keyword protected
Measurement Scales	Height of liquid (mm) - Resolution 1 mm Flow-rate (m <sup>3</sup> /h) - Resolution 0.1 m <sup>3</sup> /h Volume (m <sup>3</sup> ) - Resolution 1 m <sup>3</sup>
Volumes and totalization	Daily volume - on 8 digits - Reset to zero through the menu Totalization - on 8 digits - No reset to zero
Measurement signals inputs	4-20 mA proportional to height of liquid Temperature Pt 100 $\Omega$ sensor (-20 ... 160 °C)
Memorized flow-rate tables	In memory for Venturi channels, weir plates in V or U
Thresholds S1 and S3	2 contacts N.O., potential free, dedicated to flow-rate or temperature or to an external sensor. Adjustable hysteresis from 0 to 100 % - Adjustable timer from 0 to 9999 s
Sampler monitoring S2	Set up on volume (m <sup>3</sup> ) 1 contact N.O., potential free. Adjustable timer (closed contact) from 0 to 9999 s
Pulse output S4	For external counter - 1 pulse/m <sup>3</sup> 1 contact N.O., potential free
Contact Initial resistance	100 m $\Omega$ max. (voltage drop 6 V DC 1 A)
Switching power	3 A, 277 V AC; 3 A, 30 V DC (nominal)
Switching capacity (min.)	100 mA, 5 V DC (variable according to switching frequency, ambient conditions, accuracy)
Measurement output	0/4-20 mA (max. 600 $\Omega$ ) proportional to flow-rate - Programmable scale Temperature ( °C )
Main power supply	230 V AC - 50/60 Hz (others on request) - Consumption 10 VA
Models	Panel mounting, 96x144 mm; Front IP65; Rear IP40 Wall mounting, IP65, with cable glands

### OPTION (RS 422 + Logger)

Interface	RS422 output, J-BUS link - Binary slave mode - 2400 to 9600 bauds
Data Logger	Record of cycle average measurement - 150 000 records max. on memory card.

## DIMENSIONS



## CODE NUMBERS AND REFERENCES

Code	Reference	Description
759 501	BAMOPHAR 759 E	Panel mounting 96x144 mm - Front IP 65; Rear IP 40
759 502	BAMOPHAR 759 E/A	Panel mounting 96x144 mm - Extension, blind monitor - Front IP 65; Rear IP 40
759 503	BAMOPHAR 759 D/A	DIN Rail mounting - Extension, blind monitor / IP40
759 504	BAMOPHAR 759 E LOG BUS	Panel mounting 96x144 mm - RS422 + LOGGER - Front IP 65; Rear IP 40
759 510	BAMOPHAR 759 M	Wall mounting, IP 65, cable glands
759 511	BAMOPHAR 759 M/A	Wall mounting - Extension, blind monitor - IP 65, cable glands
759 513	BAMOPHAR 759 M LOG BUS	Wall mounting - RS 422 + LOGGER - IP 65, cable glands

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Flow calculator for open  
channels  
**BAMOPHAR 759**

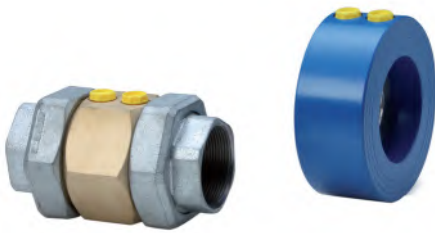
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DEB

759-03/2

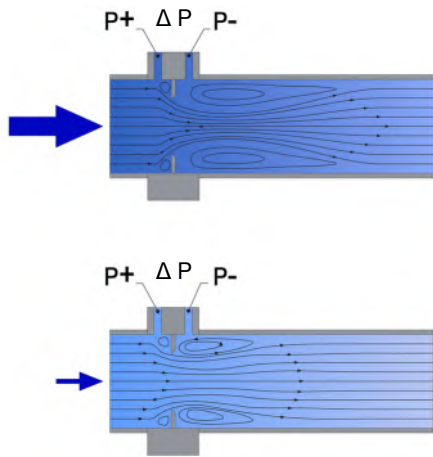
# Orifice flow-meter DDM-DB



- For liquids and gases
- Wafer type or Threaded fittings
- ND 40 to 200, or Threads 1/4" to 2"
- Horizontal or vertical installation
- No moving parts
- Materials: Brass, steel, stainless steel

## APPLICATIONS

These differential pressure flowmeters are of the most common use, in all measurements with liquids, gases or steam in various industries. They are designed for various operating conditions, under normal conditions (Water supply, swimming pool, etc.) as well as with high pressure and temperature (Steam, hydrocarbons, etc.) and aggressive fluids. They are economical, reliable for natural gas or wet gas measurements. The orifice flow-meter (differential pressure flowmeter) covers a wide range of piping diameters.



Principle

## DESCRIPTION

The device works according to the principle of differential pressure, proportional to the square of the volume rate of flow through the pipeline. A DDM flow-meter consists of an orifice plate, integrated into an armature, flanged or with unions fittings. The low and high pressure outlets on either side of the plate can be connected to a differential pressure sensor (pressure gauge, pressure switch, differential pressure transmitter).

The reliability of the measurement depends of the constant flow at the measuring point. The region of steady flow should covers piping distances of 6 DN upstream and 4 DN downstream of the device.

Several versions in steel, stainless steel or brass are available:

<b>DDM-DN</b>	Wafer, flanges acc. DIN EN 1092-1
<b>DDM-Gi</b>	Female threads acc. DIN EN ISO 228
<b>DDM-Ga</b>	Male threads acc. DIN EN ISO 228
<b>DDM-Rp</b>	Unions acc. DIN EN 10226-1 (ISO 7-1)

- Every BAMO Kirchner instrument is tested in conformity with EC directives.
- The corresponding declaration of conformity is available on request.
- The current version in force is available on our WEB site.
- Our production center Kirchner, is certified DIN EN ISO 9001: 2015

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Orifice flow-meter  
**DDM-DB**

03-03-2021

D-763.01-EN-AA

**DEB**

**763-01 /1**

## TECHNICAL FEATURES

Measuring principle	Orifice plate for differential pressure measurement.
Differential pressure	Air : 5 to 1000 mbar Water: 100 to 1000 mbar
Pressure drop	About 40 % of measured differential pressure
Pressure resistance strength	PN 16 (Caution with the pressure limit of the display unit)
Ambient temperature	-10...+70 °C
Fluid temperature	Standard: Max. -10 ... +70 °C; Max. 130 °C with insulated pipe The fluid must not freeze. Option: Temperature limit over 130 °C on request
<b>Fittings:</b>	
Wafer mounting, between flanges	PN10 or PN16 according DIN EN 1092-1, shapes A & B
Unions (Rp)	2 pieces - Female thread, cylindrical, DIN EN 10226-1 (ISO 7-1)
Female thread (Gi)	Cylindrical, internal fastening screw thread according to DIN EN ISO 228
Male thread (Ga)	Cylindrical, external fastening screw thread according to DIN EN ISO 228 T1
<b>Materials:</b>	
<b>DDM-DN</b>	Ring in S355 (Option AISI 316 Ti) Corrosion protection: Epoxy powder coating, traffic blue (RAL 5017) glossy Corrosion class: C3 Orifice plate: AISI 316 Ti
<b>DDM- Rp, Gi, Ga</b>	Fittings: Malleable cast iron, zinc plated (Rp only) Orifice plate: Brass Seals: NBR (other on request)

## MEASURING RANGES

For water: Other liquids on request.

\*) for AIR at standard operating conditions: 0 °C and 1013 mbar ABS (in-between ranges on request)

### Wafer mounting flow-meters (DDM-DB-DN)

DDM DN	Water [m³/h]		*) AIR [m³/h]	
	Lowest range	Highest range	Lowest range	Highest range
40	0.85 - 5	5.35 - 32	5.8 - 35	25 - 150
50	1.2 - 7	8.7 - 52	9 - 54	45 - 270
65	2 - 12	13 - 78	13.5 - 81	83 - 500
80	3 - 18	19.7 - 118	20 - 120	125 - 750
100	4.7 - 28	30.7 - 184	35 - 210	142 - 850
125	7.3 - 44	48 - 288	60 - 360	292 - 1750
150	10.7 - 64	68.8 - 413	75 - 450	433 - 2600
200	18.8 - 113	122.5 - 735	125 - 750	667 - 4000

### Unions (DDM-DB-Rp) and threaded fittings (female: DDM-DB-Gi / Male; DDM-DB-Ga)

DDM Rp, Ga, Gi	Water [m³/h]		*) AIR [m³/h]	
	Lowest range	Highest range	Lowest range	Highest range
¼"	0,05 - 0,3	0.2 - 1.2	0.5 - 3	1.3 - 8
⅜"	0,05 - 0,4	0.4 - 2.3	0.8 - 5	2.3 - 14
½"	0.1 - 0.7	0.75 - 4.5	1 - 6	3.5 - 21
¾"	0.2 - 1.3	1.4 - 8.5	1.3 - 8	7.5 - 45
1"	0.35 - 2	2.25 - 3.5	2.0 - 12	9 - 54
1 ¼"	0.6 - 3.5	4 - 24	4.0 - 24	18 - 108
1 ½"	0.85 - 5	5.35 - 32	5.8 - 35	25 - 150
2"	1.25 - 7.5	8.65 - 52	8.3 - 50	45 - 270

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Orifice flow-meter  
**DDM-DB**

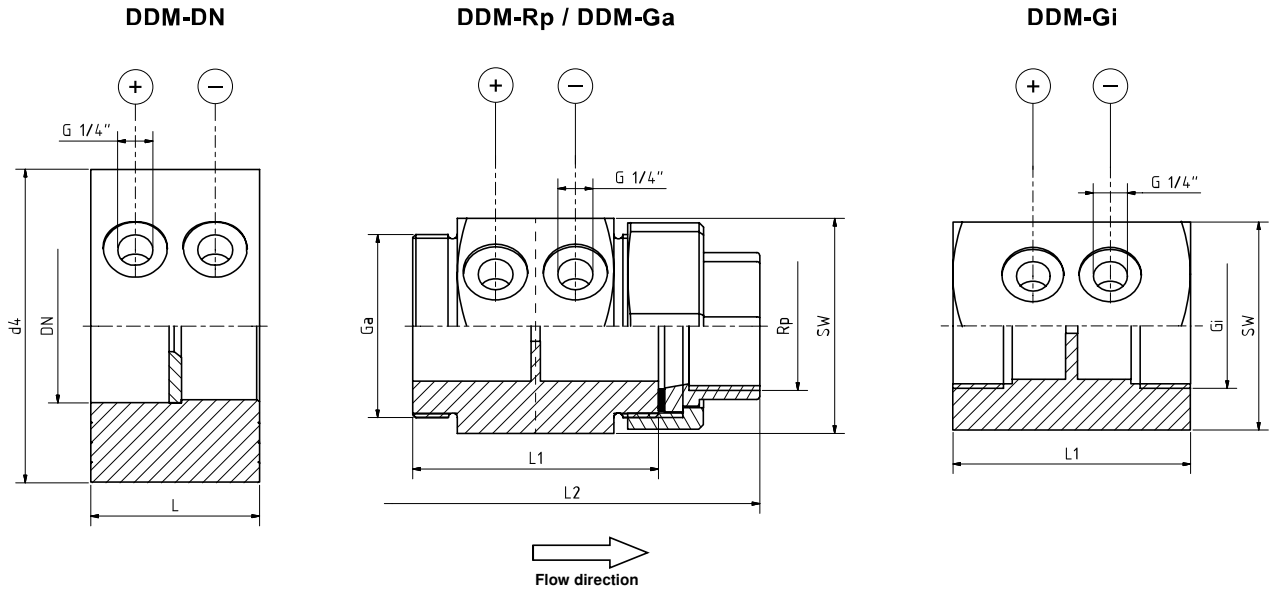
03-03-2021

D-763.01-EN-AA

**DEB**

**763-01 /2**

## DIMENSIONS - FITTINGS



DDM-DN			DDM- Rp, Gi, Ga							
DN	d4	L	Rp	L1	L2	SW	Gi	Ga	L1	SW
40	88	55	1/4"	80	124	41	1/4"	3/4"	80	41
50	102	55	3/8"	80	128	46	3/8"	3/4"	80	46
65	122	55	1/2"	80	128	46	1/2"	1 1/8"	80	46
80	138	55	3/4"	80	128	50	3/4"	1 1/4"	80	50
100	158	55	1"	80	136	60	1"	1 1/2"	80	60
125	188	55	1 1/4"	80	146	70	1 1/4"	2"	80	70
150	212	55	1 1/2"	80	149	70	1 1/2"	2 1/4"	80	70
200	268	55	2"	90	164	85	2"	2 3/4"	90	85

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**Orifice flow-meter  
DDM-DB**

03-03-2021

D-763.01-EN-AA

**DEB**

**763-01 /3**

# Orifice plate, flow indicator U6

- Mounting in all positions
- For pipes from ND 40 up to 300
- Water: up to 770 m<sup>3</sup>/h  
Air: up to 8650 Nm<sup>3</sup>/h



## APPLICATIONS

These equipments are for large flow-rates, particularly on pipes greater than 2" .

## DESCRIPTION

The direct reading flow-indicator is mounted in bypass on the orifice plate. Optimum precision is achieved with a customized orifice according to operating conditions.

The U6 can be mounted on any vertical or horizontal pipe, regardless of the direction of flow.

However, the position of the flow indicator (below or above the axis of the pipe) must be specified.

The device is wafer mounted, between flanges PN10 (not supplied, neither flat seals).

## TECHNICAL FEATURES

Measuring ranges	Water: 0 ... 25 up to 770 m <sup>3</sup> /h Air: 0 ... 180 up to 8650 Nm <sup>3</sup> /h
Accuracy	± 2.5% F.S.
Repeatability	± 0.5% of reading
Scale factor	From 1 to 8 (linear)
Temperature	Buna seals: 0 ... 90 °C FPM seals: 0 ... 120 °C
Pressure limit	21 bar
<b>Materials</b>	
Body	Cast iron and brass
Orifice	AISI 316
Reading tube	Borosilicate glass
Diver for water	AISI 316
Diver for air	Aluminum
Stoppers	AISI 316
Seals	Buna "N"
<b>OPTIONS</b>	
Seals	FPM
Body	AISI 316 L for ND up to 100

### Alarm contacts for minimum or maximum flow-rates

Inductive contacts	mono or bistable
Ambient temperature	-25 ... +60 °C
Sealing	IP 67
<b>Associated electronic device</b>	NAMUR type relay RDN 11

**EC Conformity: The instrument meets the legal requirements of the current European Directives.**

## OPERATING CONDITIONS

Fluid	.....
Pressure	..... bar
Temperature	..... °C
Density	..... kg/m <sup>3</sup> or kg/Nm <sup>3</sup>
Maximum flow rate	..... m <sup>3</sup> /h or Nm <sup>3</sup> /h
PIPE:	..... Ø / mm, ..... Thickness / mm, ..... Material

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Orifice plate, flow indicator  
**U6**

19-03-2020

D-764.01-EN-AA

**DEB**

**764-01 /1**

## FLOW MEASURING RANGES

Below, flow rates are applicable to flow indicators U6 - . . 00 depending on the diameter of the pipe.  
For air measurements, the operating, pressure and temperature, must be considered.  
The air must be dry in order to avoid any condensation in the bypass measuring tube.

**P = Pressure drop created by the orifice plate at the measuring point**  
**H = Pressure drop effective, non-recoverable**

The flow rates correspond to the maximum values available for each pipe diameter, in accordance with DIN 1952, according to the pressure ratios P and H.

These values are for information only, since the orifice is necessarily calibrated according to the operating conditions of each project.

### Water: Maximum flow rates

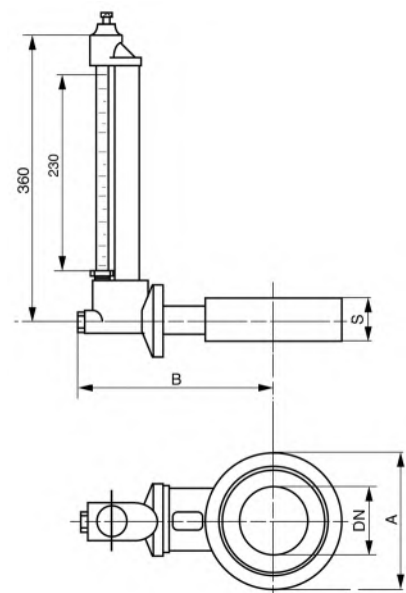
Pipe	H = 250 mbar		H = 400 mbar		H = 630 mbar		H = 1000 mbar	
	[ m <sup>3</sup> /h ]	ΔP = 88 mbar	[ m <sup>3</sup> /h ]	ΔP = 140 mbar	[ m <sup>3</sup> /h ]	ΔP = 220 mbar	[ m <sup>3</sup> /h ]	ΔP = 350 mbar
ND 50	25		32		40		51	
ND 80	57		72		90		114	
ND 100	98		124		155		195	
ND 125	154		195		245		308	
ND 150	245		272		340		430	
ND 200	385		485		610		770	

### Air: Maximum flow rates:

Pipe	H = 16 mbar		H = 25 mbar		H = 40 mbar		H = 160 mbar	
	[ m <sup>3</sup> /h ]	ΔP = 5 mbar	[ m <sup>3</sup> /h ]	ΔP = 8 mbar	[ m <sup>3</sup> /h ]	ΔP = 13 mbar	[ m <sup>3</sup> /h ]	ΔP = 53 mbar
ND 50	180		220		280		560	
ND 80	450		560		710		1,430	
ND 100	700		880		1,120		2,250	
ND 125	1,000		1,300		1,650		3,100	
ND 150	1,600		2,000		2,500		5,000	
ND 200	2,820		3,500		4,500		8,650	

## DIMENSIONS

Type	Pipe	A [mm]	B [mm]	S [mm]
U6 - 3000	ND 40	88	167	34
U6 - 3100	ND 50	100	174	
U6 - 3200	ND 65	115	184	
U6 - 3300	ND 80	130	194	
U6 - 3400	ND 100	155	204	
U6 - 3500	ND 125	180	219	
U6 - 3600	ND 150	210	234	38
U6 - 3800	ND 200	265	264	
U6 - 4000	ND 250	315	294	
U6 - 4200	ND 300	370	324	



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Orifice plate, flow indicator  
**U6**

19-03-2020

D-764.01-EN-AA

**DEB**

**764-01/2**



# Orifice plate, flow-meters DB Series



- For aggressive liquids
- Direct reading indicator on pipes from ND 50 up to ND 200
- Mounting in all positions
- According standard NF X 10-102
- Options: Flow contact; Output signal

## APPLICATIONS

- Clean waters: Tap water, swimming pool water
- Aggressive liquids (acidic or basic)

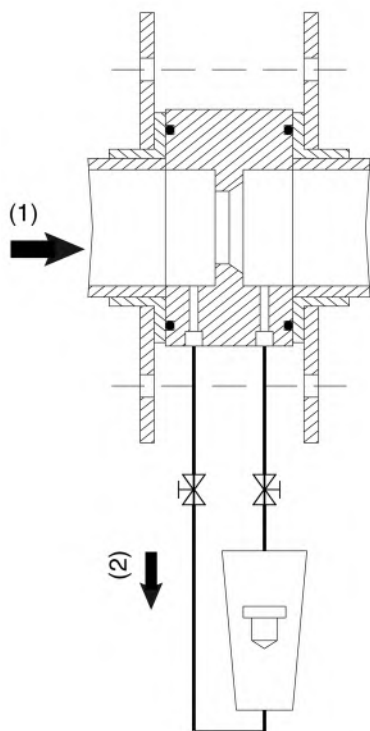
## DESCRIPTION

Wafer mounting: The orifice plate is inserted between 2 flanges. The differential pressure is between the inlet and outlet, one on each side of the plate. The differential pressure is related to the flow rate inside the main pipe. The flow indicator is part of the bypass, allowing a direct reading.

In order to obtain a proportional relation to the main flow, a BORDA nozzle is inserted before the flow indicator.

### Option with output signal:

Instead of an indicator, a flow transmitter may be installed.



(1) : Main line  
(2) : Differential flow

## TECHNICAL FEATURES

Flow ranges	From 2 up to 350 m <sup>3</sup> /h (water)
Accuracy	± 4 %
Repeatability	± 0,4 %
Scale amplitude	2 to 10
Pressure limit	10 bar (water at 20 °C)
Temperature limits	PVC: 50 °C; PPH: 90 °C; PVDF: 120 °C
Pressure drop	On request

### Materials:

Orifice plate (standard)	PVC
Associated flow indicator	PVC or polysulfone
Diver	PVDF
Bypass	Same as the orifice plate
Stop valves	Same as the orifice plate
Seals	EPDM
BORDA injector	PVC, PPH or PVDF

### Options:

- Reed contact: See data-sheet da731-03
- Output signal: Transmitter on request

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## Orifice plate, flow-meters DB Series

29-12-2020

D-765.01-EN-AD

765-01 /1

## CODE NUMBERS AND REFERENCES

Ranges indicated on the table are for DB/PDP flow indicators.  
These scales, are not contractual, may be modified according operating conditions.  
Higher flow rates, greater diameters: On request

Flow rates are indicated for pipes in PVC and PN 10.  
In all events, the thickness and the real inner diameter of pipe have to be specified, so we may assure the specifications of the system.

DB Series, [ m <sup>3</sup> /h ] (water at 20 °C)				
ND	Scale N° 1	Scale N° 2	Scale N° 3	Scale N° 4
50	2...10	5...25	-	-
65	2...10	6...30	-	-
80	3...15	6...30	10...50	-
100	4...20	6...30	15...80	-
125		6...30	15...80	30...150
150		10...50	20...100	40...200
200		20...100	40...200	70...350

## INSTALLATION REQUIREMENTS

The respect of requirements is necessary to warrant a coherent measurement with the accuracy of the system.  
The straight distances upstream the plate, are the strict necessary minimum (depend on the final calculation of the system).

Number of D (diameter), see the table N° 3 of standard NFX 10 102

↓	
6 to 23	Single elbow at 90° or a Tee (flow rate by one way)
17 to 40	2 elbows at 90°, 2 different planes
5 to 15	Reducing from 2 D to 1 D along distance of 1.5 D to 3 D
6 to 15	Valve 100 % opening (type ball valve)

The upstream distance depends on the ratio between the inner diameter (D) of the pipe and the diameter of the orifice plate.  
The exact lengths to be observed in order to maintain the accuracy are communicated after study of each case.

## WAFER MOUNTING

The loose sockets will be centered with the flanges.  
The inner diameter of the sockets must be exactly the same one of the pipe to avoid turbulences.

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Orifice plate, flow-meters  
**DB Series**

29-12-2020

D-765.01-EN-AD

765-01 /2

## DEFINITION OF THE FLOWMETER

The DB flow-meter is manufactured in accordance with operating conditions: to provide before any quote.

**Liquid** : .....  
**Density** : ..... ( kg/m<sup>3</sup> )  
**Pressure** : ..... (bar)  
**Temperature** : ..... ( °C )  
**Max. flow-rate** : ..... ( m<sup>3</sup>/h )  
**Piping** : ..... ( Ø in mm )  
 : ..... ( thickness in mm )  
 : ..... Material

**Flow direction** : ..... VA ..... Uprising liquid  
 : ..... VD ..... Liquid going down  
 : ..... GD ..... Liquid flowing to the RIGHT  
 : ..... DG ..... Liquid flowing to the LEFT

**Mounting** : ..... VB ..... (VERTICAL pipe / bottom reading)  
 : ..... VH ..... (VERTICAL pipe / Top reading)  
 : ..... HB ..... (HORIZONTAL pipe / bottom reading)  
 : ..... HH ..... (HORIZONTAL PIPE / Top reading)

VERTICAL pipe - Uprising flow



VB

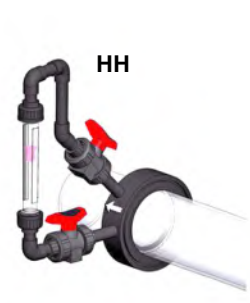


VH

HORIZONTAL pipe - Liquid flowing to the left



HB



HH

VERTICAL pipe - Liquid going down



VB

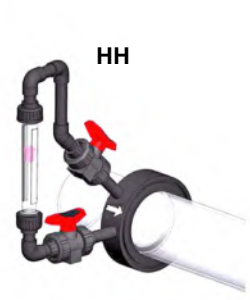


VH

HORIZONTAL pipe - Liquid flowing to the right



HB



HH

Flow contact: See data-sheet da 731-03

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Orifice plate, flow-meters  
**DB Series**

29-12-2020

D-765.01-EN-AD

765-01 /3

# Flow measurement in stationary sprinkler systems

## SMB

- Agreement VdS: G 4990049 (Germany)
- From ND 80 to ND 250
- Free mounting position & flow direction
- Indicator: direct mounting or remoted
- Scales: m<sup>3</sup>/min or % according directives



### APPLICATIONS

The sprinkler measuring orifice SMB is used for monitoring efficiency of pump in test piping of stationary sprinkler systems. It works according to the principle of differential pressure created with an orifice plate.

### DESCRIPTION

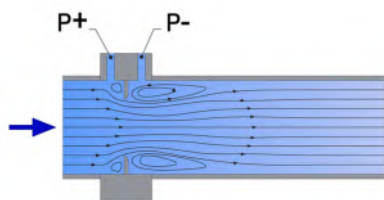
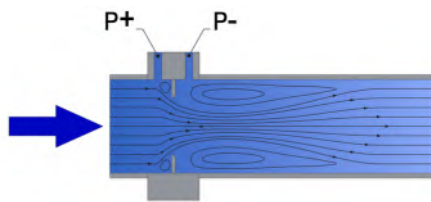
The SMB is integrated into the pipeline between flanges as a wafer flow-meter. A differential pressure occurs at the orifice, which is proportional to square of the volume flow through the pipeline.

The differential pressure is indicated by a differential-pressure gauge. We calibrate on bench the gauge according the flow rates. The instant value of flow rate is directly read on the dial.

The version SMB-OE displays the differential pressure as a percentage value. The operator can read the equivalent flow in m<sup>3</sup>/min on a label fixed to the casing.

Thanks to its particular articulate design, integration of the SMB is possible in any flow direction. The display pivots by 180 degrees in both directions.

In case of vibrations in the Sprinkler system, the SMB may be fitted with flexible capillaries, to remote the gauge.



Operating principle

### SMB series:

<b>SMB</b>	Reading scale in m <sup>3</sup> /min
<b>SMB-OE</b>	Reading scale in %
<b>SMB-...Minimess</b>	Remote display gauge with flexible capillaries

### TECHNICAL FEATURES

<b>Agreement</b>	<b>VdS : G 4990049</b>
Operating principle	Measurement of differential pressure from an orifice plate
Accuracy	2.5 % F. S.
Operating pressure	Max. 16 bar
Installation	According VdS guideline CEA 4001 chapter 7.4
Process fitting	Wafer mount, between flanges DIN EN 1092-1, PN 16

### Materials

Orifice plate	Aluminum, hard coated
Screwed connections	Nickel-plated brass, 1.4308
Ball valves	Nickel-plated brass
Dial gauge	Aluminum, coated

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Flow measurement in  
stationary sprinkler systems  
**SMB**

06-06-2021

D-765.10-EN-AA

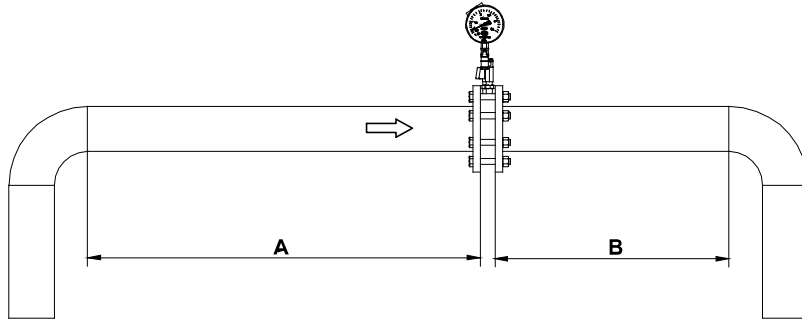
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**765-10/1**

### Pipe straight lengths:

Optimal accuracy is performed if the piping is in conformity to the VdS guidelines. The inlet and outlet pipe sections must not contain valves, elbows, diameter changes or the like.

When using a pump that create flow fluctuations, we recommend to extend the inlet distance from x10 ND to x18 ND. If vibrations causes unstable readings, a hose clearance may be used (Separate Minimess® flexible, length = 1500 mm).



Models	Minima for inlet straight pipe	Minima for outlet straight
	A [mm]	B [mm]
SMB 80	800	400
SMB 100	1000	500
SMB 150	1500	750
SMB 200	2000	1000
SMB 250	2500	1250

### MEASURING RANGES AND ACCURACY

Models	DN	Range [m³/min] ¹)	Ranges VdS directive		Max. deviation of F.S.	
			[m³/min]	(% on SMB-OE)	[m³/min]	[%]
SMB 80	80	0.4 – 2.1	0.6 (28,5 %) – 2.1 (100 %)		± 0.0525	± 2.5
SMB 100	100	0.6 – 3.4	1 (29.4 %) – 3.4 (100 %)		± 0.085	± 2.5
SMB 150	150	1.4 – 7.25	2 (27.58 %) – 7.25 (100 %)		± 0.18125	2.5
SMB 200	200	2.6 – 12.35	4 (32.35 %) – 12.35 (100 %)		± 0.30875	± 2.5
SMB 250	250	3 – 18.12	4 (22.85 %) – 18.12 (100 %)		± 0.453	± 2.5

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Flow measurement in  
stationary sprinkler systems  
**SMB**

06-06-2021

D-765.10-EN-AA

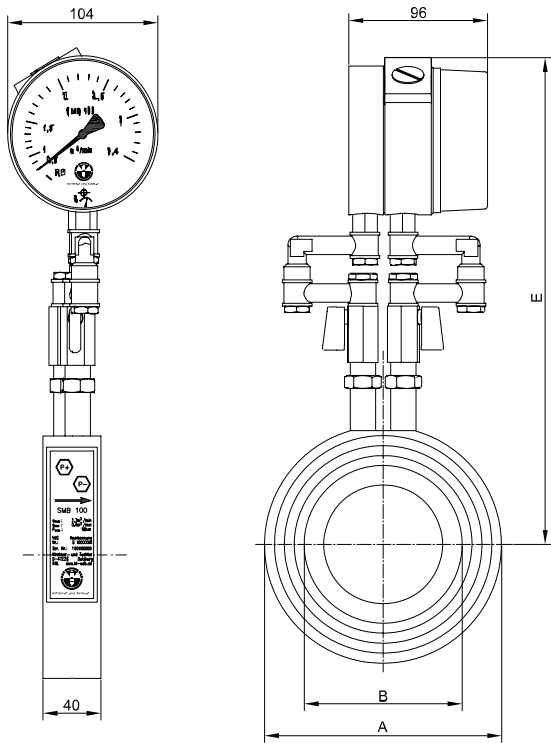
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**765-10/2**

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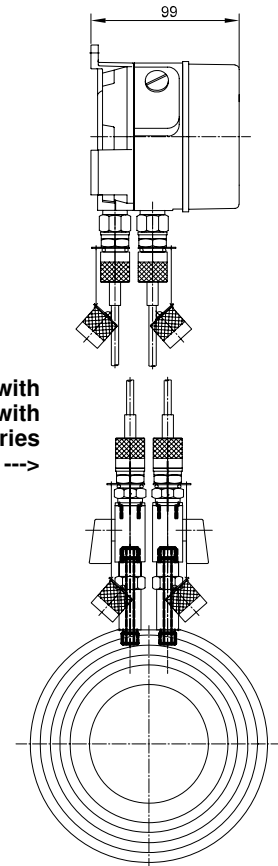
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## DIMENSIONS



SMB / SMB-OE

SMB / SMB-OE with  
remote display with  
flexible capillaries  
Minimess --->



Models	A [mm]	B [mm]	E [mm]
SMB 80	144	84.1	311
SMB 100	164	108.9	321
SMB 150	220	161.8	349
SMB 200	275	211.1	377
SMB 250	331	264.5	406

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Flow measurement in  
stationary sprinkler systems  
**SMB**

06-06-2021

D-765.10-EN-AA

DEB

765-10/3



# Electromagnetic flow-meter BAMOMATIC



- Ranges from 0.1 up to 250 l/min
- 2 Outputs: Analogue and pulse
- No moving parts
- Small dimensions
- High accuracy

## APPLICATIONS

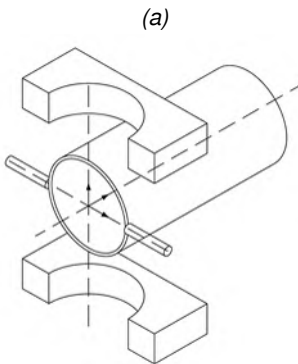
- Mechanical and industrial engineering fields
- Cleaning process
- Liquid dosage
- On board skids, etc.

## DESCRIPTION

BAMOMATIC is a flowmeter based on the principle of electromagnetic induction to measure flow-rate on electrically conductive liquids ( $> 20 \mu\text{S}/\text{cm}$ ). It is perfectly suited for dosing or totalizing liquids. Each instrument is calibrated on a bench test at  $\pm 5/1000$  pulses of water at  $23^\circ\text{C}$ . Density of the liquid, its temperature or its pressure have no influence on the measurement; No moving parts in this flow-meter: it ensures operations without mechanical wear.

The measuring principle is based on Faraday's law (a): In an electromagnetic flow-meter, the liquid section is in a magnetic field created by solenoid coils. Electrode sensors are located on a plane, perpendicular to the magnetic field, in contact with the (conductive) liquid, allowing measurement of the generated voltage. This voltage is directly proportional to the fluid velocity and therefore to the flow-rate (for a constant flow section).

(a): According to Faraday's law, electromagnetism principle, the voltage induced in a moving conductor through a magnetic field, is directly proportional to the conductor speed.



## TECHNICAL FEATURES

Electrical connections	Built-in 4-pin plug M12x1
Power supply	12 ... 24 V DC $\pm 10\%$
Consumption	Max. 3.6 W
Accuracy	$\pm 0.7\%$ of reading; $\pm 0.3\%$ of range (Factory tests with water at $23^\circ\text{C}$ )
Repeatability	$\pm 1\%$
Response time	$< 100$ ms
Electrical protection	Short-circuit proof; Protection against reverse polarity
Signal outputs	Push-pull square wave and 4-20 mA
Status display	Green LED: Flashing proportionally to the flow-rate
Nominal diameter	DN 3; DN 8; DN 15; DN 20; DN 25
Fittings	BSP-M: $\frac{3}{8}$ "; $\frac{1}{2}$ "; $\frac{3}{4}$ "; 1"; $1\frac{1}{4}$ "
Materials	Housing: ABS Fittings and measuring tube: PVDF Option: POM Sealing: EPDM seals Electrodes: Stainless steel 316 L (1.4404) Option : Hastelloy C electrodes and FPM seals
Minimum conductivity	$20 \mu\text{S}/\text{cm}$
Pressure limits	10 bar at $20^\circ\text{C}$ ; 8 bar at $40^\circ\text{C}$ ; 6 bar at $60^\circ\text{C}$
Operating temperature	Liquid: $-10 \dots +60^\circ\text{C}$ Ambient: $+5 \dots +60^\circ\text{C}$ ; Storage: $-15 \dots +60^\circ\text{C}$
Protection	IP 65 (cable connected) according EN 60529

**EC Conformity:** The instrument meets the legal requirements of the current European Directives.

# BAMO INTERNATIONAL

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## Electromagnetic flow-meter BAMOMATIC

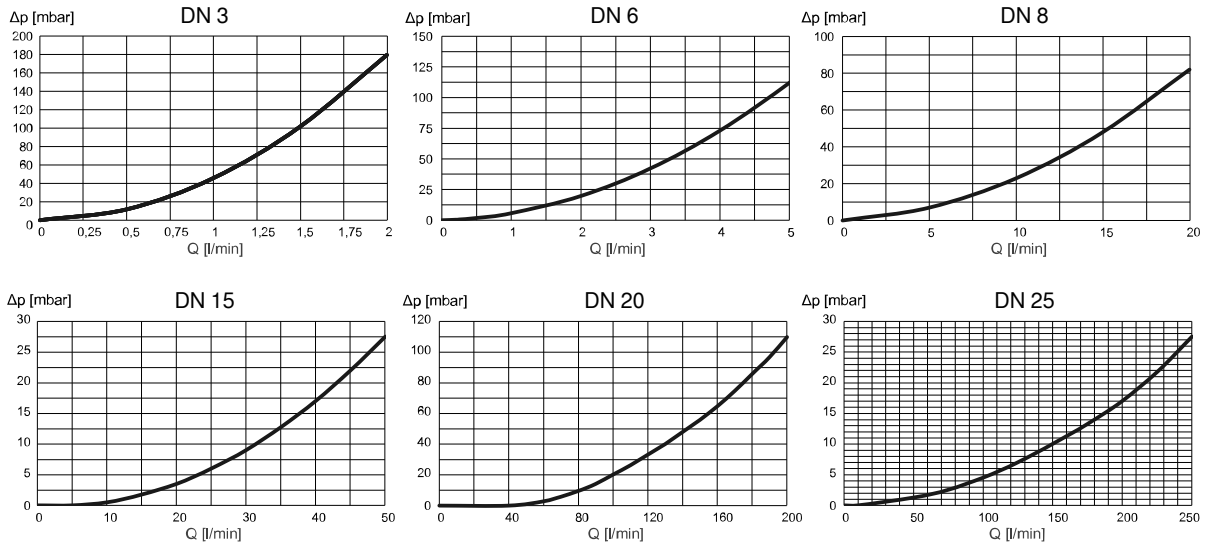
22-10-2020

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775-02/1

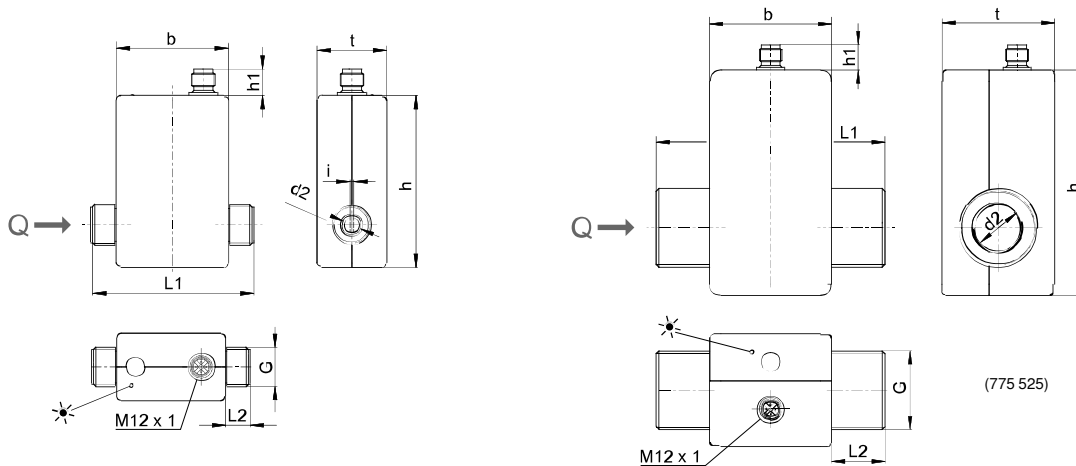
## PRESSURE DROP vs. FLOW-RATE



### CODE NUMBERS AND REFERENCES

Code	Tube material	Fittings (BSP-M)	DN	Inner Ø [mm]	Range [l/min]	Pulse/l	Resolution [ ml/pulse ]
775 503	PVDF	3/8"	3	3	0.1 ... 2	10,000	0.1
775 506	PVDF	1/2"	8	8x2.5 rectangular section	0.25 ... 5	4,000	0.25
775 508	PVDF	1/2"	8				
775 515	PVDF	3/4"	15	14	2.5 ... 50	400	2.5
775 520	PVDF	1"	20	18	5 ... 200	200	5
775 525	PVDF	1 1/4"	25	25	12.5 ... 250	80	12.5

### DIMENSIONS



Code	L1 [mm]	L2 [mm]	G	d2 [mm]	b [mm]	h [mm]	h1	t [mm]	Mass [g]
775 503	85	13	3/8"	Ø 3	58	89	13.5	36	360
775 506	85	13	1/2"	Ø 8	58	89	13.5	36	360
775 508	85	13	1/2"	Ø 8	58	89	13.5	36	360
775 515	90	16	3/4"	Ø 14	58	89	13.5	36	360
775 520	90	16	1"	Ø 18	58	89	13.5	36	360
775 525	122	28.5	1 1/4"	Ø 25	65	120	13.5	60	360

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## Electromagnetic flow-meter BAMOMATIC

22-10-2020

D-775.02-EN-AB

### DEB

### 775-02/2

# Ultrasonic flow-meter BAMOFLONIC



PSU version (ND 10 to 25)



HD-PE version (ND 32 to 50)

- 7 models ND 10 to ND 50
- Flow ranges from 0.3 up to 900 l/min
- Analogue output: 0/4-20 mA
- Digital output to set on site
- Back-lighted display

## APPLICATIONS

Flow measurements on conductive and non-conductive liquids in various industrial, cosmetic and food applications.  
Examples: Demineralized water, liquid cosmetics, bases, acids, etc.

## DESCRIPTION

BAMOFLONIC applies propagation ultrasonic waves principle to measure the speed of a liquid, then to calculate the corresponding flow-rate. Therefore, It is convenient for liquids electrically conductive or not.  
Important: The liquid must be clear and homogeneous.

The absence of a moving part ensures its operation without mechanical wear. Wet parts are of PSU or of HD-PE

## TECHNICAL FEATURES

Power supply	24 V DC / 3.6 W
Outputs	Digital output: to set as pulses (0.1 to 3000 ml/pulse) or empty tube alert, flowing back alarm, dosage, or min./max. flow alarm. Analogue output: 0/4 ... 20 mA, scalable
Display	Alphanumeric back lighted LCD display
Connexions	Connector M12 -5 pins (supplied)
Accuracy	±2 % of reading and ±3 mm/s
Repeatability	≤ 0,5 %
Liquid temperature limits:	0... +80 °C for version in PSU, ND 10 to 25 0... +50 °C for version in HD-PE, ND 32 to 50
Pressure limits	16 bar max. at 20 °C (PSU, ND 10 & 15) 10 bar max. at 20 °C (PSU, ND 20 & 25) 7 bar max. at 20 °C (HD-PE, ND 32 to 50)
Protection	IP 67 for PSU ND 10 to 25; IP 65 for HD-PE ND 32 to 50
Fittings	BSP threads (standard) PVC Unions (see accessories) <i>Other fittings on request: Straight tube, Clamp DIN 11864</i>
Materials	PSU (Polysulfone): ND 10 to 25; 2 EPDM flat seals HD-PE: ND 32 to 50; 2 EPDM flat seals
<b>Options</b>	
Digital input	To start a dosage (Connector M12 - 8 pins)
Accuracy	±1 % of reading and ±3 mm/s, ±6 mm/s for NB 10 - 3/8" (according to VDI/VDE 2642)
Remote interface	To set all parameters (Adaptor USB/ RS485 with software), or remote display module

**EC conformity: The instrument meets the legal requirements of the current European Directives**

### Accessories:

- Kit of PVC fittings for solvent welding
  - Relay, for interfacing a dry contact
- See table Codes and references

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Ultrasonic flow-meter  
**BAMOFLONIC**

16-01-2020

D-776.01-EN-AG

DEB

776-01 /1

## CODE NUMBERS AND REFERENCES

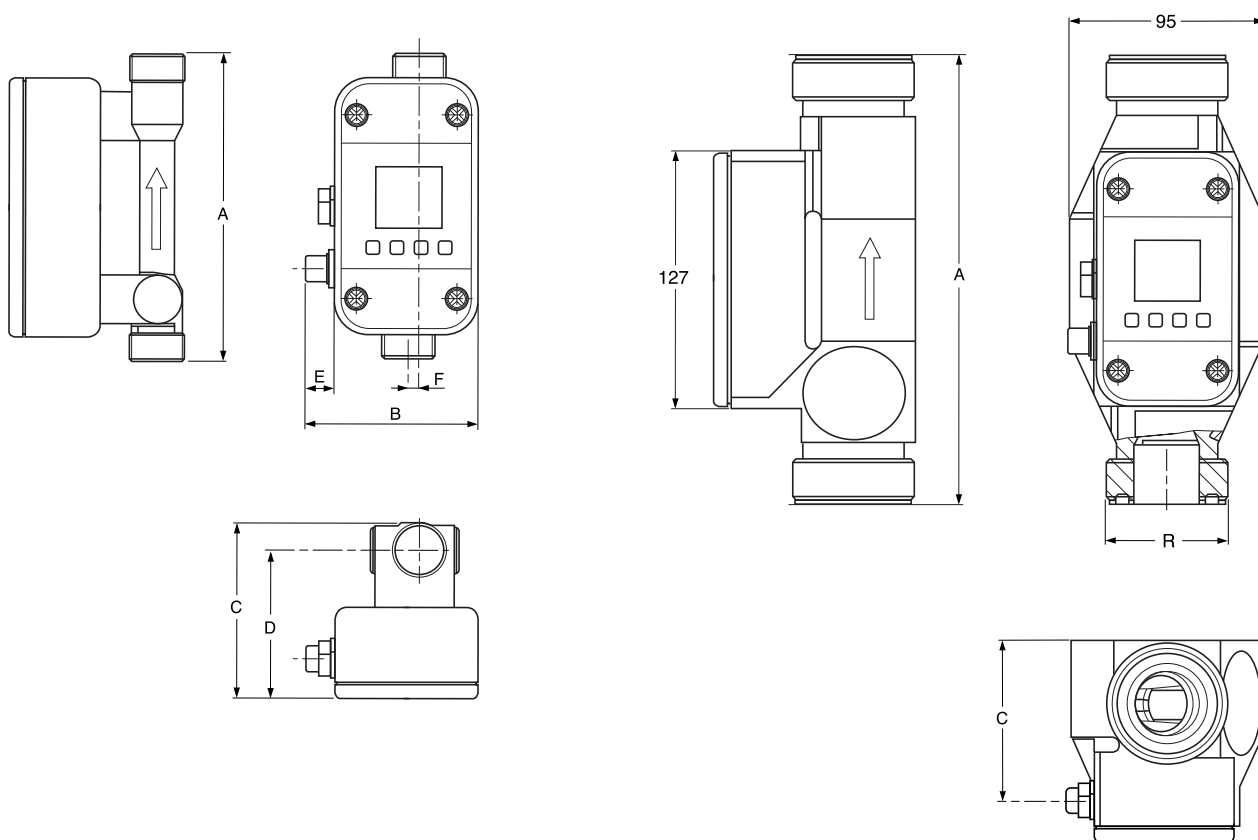
Code	Reference	ND	Measuring scale		Fittings	
			l /min	l /h	BSP (standard)	PVC (kit)
776 010	BAMOFLONIC DN10	10	0.3 ... 21	18...1260	1/2"	776 910
776 015	BAMOFLONIC DN15	15	0.9 ... 36	54...2160	3/4"	776 915
776 020	BAMOFLONIC DN20	20	3.5 ... 60	210...3600	1"	776 920
776 025	BAMOFLONIC DN25	25	5.0 ... 240	300...14 000	1 1/4 "	776 925
776 027	BAMOFLONIC DN32	32	6...300	360...18 000	2"	-
776 028	BAMOFLONIC DN40	40	24...500	1440...30 000	2 1/4"	
776 029	BAMOFLONIC DN50	50	45...900	2700...54 000	2 3/4"	

### Accessory

251 260	RSZE*	Relay for dry contact, 24 V DC; Outputs: 2 changeover contacts, 8 A, 260 V AC, status display by LED
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\* To connect to the digital output configured as NPN or PNP.

## DIMENSIONS



ND	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	Mass (kg)
10	147	84	83	70.5	15	5	0,332
15	147	84	84.5	71.1	15	5	0,344
20	160	84	94.2	77.6	15	5	0,414
25	168	84	98.5	77.6	15	5	0,454
32	220	97	99				1,000
40	220	97	122				1,100
50	220	97	131				1,200

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Ultrasonic flow-meter  
**BAMOFLONIC**

16-01-2020

D-776.01-EN-AG

**DEB**

**776-01 /2**

# Ultrasonic flow-meter BAMOFLONIC - PFA



- 4 models ND 7 to ND 20
- Measuring ranges from 0.09 up to 120 l/min
- Wet parts in PFA; Casing in PP
- 1 Analogue output 0/4-20 mA
- 1 Digital output, to set up

## APPLICATIONS

Flow measurements or dosing sequences of aggressive or neutral liquids:

- Chemicals strongly alkaline or acidic
- CIP (Clean In Place)
- Lixiviates, etc.

## DESCRIPTION

BAMOFLONIC - PFA applies propagation ultrasonic waves principle to measure the speed of a liquid, then to calculate the corresponding flow-rate. Therefore, it is convenient for liquids electrically conductive or not.

Note: The liquid must be homogeneous and clear.

As no moving parts are concerned, BAMOFLONIC operates without mechanical wear. Wet parts are of PFA.

BAMOFLONIC - PFA can operate without its remote display unit. If liquid properties are different to water (viscosity, waves propagation, etc.), it is recommended to use the remote display unit. It allows to display and modify the flow-meter parameters (output signals, reset of totalizer, dosing function, etc.).

## TECHNICAL FEATURES

Power supply	24 V DC / 3.6 W
Outputs	1 Digital output (to set as pulses or empty tube alarm, reverse flow, dosage, min. or max. flow-rate) 1 Analogue output 0/4-20 mA
Interface	For settings and/ or display on remote unit
Connector	M12, 5 pins (included)
Accuracy	± 2 % of reading and ± 0.3 mm/s
Repeatability	≤ 0.5 %
Liquid temperature	0... +60 °C
Pressure	6 bar at 20 °C
Protection	IP 65
Fittings	Quick coupling connectors (flare type, see the table)
Materials	Body: PFA (Perfluoralkoxy); Casing: PP

### Options:

Digital input	To launch a dosage (Connector M12 8 pins)
Accuracy	± 1 % of reading and ± 0.3 mm/s

**EC Conformity:** The instrument meets the legal requirements of the current European Directives



Remote display unit for  
BAMOFLONIC - PFA

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Ultrasonic flow-meter  
**BAMOFLONIC - PFA**

12-07-2018

D-776.02-EN-AA

**DEB**

776-02/1

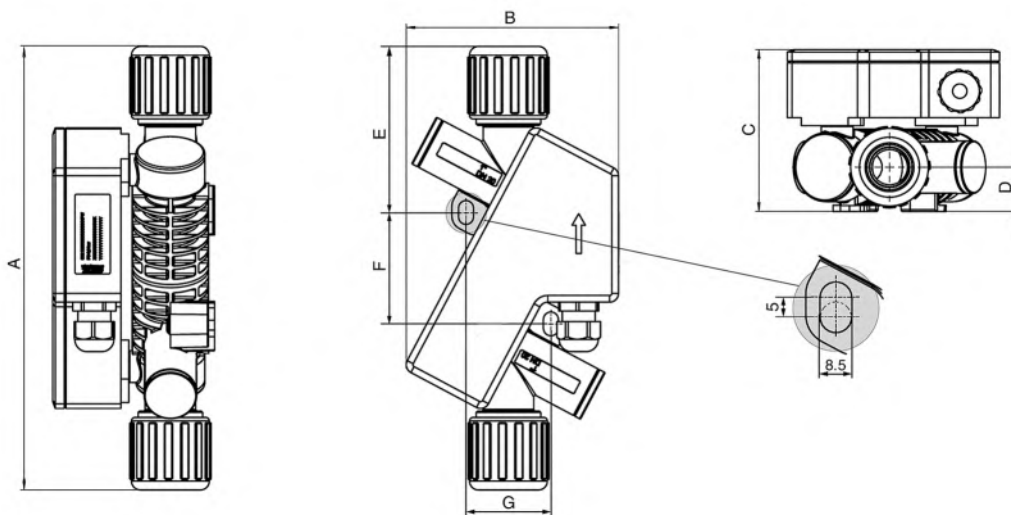


## CODE NUMBERS AND REFERENCES

Code	Reference	ND	FLARE couplings	Range	
				l/min	l/h
776 008	BAMOFLONIC PFA DN7	7	3/8"	0.09 ... 6.00	5.4 ... 360
776 011	BAMOFLONIC PFA DN10	10	1/2"	0.3 ... 24	18...1440
776 016	BAMOFLONIC PFA DN15	15	3/4"	0.9 ... 60	54...3600
776 021	BAMOFLONIC PFA DN20	20	1"	1.2 ... 120	72...7200

On request: Low flow-rate, from 0.03 ... 6.0 l/min (ND 7 / raccord 3/8")

## DIMENSIONS

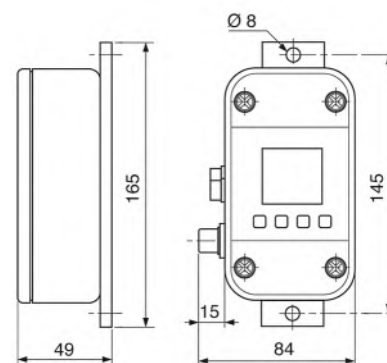


ND	Fittings	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	Mass [kg]
7	3/8"	218	120	79	16	77	63	48	1.3
10	1/2"	219.5	120	79	16	78.5	64	48	1.3
15	3/4"	227	120	82	19	82	64	48	1.3
20	1"	251	120	91.5	25	94	64	48	1.6

## REMOTE DISPLAY UNIT

**Code** 776002  
**Reference** Remote display for BAMOFLONIC - PFA

Housing IP 65; in PSU (Polysulfone),  
 anodized aluminum wall bracket  
 Power supply 18 ... 30 V DC, 3.6 W  
 Connector M12; 5 pins  
 Ambient temperature +5 ... +60 °C  
 Storage temperature 0... +70 °C  
 Display LCD; Backlighted  
 Keypad 4 keys



**EC Conformity:** The instrument meets the legal requirements of the current European Directives

Remote display unit is supplied with a 5 m long cable (connector 5 pins fitted), a Te connector and an electric plug "Europlug" (5 pins connector). The set allows display and modification of settings of flow-meter, as well as recovering of output signals.

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Ultrasonic flow-meter  
**BAMOFLONIC - PFA**

12-07-2018

D-776.02-EN-AA

**DEB**

**776-02/2**



# Ultrasonic flow-meter BAMOFLONIC 42i



- For liquids electrically conductive or not
- Ranges from 0.024 up to to 60 l/min
- Wet parts all in PE-HD
- 1 Analogue output 0/4-20 mA
- 1 Digital output (various functions)

## APPLICATIONS

The BAMOFLONIC 42i is well suited for measuring flow and dosing liquids:

- Demineralized water, cosmetics, liquid foods
- Toxic chemicals
- Aggressive liquids such as acids and alkalis

## DESCRIPTION

BAMOFLONIC 42i applies propagation ultrasonic waves principle to measure the speed of a liquid, then to calculate the corresponding flow-rate.

Therefore, it is convenient for liquids electrically conductive or not.

BAMOFLONIC 42i has no moving components and is therefore wear-free.

The device is characterized by its high measuring accuracy and reproducibility. Some liquids or their concentrations, are not compatible with the ultrasonic measuring principle; Please, contact us for information.

## TECHNICAL FEATURES

Power supply	24 V DC / 3,6 W
Outputs	1 Digital output to set up (pulses or alarm for empty tube, flowing back alarm, dosage, or min./max. alarms). 1 Analogue output 0/4 ... 20 mA, scalable
Display	Alphanumeric back lighted LCD display
Electrical connection	Connector M12 (5 pins)
Accuracy	Standard, $\pm 2\%$ of reading and $\pm 3$ mm/s (According VDI/VDE 2642)
Repeatability	$\leq 0.5\%$
Liquid temperature	0... +60 °C
Pressure	max. 7bar at 20 °C
Protection	IP 65
Fittings	Internal threads BSP
Materials	PE-HD (option: PVDF for ND10)
Options	Access to engineering parameters with USB/RS485 adaptor and software Remote display Accuracy: $\pm 1\%$ of reading and $\pm 3$ mm/s

**EC Conformity: The instrument meets the legal requirements of the current European Directives**

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Ultrasonic flow-meter  
**BAMOFLONIC 42i**

19-10-2018

D-776.04-EN-AB

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**776-04/1**

## CODE NUMBERS AND REFERENCES

ND	Code	Measuring range		Fittings
		l/min	l/h	
5	776 030	0.024 ... 3	1.44 ... 180	G1/2"
7	776 032	0.09 ... 6	5.4 ... 360	G1/2"
10	776 034	0.3 ... 24	18 ... 1440	G3/4"
15	776 036	0.9 ... 60	54 ... 3600	G1"

**On request: Wet parts in PVDF for ND10 (code 776 044)**

Measuring ranges at constant flow-rate, for pulsating flow-rate from 0.5 l/h (= 0.008 l / min)

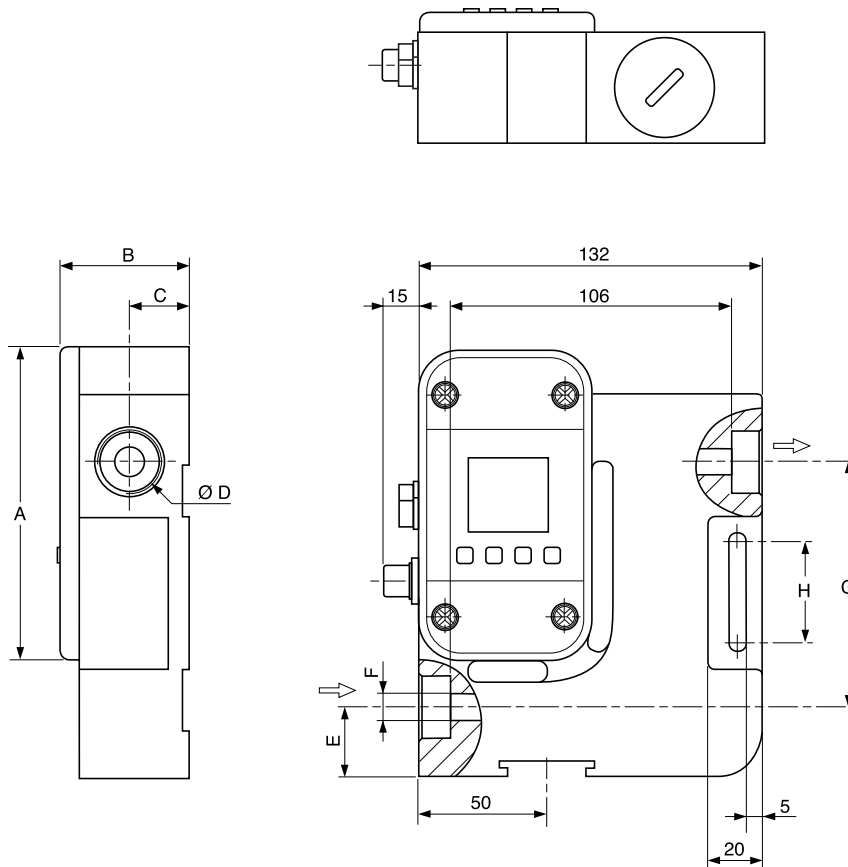
Fitting adaptor (in option): BSP 1/2", 3/4", 1" on request

### Accessories:

Code	Reference	Description
251 260	RSZE*	Interfacing relay 24 V DC, 2 change-over contacts, 8 A / 260 V AC, LED indicator of status

\* To connect to the digital output (set as NPN or PNP output)

## DIMENSIONS / WEIGHT



ND	A [mm]	B [mm]	C [mm]	D [inch]	E [mm]	F [mm]	G [mm]	H [mm]	Mass [kg]
5	168	50	23	G1/2"	25	7	98	40	0.670
7	168	50	23	G1/2"	25	7	98	40	0.670
10	171	50	23	G3/4"	26.5	10	95	40	0.720
15	176	55	25	G1"	29	15	90	30	0.895

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Ultrasonic flow-meter  
**BAMOFLO NIC 42i**

19-10-2018

D-776.04-EN-AB

**DÉB**

**776-04/2**

# Paddle wheel flow sensor BAMOFLU 100



- On-line flow sensor
- From ND 15 up to ND 600
- Output: Rectangular pulses
- Materials: PVC, PPH, PVDF or AISI 316

## APPLICATIONS

BAMOFLU is designed for neutral or slightly aggressive liquids, free from solid particles (demineralized water, pool water after filtration, etc.)

## DESCRIPTION

The liquid flow, causes rotation of a 5-blade paddle wheel with magnetic inserts. Variations of magnetic field produce pulses whose frequency is directly proportional to the speed of the fluid.

The liquid may contain no more than 2 % of solid particles, non-magnetic and size < 0.5 mm.  
The viscosity may be between 0.5 and 20 cSt, beyond which an on-site calibration will be necessary.

### Commissioning recommendations:

- The pipeline must always be full
  - Do not have liquid / gas interfaces
  - The flow-rate must be between 0.8 and 10 m/s
- Refer to the manual for the required straight lengths.

## TECHNICAL FEATURES

Output	From 38 to 45 Hz according fitting vs. pipe I.D. Rectangular pulses, 5 ... 24 V DC
Power supply	7 ... 30 V DC / 30 mA (stabilized) Sensor protected against reverse polarity
Measuring range	0.8 ... 10 m/s
Accuracy	± 1 % With calibrated frequency converter
Repeatability	± 0.5 %
Linearity	± 1 %
Pressure limits	PPH & PVDF: 10 bar at 20 °C AISI 316 L: 25 bar (with stainless steel nut)
Temperature limits	PVC: 40 °C; PPH: 85 °C; PVDF & AISI 316: 100 °C
Body	PPH or PVDF or AISI 316 L
Paddle wheel	E-CTFE (Halar)
Rotor shaft	Ceramic (Al <sub>2</sub> O <sub>3</sub> )
Seals	FPM (standard); EPDM on request
Connector	Plug DIN 43 650, IP 65

**EC Conformity:** The instrument meets the legal requirements of the current European Directives

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
780 100	BAMOFLU 100 - PVC	PVC paddle wheel flow sensor
780 125	BAMOFLU 100 - PPH	PPH paddle wheel flow sensor
780 150	BAMOFLU 100 - PVDF	PVDF paddle wheel flow sensor
780 175	BAMOFLU 100 - AISI 316	AISI 316 L paddle wheel flow sensor

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Paddle wheel flow sensor  
**BAMOFLU 100**

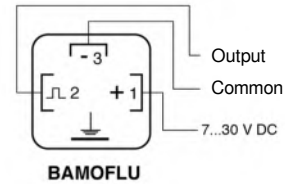
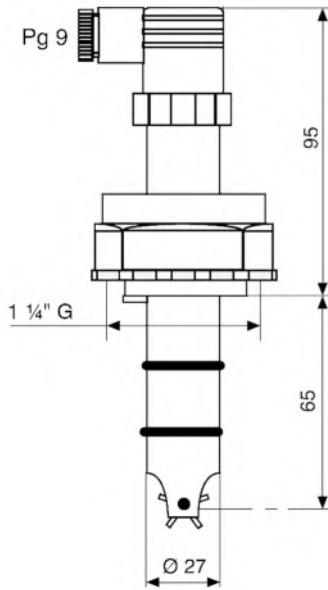
29-12-2020

D-780.01-EN-AD

**DÉB**

780-01 /1

## DIMENSIONS



## RELATED CONVERTERS

Our converters are delivered set up according to the application parameters confirmed with the purchase order: Flow rate max. and pipe I.D. For programmable converters, the setting is saved to nonvolatile internal memory (EEPROM type).

### BIF 6040: Flow-rate indicateur and counter

The BIF 6040 provides display by red LED of instantaneous flow and flow totalization. It is fully configurable on site without any simulator. It provides a power supply of 24 V DC to the sensor (12 V DC on request). Panel mount, standard cut: 48 x 96 mm. (Data-sheet 282-01)

### BCP 48: Counter and downcounter

The BCP 48 performs simple counting or a dosage. Set up may be done on site without a simulator. It provides a power supply of 12 V DC to the sensor. Panel mount, standard cut: 48 x 45 mm. (Data-sheet 289-03)

### BAMOTOP 281: Frequency converter

The BAMOTOP 281 converts the pulse signal into an analogue signal 0/4 ... 20 mA, or, 0/2 ... 10 V. This converter is delivered with a set up according to the application parameters confirmed with the purchase order. Rail DIN mounting (DIN 35). It provides a power supply of 12 V DC to the sensor. (Data-sheet 281-01)



BIF 6040



BCP 48



BAMOTOP 281

# BAMO INTERNATIONAL

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Paddle wheel flow sensor  
**BAMOFLU 100**

29-12-2020

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DÉB

780-01 /2

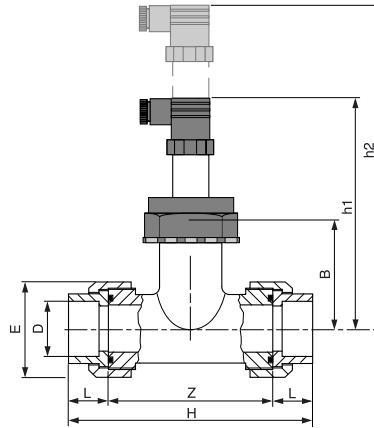
## MOUNTING ACCESSORIES

### Mounting Tees:

The mounting tees in PVC, PPH, PVDF or AISI 316L are convenient for pipes from ND 15 to ND 40 with half-unions and FPM seals (flanges or to weld on site: on request).

For pipe inner diameters ND 15 to ND 300, we can supply sleeves with flanges, center to center = 250 mm (Materials: on request).

Pressure limit 10 bar at 20 °C  
 Temperature limit Depending of sensor material  
 Fitting PVC: Solvent welding; PPH or PVDF: Fusion welding



#### PVC version

Code	ND	D	R	H	Z	L	B	E	h1	h2
780 205	15	20	1"	113	81	16	73	53	168	243
780 207	20	25	1 1/4"	126	88	19	80	62	170	245
780 209	25	32	1 1/2"	139.5	95.5	22	81	71	173	248
780 211	32	40	2"	170	118	26	84	84	177	252
780 213	40	50	2 1/4"	199	137	31	82,5	98	181	256

#### PPH version

Code	DN	D	R	H	Z	L	B	E	h1	h2
780 240	15	20	1"	111	73	14.5	73	53	168	243
780 242	20	25	1 1/4"	120.5	80	16	80	62	170	245
780 244	25	32	1 1/2"	133.5	81	18	81	71	173	248
780 246	32	40	2"	163.5	84	20.5	84	84	177	252
780 248	40	50	2 1/4"	195	82.5	23.5	82.5	98	181	256

#### PVDF version

Code	DN	D	R	H	Z	L	B	E	h1	h2
780 260	15	20	1"	111	82	14.5	73	53	168	243
780 262	20	25	1 1/4"	120.5	88.5	16	80	62	170	245
780 264	25	32	1 1/2"	133.5	97	18	81	71	173	248
780 266	32	40	2"	161.5	120.5	20.5	84	84	177	252
780 268	40	50	2 1/4"	193.5	146.5	23.5	82.5	98	181	256

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Paddle wheel flow sensor  
**BAMOFLU 100**

29-12-2020

D-780.01-EN-AD

**DÉB**

780-01 /3

### Supporting collars:

For mounting on plastic pipes only (PVC, PE or PPH), we supply support collars in PP or PVC-C with NBR seal.

### Simplified BAMOFLU mounting:

The support collar is delivered with the special adaptor to fit the BAMOFLU to the threaded sleeve of the collar.  
The fitting is pre-mounted on the collar and does not require any adjustment on site.  
The complete assembly respects the immersion distance ( $0.12 \times \text{ØD}$ ).

### Technical features:

Pipeline	From ND 40 (O.D. 50 mm) up to ND 100 (O.D. 110 mm)
Body	Polypropylene or PVC-C
Adaptor	PPH or PVC-C
Seal	O-ring in NBR (EPDM or FPM on request)
Screws	Galvanized steel
Pressure limit	10 bar at 20 °C
Temperature limit	55 °C

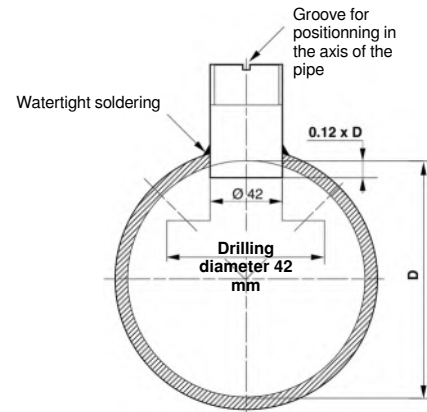


Supporting collar including fitting for BAMOFLU

PE/ PPH version		PVC-C version		Dimensions		
Code	Reference	Code	Reference	ND	Ø d	R
780 901	COL 50 PE	-	-	40	50	1 ½"
780 906	COL 63 PE	780 907	COL 63 PVC-C	50	63	2"
780 911	COL 75 PE	780 912	COL 75 PVC-C	65	75	2 ½"
780 916	COL 90 PE	780 917	COL 90 PVC-C	80	90	3"
780 921	COL 110 PE	780 922	COL 110 PVC-C	100	110	4"

### BF150 adaptor:

Adaptors available for pipes from ND 50; In AISI 316L, PVC, PPH or PVDF. The adaptor allows sensor mounting on-line.  
For mounting with adaptors( BF150 ), it is important to respect the immersion distance specified on the drawing.  
This dimension complies with the standard ISO 7145-1982, respecting relation with inner diameter  $0.12 \times \text{ØD}$



Code	Reference	Description
780 200	BF 150-I	Aaptor in AISI 316 L for welding
780 201	BF 150-PVC	Adaptor in PVC for welding
780 202	BF 150-PPH	Adaptor in PPH for welding
780 203	BF 150-PVDF	Adaptor in PVDF for welding

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Paddle wheel flow sensor  
**BAMOFLU 100**

29-12-2020

D-780.01-EN-AD

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**780-01 /4**



# Turbine flow sensor FFG



- **Applications: Totalization; Low flow-rates**
- **Versions: Or in Arnite, or in PVDF**
- **Ranges: From 2 up to 940 l/h**
- **High resolution frequency output**
- **Fitting: BSP 1/4"**

## APPLICATIONS

- With neutral or aggressive liquids
  - Clear liquids free of particles, non-crystallizing.
- The flow must be homogeneous and piping always full of liquid.  
(FFG turbine type is not suitable for measuring gas flow)

## DESCRIPTION

The FFG flow sensor allows measurements of low flow-rates for remote reading or totalization with appropriate monitors (See Codes and References on next page)

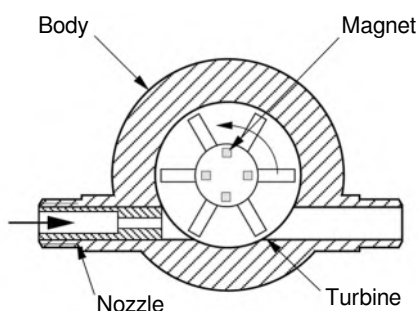
The dynamic pressure of the liquids makes rotate the turbine. The liquid passes through a calibrated nozzle, which increases its speed and that of the turbine. Magnets are integrated to the turbine and activate an Hall effect sensor inside the top cover. The electronic generates a pulsating signal, proportional to the speed of rotation of the turbine and therefore to the flow-rate.

### Recommendations for assembly:

The FFG works in any position, but it is recommended to mount it on a horizontal axis, with its upper body in a horizontal plane, to obtain reliable and precise measurements.  
Respect the straight pipe section of 150 mm upstream and 50 mm downstream in order to obtain a uniform flow.  
Installing an upstream filter prevents suspended particles from blocking the turbine (during commissioning, and, normal operation).

### Associated electronics:

- BAMOWIZ : Flow rate indicator and flow totalizer, digital and graphical display, relays and analogue outputs (Data-sheet 217-01)
- BIF 6040: Flow indicator and totalizer with options for thresholds and analogue output (Data-sheet 282-01)
- BCP 48: Counter and downcounter for dosage with 2 set points (Data-sheet 289-03)
- BAMOTOP 281: Frequency converter for analogue output 0/4-20 mA or 0/5-10 V (Data-sheet 281-01)



Option: BAMOWIZ monitor

All these electronic monitors include supply to the sensor FFG and can be set up before shipment according your specifications.

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Turbine flow sensor  
FFG

20-01-2021

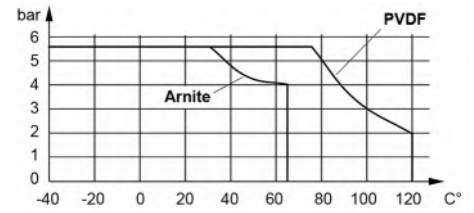
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784-01 /1

## TECHNICAL FEATURES

Measuring ranges	According the nozzle size: 2 to 35 l/h - up to 10 to 550 l/h of water PVDF model, without nozzle: 150 to 940 l/h
Accuracy	± 1 % F.S. with scale factor 1:10 ± 2 % F.S. with scale factor 1:25
Repeatability	> 0.25 %
Temperature	Ambient: 0 ... + 40 °C Limits: See the diagram Pressure vs. Temperature
Viscosity	0.2 ... 20 cSt



Pressure vs. temperature diagram

### Materials:

Body / Sealing	PVDF / FPM Arnite / Silicone
Turbine	PVDF
Nozzle	PTFE
Turbine axes	PCTFE

Power supply	4.5 ... 24 V DC
Consumption	Max. 20 mA
Output signal	Open collector - NPN - Max. load 20 mA
Connections	Plug DIN 43650, IP65
Accepted cable	3 x 0.75 mm <sup>2</sup> , shielded; Max. 100 meters 3 x 0.75 mm <sup>2</sup> , without shield; Max. 30 meters
Fittings	BSP 1/4"
Mass	185 g

**EC Conformity:** The instrument meets the legal requirements of the current European Directives.

## CODE NUMBERS AND REFERENCES

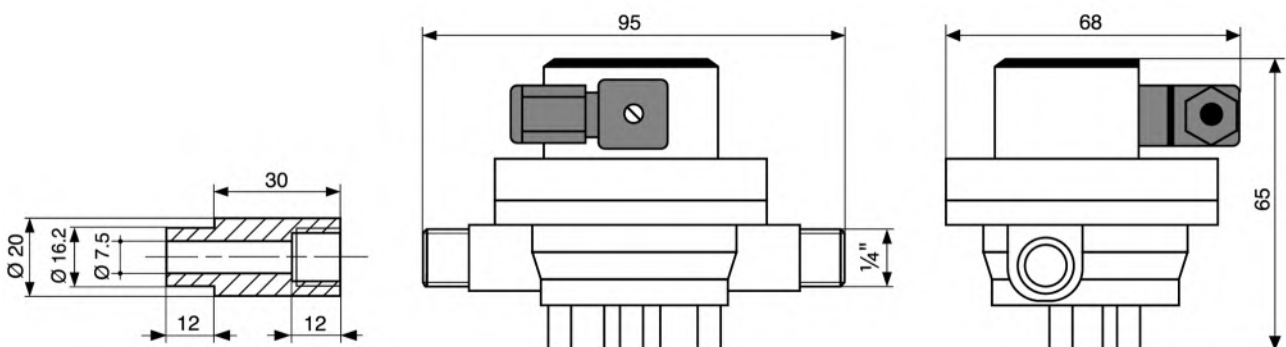
Below, values should be considered as approximated values.

Code	Reference	Description	Code	Description	Flow range*	Pulses **
784 606	FFG 6/PVDF	Flow sensor PVDF / FPM seal; Max. 950 l/h	784 001	Nozzle, Ø 1 mm, PTFE	1.2 ... 35 l/h	3413 pulse/l
			784 002	Nozzle, Ø 2 mm, PTFE	3...140 l/h	1687 /l
			784 003	Nozzle, Ø 3 mm, PTFE	7...340 l/h	1045 /l
			784 004	Nozzle, Ø 4 mm, PTFE	10...550 l/h	721 /l
784 406	FFG 6/A	Flow sensor Arnite / Silicone seal; Max. 465 l/h			14 ... 465 l/h	343 pulse/l
784 101	R1/4-FFG/PVC	U-PVC coupling BSP-F 1/4" diam. 16 mm (solvent welding to piping)				

\* Maximum flow rates are for a pressure drop of 1 bar, P<sub>max</sub> 3.3 bar Higher flow rates may be possible, but, the pressure drop would increase by the square of flow rate.

\*\* The number of pulses per litre may differ depending on the installation. We recommend to calibrate the device on site (pulses per litre) according to the installation.

## DIMENSIONS



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Turbine flow sensor  
**FFG**

20-01-2021

D-784.01-EN-AD

**DEB**

**784-01 /2**

# Low flow-rate flowmeters 1900/1901/1903



- Direct reading of low flow-rates
- 3 models - C to C (A): 100, 170 or 320 mm
- ATEX version on request
- Pressure limit: 16 bar
- Temperature: -20 ... +100 °C
- Borosilicate glass tube
- Protection screen: PMMA (Ex version: PCC)
- Sealing: rubber, FPM, EPDM
- Fittings: NPT-F or BSP-F size 1/4"
- **OPTIONS:**  
Pressure regulator  
Inductive contacts

## APPLICATIONS

Direct reading flow indicators with adjustment valve for low flow rates of liquids or gases (valve on request for models 1901 and 1903)

## PRINCIPLE

Variable area flowmeters: the diver ("float") moves inside a conical measuring tube.

## LIMIT SWITCHES

Inductive type: Only for metal float; Cable output; Supplied with 1 m long cable  
Add an amplifier relay providing an appropriate power supply to the inductive contact

For contact in ATEX version: the contact must be connected via an Intrinsic Safety relay (RDN11, data-sheet 250-03)

## CODE NUMBERS AND REFERENCES

Code	Type	Materials (body, valve)	C to C A [ mm ]	Height scale	Length B [ mm ]	Accuracy
790 101	1900	PVC	100	63	128	±5 %
790 200	1900	AISI 316 L	100	63	128	
790 300	1901	AISI 316 L	170	90	198	±3 %
790 400	1903	AISI 316 L	320	240	348	

## OPTIONS, ACCESSORIES

Code	Description
790 035	Inductive contact, monostable
790 037	Inductive contact, bistable
251 011	Intrinsic safety relay RDN 11 (NAMUR)
790 051	Protection screen for 1901 model without contact
790 053	Protection screen for 1903 model without contact
790 205	Needle valve for stainless steel models with range ≤ 60 NI/h

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Low flow-rate flowmeters  
**1900/1901/1903**

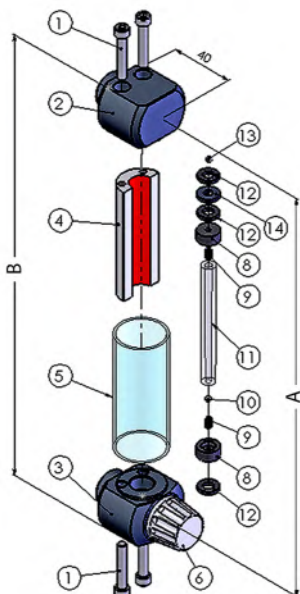
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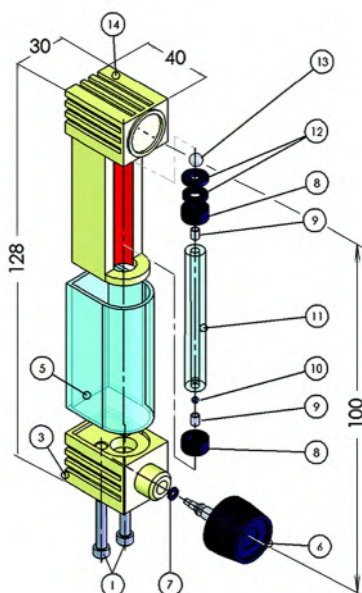
**DEB**

790-01 /1

1900; 1901; 1903 valve/ISI 316 L body and



1900 - PVC body and valve



- 1) Screw
- 2) Top armature
- 3) Bottom armature/ needle valve
- 4) Rear frame
- 5) PMMA Protection screen
- 6) Valve needle
- 7) O-ring seal
- 8) Reading tube seal
- 9) Spring
- 10) Float
- 11) Reading tube
- 12) Washer
- 13) On request: Check ball
- 14) PVC flowmeter armature

## TECHNICAL FEATURES

1900 model		
Float material	AIR scale: 20 °C & 1 bar ABS	Water scale at 20 °C
Glass	1...10 NI/h	-
AISI 316 L	2,5...25 NI/h	-
Glass	3...30 NI/h	-
AISI 316 L	5...60 NI/h	0,025...0,85 l/h
Glass	10...100 NI/h	0,2...2 l/h
AISI 316 L	20...190 NI/h	0,5...5 l/h
Glass	20...250 NI/h	0,25...6 l/h
AISI 316 L	40...460 NI/h	1...13 l/h
Glass	50...600 NI/h	0,5...15 l/h
AISI 316 L	100...1100 NI/h	3...36 l/h
Tungsten carbide	150...1600 NI/h	5...50 l/h
Glass	250...850 NI/h	4...20 l/h
AISI 316 L	450...1600 NI/h	13...50 l/h
Tungsten carbide	400...2000 NI/h	15...70 l/h

1901 model		
Float material	AIR scale: 20 °C & 1 bar ABS	Water scale at 20 °C
Glass	85...850 NI/h	2...20 l/h
AISI 316 L	160...1600 NI/h	5...50 l/h
Tungsten carbide	200...2000 NI/h	7...70 l/h

1903 model		
Float material	AIR scale: 20 °C & 1 bar ABS	Water scale at 20 °C
Glass	3...60 NI/h	0,07...1 l/h
AISI 316 L	10...115 NI/h	0,2...3 l/h
Glass	4...115 NI/h	0,1...2,5 l/h
AISI 316 L	16...220 NI/h	0,2...6 l/h
Glass	4...190 NI/h	0,05...4 l/h
AISI 316 L	10...340 NI/h	0,1...10 l/h
Glass	20...560 NI/h	0,3...11 l/h
AISI 316 L	40...1000 NI/h	1...30 l/h
Glass	20...600 NI/h	0,5...15 l/h
AISI 316 L	40...1100 NI/h	3...36 l/h
Tungsten carbide	100...1400 NI/h	1...45 l/h
Glass	85...850 NI/h	1,9...19 l/h
AISI 316 L	160...1600 NI/h	5...50 l/h
Tungsten carbide	200...2100 NI/h	7...70 l/h

On request, models 1901 and 1903 can be supplied with a needle valve.

Stainless steel models with measuring ranges  $\leq 60$  NI/h require the addition of a precision valve.  
(Code Nr 790 205)

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Low flow-rate flowmeters  
**1900/1901/1903**

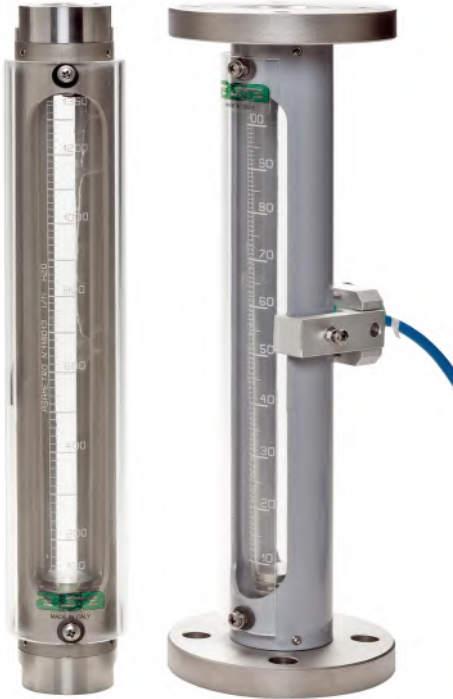
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DEB

790-01 /2

# Variable area glass flow indicators E Series



- Direct reading
- Accuracy  $\pm 2\%$
- For liquids or for gases
- Materials according ranges
- Adjustable contacts

## APPLICATIONS

The E series flow indicators are used for flow-rate reading or on gases or on liquids:

- Water treatment plants
- Manufactures (pulp industry, textile industry, etc.)
- Chemical, pharmaceutical industries
- Heating or cooling plants

## DESCRIPTION

The E Series are variable area flow indicators, the diver ("float") moves inside a calibrated conical tube.

These flow indicators may be calibrated according the fluid properties and operating conditions.

They accept flow switches, inductive monostable contacts, adjustable over the entire measuring range.

## TECHNICAL FEATURES

Accuracy	$\pm 2\%$ F. S. (Full Scale)
Repeatability	$\leq 0.25\%$ of reading
Scale length	250 mm
Unit	On request of customer
Temperature limits	0... 90 °C with Buna seals 0... 120 °C with FPM seals
Fittings	Or BSP-F Or flanges (DIN, ANSI, etc.)
<b>Materials</b>	
Thread fittings	Or carbon steel, or AISI 316, or PVDF On request: Hastelloy, Titanium
Flanges	Or AISI 316, or painted carbon steel
Measuring tube	Borosilicate glass
Spherical diver	According to specifications (see further on)
Conical diver	Standard: AISI 316 L; Or Aluminum (application for air) Options: PVDF, PTFE, Hastelloy B or C, Monel or titanium
Stops	AISI 316 L, or PVDF On request: Hastelloy, monel
Seals	Standard: NBR; Or FPM
Body	Epoxy painted carbon steel Or AISI 304 L

### Monostable inductive contacts

Intrinsically safe version (CENELEC, EEX ib II C)	
Repeatability	$\pm 0.3\%$ F.S.
Ambient temperature	-25 ... +60 °C
Protection	IP 67
Cable length	1 m

### Accessories

Transparent protection screen	PMMA
Guiding rod (when specified)	Or AISI 316, Or same material as of the diver

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Variable area glass flow  
indicators  
**E Series**

29-06-2020

D-795.01-EN-AA

DEB

795-01 /1



## MEASURING RANGES

- Ranges in l/h for water at 20 °C
- Ranges in NI/h for air at 20 °C and P = 1013 mbar abs
- Operating pressure, Max. at T < 100 °C: see next table

Diver type	l/h	ΔP [mbar]	NI/h	ΔP [mbar]	P Max.
Model 2600 - spherical divers					
Glass ball	0.07 ... 1		3...60		24 bar
Stainless steel ball	0.2 ... 3		10...115		
Glass ball	0.1 ... 2.5		4...115		
Stainless steel ball	0.2 ... 6		16...220		
Glass ball	0.05 ... 4		4...190		
Stainless steel ball	0.1 ... 10		10...340		
Glass ball	0.3 ... 11		20...560		
Stainless steel ball	1...30		40 ... 1,000		
Tungsten carbide ball	1...45		100 ... 1,400		
Glass ball	1.9 ... 19		85...850		
Stainless steel ball	5...50		160 ... 1,600		
Tungsten carbide ball	7...70		200 ... 2,100		
Model 2600 - conical divers					
AISI 316 L, conical Aluminum, conical (*)	4...40	3	100 ... 1,000 *	2	21 bar
	6.3 ... 63	8	130 ... 1,300 *	4	
	7...70	10	160 ... 1,600	5	
	10...100	7	160 ... 1,600 *	2	
	13...130	12	250 ... 2,500	5	
			250 ... 2,500 *	5	
			400 ... 4,000	12	
		4	400 ... 4,000 *	2	
		10	600 ... 6,000 *	5	
		16	630...630	6	
		1,000 ... 10,000	15		
2800 Models (conical divers)					
AISI 316 L, conical Aluminum, conical (*)	40...400	8	1,000 ... 10,000 *	6	14 bar
	63..630	19	1,250 ... 12,200 *	9	
	65...680	23	1,600 ... 16,000	15	
	100 ... 1,000	18	1,600 ... 16,000 *	5	
	130 ... 1,300	33	2,500 ... 23,500 *	13	
			2,500 ... 23,500	13	
		4,000 ... 40,000	34		
3000 Models (conical divers)					
AISI 316 L, conical Aluminum, conical (*)	160 ... 1,600	11			10 bar
	250 ... 2,500	27	4,000 ... 40,000 *	9	
	320 ... 3,200	44	5,500 ... 58,000 *	17	
			6,300 ... 63,000	22	
			1,000 ... 10,000	63	7 bar
	400 ... 4,000	20	6,300 ... 63,000 *	6	
	630 ... 6,300	48	10,000 ... 100,000 *	15	
	700 ... 7,000	60	12,500 ... 125,000 *	23	
		16,000 ... 160,000 *	38		
Models 3100 (conical divers)					
AISI 316 L, conical Aluminum, conical (*)	1,000 ... 10,000	45	16,000 ... 160,000 *	13	6 bar
	1,300 ... 13,000	76	24,000 ... 240,000 *	30	
			25,000 ... 250,000	32	
			40,000 ... 400,000	82	

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Variable area glass flow  
indicators  
**E Series**

29-06-2020

D-795.01-EN-AA

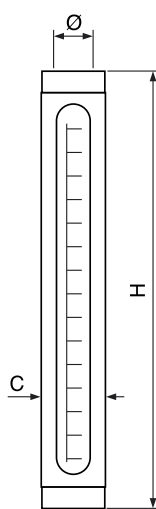
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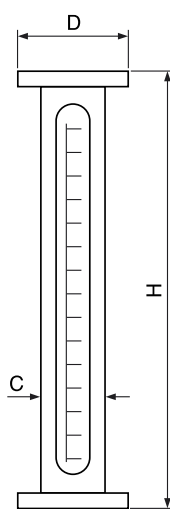


The flow rates indicated in bold type refer to models with aluminum divers.

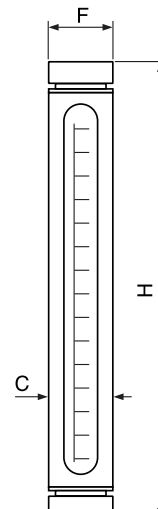
## DIMENSIONS



(1)



(2)



(3)

### (1) E5 Series - female thread fittings

Model	Ø	Ø C [mm]	H [mm]	Mass [kg]
E5-2600	½"	38	360	1.0
E5-2800	1"	54	360	2.1
E5-3000	1 ½"	80	460	5.9
E5-3100	2"	100	490	9.6

### (2) E6 series - PN 10 flanged fittings

Model	ND	Ø C [mm]	Ø D [mm]	H [mm]	Mass [kg]
E6-2600	15	38	95	353	2.2
E6-2800	25	54	115	353	4.1
E6-3000	40	80	150	446	9.2
E6-3100	65	100	185	480	15.2

### (3) E5 series - DIN 11851 fittings

Model	ND	Ø C [mm]	Ø F [mm]	H [mm]	Mass [kg]
E5-2600	20	38	44 x 1/6	357	1.2
E5-2800	25	54	52 x 1/6	381	2.5
E5-3000	40	80	65 x 1/6	470	8.1
E5-3100	65	100	95 x 1/6	510	15.2

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Variable area glass flow  
indicators  
**E Series**

29-06-2020

D-795.01-EN-AA

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795-01 /3

# Pressure transducer TP 805



- Compact and robust construction
- Output signal: 4-20 mA; 2-wire
- Pressure: 0 ... 2.5 barg up to 25 barg
- AISI 316 Fitting: 1/2" G or 1/4" G
- Ceramic diaphragm

## APPLICATIONS

The pressure transmitter is used for pressure measurements, continuously in real time, of gases and liquids.

## DESCRIPTION

Accuracy, reliability, corrosion resistance and mechanical load upper limit, make this top quality pressure transmitter a suitable product for a wide variety of industrial applications.

The transmitter is based on a piezo-resistive sensor for which the ceramic diaphragm fits a stainless steel body to resist to aggressive chemicals. Materials in use and the technology implemented make this sensor particularly resistant to vibrations and mechanical shocks.

Commissioning is easy and fast. The pressure transmitter is factory adjusted to its measuring range and can not be modified on site. It does not require maintenance.

## TECHNICAL FEATURES

Pressure ranges	0... 2.5 up to 0 ... 25 barg
Overload limit:	2.5 times the full scale
Accuracy	±0.5 % F.S.
<i>Inclusive: variations on zero point, end of range, linearity, hysteresis and repeatability</i>	
Response time	< 2 ms
Fluid temperature	-15 ... +125 °C
Ambient temperature	-30 ... +85 °C
Temperature incidence	± 0.2 % F.S. / 10 K
<i>Test conditions: At 25 °C</i>	
Output signal	4 ... 20 mA
Power supply	7 ... 33 V DC, 2-wire loop
Protected against short circuit and reverse polarity	
Isolation voltage	500 V DC
Electric protection	Classe III
Connections	Connector DIN; EN 175301-803-A Cable Ø 6 ... 8 mm
Protection	IP 65 (connector DIN mounted)
<b>Materials:</b>	
Body and fitting	AISI 316 L (1.4404)
Seal	FPM
Sensor	Piezo-resistive with ceramic diaphragm Al <sub>2</sub> O <sub>3</sub> (96 %)
Connector	Polyamide 50 % GF UL 94 V-0
<b>Mounting:</b>	
Fitting	Male threads: G 1/4" or G 1/2"
Mounting position	Vertical, connector upward (recommended)

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Pressure transducer  
TP 805

28-06-2018

D-805.04-EN-AC

PR

805-04/1

Mass	90 g
<b>Agreements</b>	
Electromagnetic compatibility	Directive EN 61326-2-3
EMC additional	Directive EN 50121-3-2
Mechanical Tests & Environmental Tests	Procedures IEC 68-2-27 & IEC 68-2-29
Vibrations, mechanical tests	Procedures IEC 68-2-6

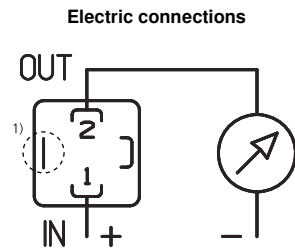
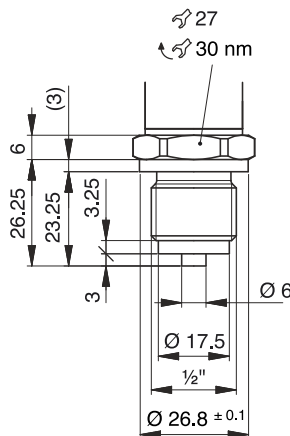
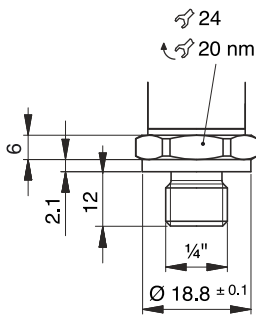
**EC Conformity: The instrument meets the legal requirements of the current European Directives**

### CODE NUMBERS AND REFERENCES

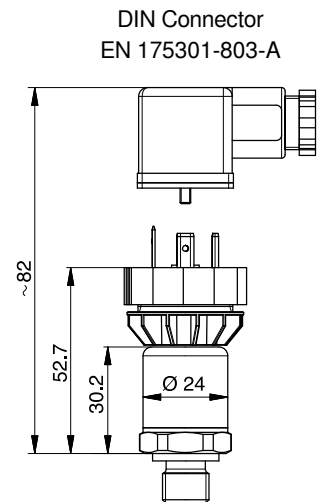
Code	Reference	Measuring range	Fitting
805 021	TP 805-528914-4	0... 2.5 bar	BSP 1/4"
805 024	TP 805-528915-4	0...4 bar	
805 026	TP 805-528917-4	0...6 bar	
805 030	TP 805-528930-4	0...10 bar	
805 036	TP 805-528931-4	0...16 bar	
805 402	TP 805-528914	0... 2.5 bar	BSP 1/2"
805 406	TP 805-528917	0...6 bar	
805 410	TP 805-528930	0...10 bar	
805 416	TP 805-528931	0...16 bar	
805 425	TP 805-528932	0...25 bar	

Other operating ranges: on request.

### DIMENSIONS



1 (IN) 2 (OUT)



### PRECAUTIONS

- These sensors should be handled by qualified technicians.
- Wet parts must be suitable for the application.
- The pressure limit for overload must be considered and respected.
- Protect the device from the direct action of UV / sunlight.

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Pressure transducer  
**TP 805**

28-06-2018

D-805.04-EN-AC

PR

805-04/2

# Flush diaphragm pressure transmitter TP 805-28



- Compact and heavy duty model
- Relative pressure from -1 up to 60 bar
- Output signal: 4-20 mA
- Stainless steel fitting: BSP 1"
- AISI 316L diaphragm (option: Hastelloy)

## APPLICATIONS

Remote pressure values of viscous, pasty, sticky, crystallizing liquids, contaminated fluids, that may clog the fitting of a standard pressure transmitter.

## DESCRIPTION

Accuracy, reliability, corrosion resistance and mechanical resistance make this pressure transmitter a suitable product for many industrial applications.

The built-in sensor is a piezoresistive sensor separated from the liquid by a stainless steel diaphragm. All parts and materials in use and the technology implemented make this sensor particularly resistant to vibrations and mechanical shocks.

Installation is quick and easy.  
If necessary, it is possible to shift the zero and the range by  $\pm 10\%$ , without altering the performance. It does not require any maintenance.  
Checks must be carried out according to Company's rules or to application.

## TECHNICAL FEATURES

Measuring range	-1 ... 60 barg (relative pressure) 0... 60 bar ABS (absolute pressure) <i>See standard scales on page 2</i>
Overload limit	4 times the F.S.
Damaging overload	8 times the F.S.
Accuracy	$\pm 0.2\%$
Long term stability	0.1 % per year
Repeatability	0.05 %
Response time	< 120 ms
Liquid temperature	-40 ... +130 °C
Ambient temperature	-40 ... +80 °C
Temperature incidence	Max. 0.4 % / 10 °C
Humidity acceptance	R.H.: 0 to 98 %, condensing
Output signal	4-20 mA; 2-wire
Power supply	8 ... 36 V DC
Electrical connection	Connector DIN 43650 with PG 9 ( $\varnothing$ 6 to 8 mm cable)
Protection	IP 65 (with DIN connector fitted)

### Materials:

Diaphragm	AISI 316 L (1.4435) Option: Hastelloy
Body	AISI 304 (1.4301)
Connector	Itamide (Nylon 6)

### Mounting:

Fitting	Male thread, BSP 1"
Mass	About 90 g

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Flush diaphragm pressure  
transmitter  
**TP 805-28**

17-01-2020

D-805.05-EN-AC

PR

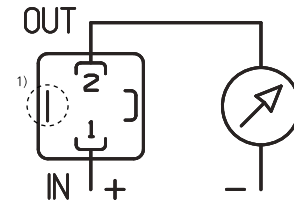
805-05/1

**Agreements:**

- Directive EN 61326-1 & EN61000-6-2, electromagnetic compatibility

**EC Conformity: The instrument meets the legal requirements of the current European Directives.****Options:**

- ATEX version
- Marine Certificate DNV and BR
- Accuracy: 0.16 %
- MODBUS Protocol
- SIL 1 certificate
- Response time less than 30 ms

**Electrical connections**

1 (IN) 2 (OUT)

**CODE NUMBER AND REFERENCE**

Code	Reference	Description
805 300	TP 805-28	Flush diaphragm transmitter (Scale to be specified)

**Standard scales:**

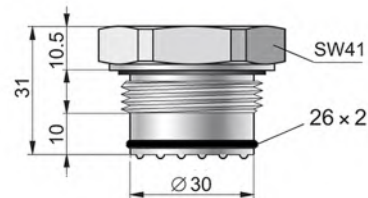
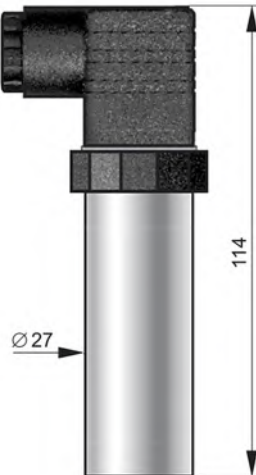
- **For relative pressure:**

In barg: 0 to -1; -0.4; -0.1; 0.1; 0.4; 1; 2.5; 6; 10; 16; 25; 60

- **Absolute pressure:**

In bar ABS: 0 to 0.4; 1; 2.5; 6; 10; 16; 25; 60

*Other scales: on request*

**DIMENSIONS [mm]****INSTALLATION PRECAUTIONS**

- These transmitters should be handled by qualified technicians.
- Wet parts must be suitable with the liquid, application.
- Overload pressure limit must be considered and respected.
- Protect the device from the direct action of UV / sunlight.

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**Flush diaphragm pressure transmitter**  
**TP 805-28**

17-01-2020

D-805.05-EN-AC

**PR**

**805-05/2**

# Plastic gauge guards SPM 903



- Base plate: PVC-U, PP, PVDF
- Diaphragm in EPDM; PTFE coated
- For aggressive and/or ultrapure liquids
- No metal parts
- OEM versions on request

## DESCRIPTION

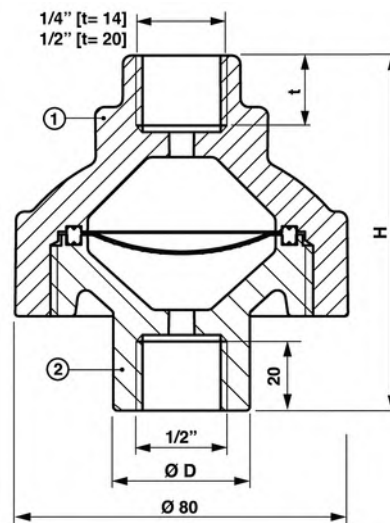
Pressure gauge guards SPM 903, are suitable to protect sensors against the destroying effects of aggressive liquids. Their design, all in plastic, PTFE coated diaphragm, insure a high chemical resistance.

Pressure from process is transferred to sensor through an incompressible liquid such as oil. Fitting of guard to sensor is done under vacuum.

We accept to fit on our guards, specific pressure sensors from Customers (please ask us before a quotation).

## TECHNICAL FEATURES

Upper cover (1)	PPG (glass fibre reinforced PP)
Base plate (2)	PVC-U, PP, PVDF
Diaphragm	EPDM coated PTFE
Process connection	1/2" G
Instrument fitting	1/2" or 1/4" G
Pressure limit	10 bar at 20 °C as a maximum
Temperature limits	0...+60 °C with PVC-U base plate
(for the liquid in process)	+10 ... +80 °C with PP base plate
	-30 ... +100 °C (for PVDF base plate)



(Dimensions in mm)

PVC: Ø D = 40	PP, PVDF: Ø D = 33.5	PVC: H = 89	PP, PVDF: H = 83
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Plastic gauge guards  
**SPM 903**

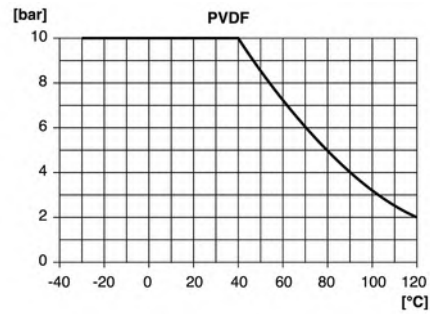
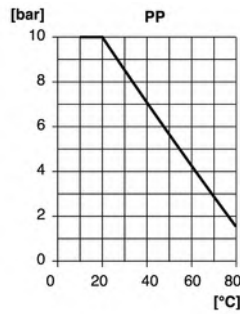
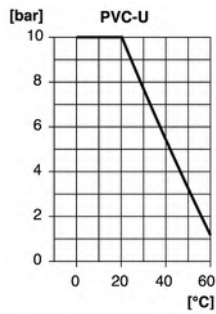
05-10-2020

D-903.02-EN-AC

**PLAS**

903-02/1





Pressure limit vs. temperature

## CODE NUMBERS AND REFERENCES

Process connection	Sensor fitting	PVC	PP	PVDF
1/2" GAZ	1/2" GAZ	903 100	903 200	903 250
1/2" GAZ	1/4" GAZ	903 104	903 204	903 254

## RECOMMENDATIONS

When guard is supplied alone, the end-user must fill the system guard + sensor, under vacuum, with an appropriate liquid. Without liquid the measure is false and diaphragm will be destroyed.

The system sensor + gauge guard, may be mounted in any position.

To install the system do not use the gauge as a handle. Use hexagonal wrench on the guard.

Caution: modifying the position of the gauge against the separator will change the inside pressure of filling liquid.

**To test a system guard + sensor, never push on the diaphragm with any object.**

**Never disassemble a sensor from its guard.**

When accidentally the gauge is separated from guard, you have to send back the both parts to our factory.

**Damaged diaphragm and modified position of the sensor against the guard, are not covered by the warranty.**



Example of use

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Plastic gauge guards  
**SPM 903**

05-10-2020

D-903.02-EN-AC

**PLAS**

**903-02/2**

# PRESSURE REDUCING VALVES

## RDP 906



- All wetted parts in plastic
- Protection of low pressure process lines
- Body parts: Glass fibre reinforced PPH
- Diaphragm: PTFE coated EPDM
- Adjustable from 1 to 9 bar
- From ND 10 to ND 25

### APPLICATION AND FITTING

A pressure reducing valve RDP 906 maintains constant the pressure downstream, at the adjusted value (*lower than the upstream pressure*).

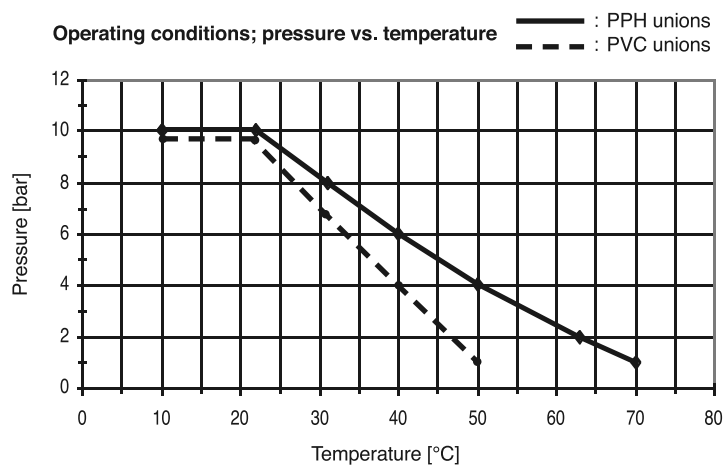
An EPDM diaphragm, PTFE coated, separates the mechanical parts body and the channel. All wetted parts are in plastics. The seat seal is in EPDM or FPM according to the model and connections. Without any metallic parts exposed to the atmosphere it allows a location in aggressive, corroding ambient.

The downstream pressure is adjustable from 1 to 9 bar with an upstream pressure up to 10 bar.

These equipment protection devices may be fitted in any position, in line, or on by-pass according to the application.

### TECHNICAL FEATURES

Body parts:	Glass fibre reinforced PPH
Diaphragm:	PTFE coated EPDM
Seat seal and O-rings:	EPDM or FPM
Adjustable range:	1...9 bar
Pressure:	Class PN 10 (at 20°C) ; [bar]
Inlet / outlet size:	ND 10 to ND 25
Connections:	DIN 8068 threaded PVC union to glue on site PPH union to weld on site
Temperature limits	PPH: 10 to 70°C ; PVC: 10 to 50°C



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PRESSURE REDUCING  
VALVES  
RDP 906

31-01-2013

906 I1 02 D

PLAS

906-02/1

906

## CODE NUMBERS

### RDP 906 with PVC unions to be glued on site

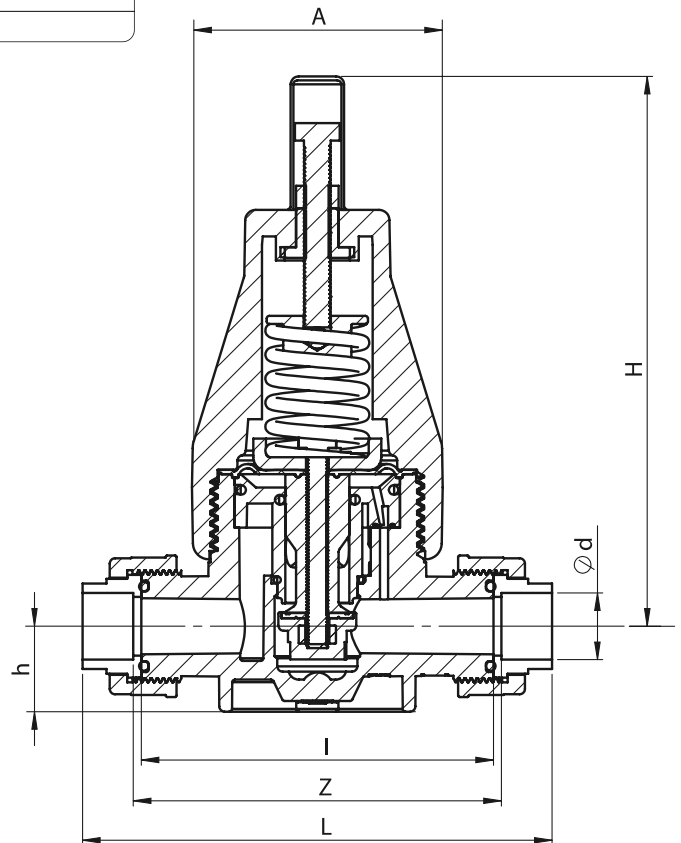
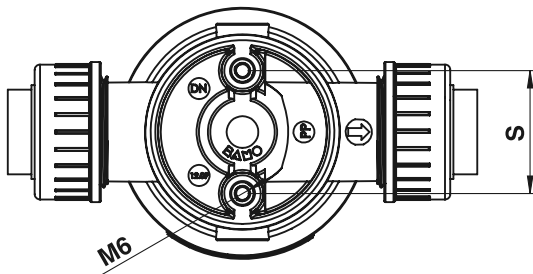
ND	Sealing EPDM	Sealing FPM
ND 10	906 001	906 011
ND 15	906 002	906 012
ND 20	906 003	906 013
ND 25	906 004	906 014

### RDP 906 with PP unions to be welded on site

ND	Sealing EPDM	Sealing FPM
ND 15	906 102	906 112
ND 20	906 103	906 113
ND 25	906 104	906 114

Any other material or model: please contact us

## DIMENSIONS



ND	d (mm)	A [mm]	H [mm]	h [mm]	I [mm]	S [mm]	Z [mm]		L [mm]		Mass [Kg]
							PVC	PPH	PVC	PPH	
ND 10	16	80	186	24	112	40	118	-	147	-	0,52
ND 15	20	80	186	24	112	40	118	118	152	151	0,53
ND 20	25	94	210	32	132	46.5	138	138	176	175	0,93
ND 25	32	94	210	32	132	46.5	138	138	182	179	0,96

## FLOW RATE LIMITS

ND	Flow rate [l/h] *
ND 10	900
ND 15	2000
ND 20	3500
ND 25	5500

\* Measured maxima according to a fluid speed of 3 m/s approx.  
The speed of 3 m/s may be considered as a maximum.  
Above 3 m/s the plastic devices will be damaged.

For water at 20°C

# BAMO MESURES

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**PRESSURE REDUCING  
VALVES  
RDP 906**

31-01-2013

906 I1 02 D

**PLAS**

**906-02/2**

# Pressure relief valves SDD 910



- All wet parts in plastic
- Protection of pumps and piping
- Body: PPG or PVDF
- Unions: PVC, PP or PVDF
- ND 10 and ND 15
- Adjustable trigger point: 0.5 ... 6 bar

## FUNCTION AND INSTALLATION

Pressure relief valve SDD 910 protects a network of pipes in the event of overpressure that could lead to deterioration of the system. It limits the static pressure to a constant upstream pressure when the pressure is over the settled value.

All wet parts are of plastics. The diaphragm and seals are of EPDM or FPM according the model.

SDD 910 valves may be used as pressure relief valves on dosing or volumetric pumping systems.

The pressure relief valves are mounted in any position, or in line or as a bypass, according to requested operation.

They can also be used on injection stems with dosing pumps, avoiding the risk of siphoning, creating a constant back-pressure (adjustable on site).

As a standard supply, valves SDD 910 have a top handle for adjustment, which is self-locking.

(No needs of tools)



## TECHNICAL FEATURES

Body	PPG (glass fibre reinforced polypropylene) or PVDF
Diaphragm	EPDM or FPM
Seals (unions)	EPDM or FPM
Upper cover	PPG
Adjusting knob	PPG
Screws	Stainless steel
Spring	Stainless steel
Insert (movement inside)	Brass
Dimensions	ND 10 or ND 15
Hysteresis	About 0.3 bar
Adjustment range	0.5 ... 6 bar
Fittings	PVC Unions for solvent welding; PP or PVDF Unions for fusion welding

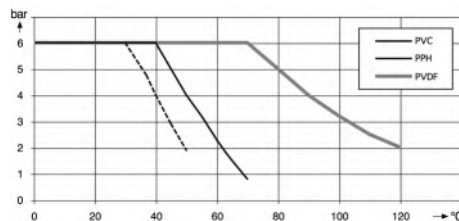


Diagram: Pressure vs. Temperature

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Pressure relief valves  
**SDD 910**

28-10-2019

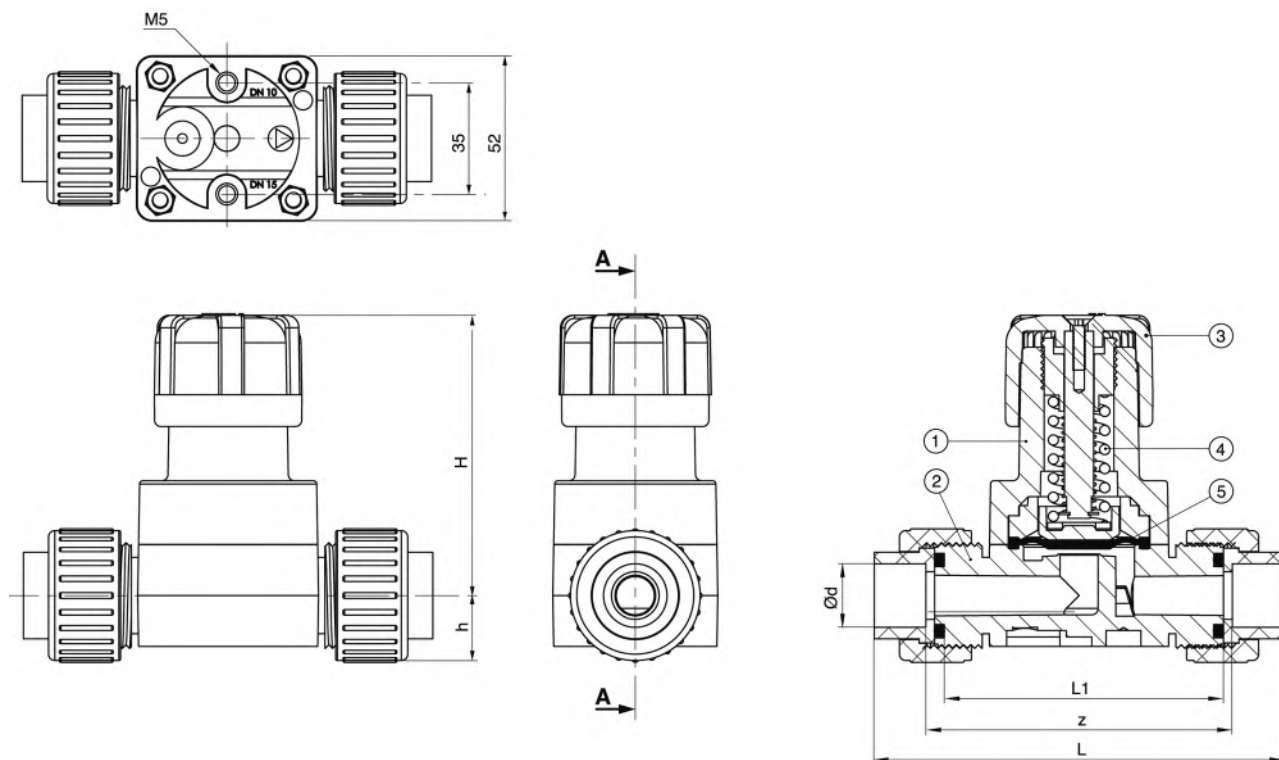
D-910.01-EN-AA

PLAS

910-01 /1

## CODE NUMBERS, DIMENSIONS

Code	ND	Body / Unions	Seal & diaphragme	L	H	d	h	L1	Z
910 001	10	PPG / PVC	EPDM	124.5	89	16	18	91	97.5
910 002	15	PPG / PVC	EPDM	128	89	20	23	91	98
910 011	10	PPG / PVC	FPM	124.5	89	16	18	91	97.5
910 012	15	PPG / PVC	FPM	128	89	20	23	91	98
910 101	10	PPG / PP	EPDM	124.5	89	16	18	91	97.5
910 102	15	PPG / PP	EPDM	128	89	20	23	91	98
910 111	10	PPG / PP	FPM	124.5	89	16	18	91	97.5
910 112	15	PPG / PP	FPM	128	89	20	23	91	98
910 211	10	PVDF / PVDF	FPM	124.5	89	16	18	91	97.5
910 212	15	PVDF / PVDF	FPM	128	89	20	23	91	98



(1)	Bonnet in PPG (PP fiber-glass reinforced)
(2)	Body or in PPG or in PVDF
(3)	Adjustment knob in PPG
(4)	Spring in stainless steel
(5)	Diaphragm in EPDM or FPM

## FLOW FEATURES

ND	Flow rate l/h*	Kv (l/h)**	*: Maximum flow rates for a speed of 3 m/second; **: Values for water at 20 °C <i>This speed is a maximum not to exceed with plastic materials. Beyond, the valve deteriorates quickly.</i>
10	900	1920	
15	2000	2560	

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Pressure relief valves  
**SDD 910**

28-10-2019

D-910.01-EN-AA

**PLAS**

**910-01/2**

# Pressure relief valve SDD 911



- Plastic design, from ND 15 to ND 25
- Protection of pumps and process pipes
- Body: PPG, Glass fiber reinforced polypropylene
- Diaphragm: EPDM, PTFE coated
- Adjustable range: from 0.5 to 10 bar

## APPLICATIONS

- Water treatment plants (neutral and aggressive liquids)

## DESCRIPTION

The SDD 911 is used to maintain a constant pressure upstream in the event of pressure variation greater than the set pressure..

All wet parts are made of plastic components. The EPDM diaphragm, PTFE coated, separates the mechanical parts from liquid circuit. Seat and O-ring seals are in EPDM or FPM (according to application). All wet parts are in plastics, no external metallic parts, allowing to install SDD 911 in aggressive, corroding ambients.

SDD 911 can be used as a relief pressure valve or as a holding pressure valve. It can be mounted in-line or as a bypass, according the application, in any position.

Caution: Not suitable as a valve with safety function requested in accordance with the EC Pressure Equipment Directive.

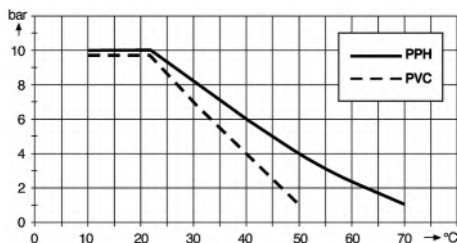


Diagram: Pressure vs. temperature

## TECHNICAL FEATURES

Trigger point adjustment from 0.5 to 10 bar by steps of 0.5 bar  
Hysteresis About 0.3 bar

### Materials:

Body PPG, fiber glass reinforced polypropylene  
Diaphragm EPDM, PTFE coated  
Seat seal EPDM or FPM  
Spring and screws Stainless steel  
Fittings PVC unions (solvent welding) or PP (fusion welding)  
Pressure 10 bar max. at 20 °C  
See also: Diagram Pressure vs. Temperature

### Flow-rate max.

ND	Flow-rate ( l/h )	Kv ( l/h ) **
15	2000	2380
20	3500	6160
25	5500	7870

\* These upper limits of flow rates correspond to a speed of 3 m/s This speed is a maximum not to be exceeded for plastic devices. Beyond 3 m/s, the valves deteriorate rapidly.

\*\* : Values shown for water at 20 ° C.

Refer to instructions manual to view all the operating curves of the valves according to the nominal diameter.

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Pressure relief valve  
**SDD 911**

12-03-2021

D-911.03-EN-AB

911-03/1



## CODE NUMBERS AND REFERENCES

### PVC unions for solvent welding - Sealings EPDM or FPM

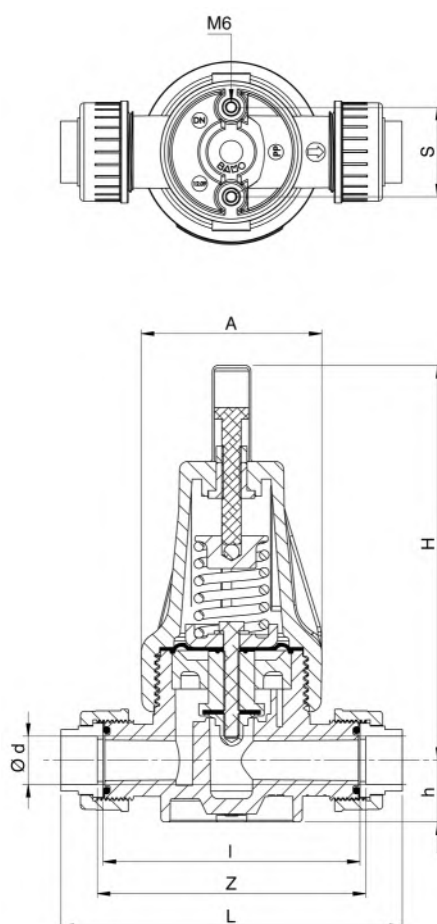
	EPDM sealing	FPM sealing
ND 15	911 002	911 012
ND 20	911 003	911 013
ND 25	911 004	911 014

### PPH unions for fusion welding - Sealings EPDM or FPM

	EPDM sealing	FPM sealing
DN 15	911 102	911 112
DN 20	911 103	911 113
DN 25	911 104	911 114

Other fittings on request

## DIMENSIONS in mm



DN	d	A	H	h	l	S	Z - PVC / PPH	L - PVC / PPH	Mass (kg)
15	20	80	186	24	112	40	118 / 118	152 / 151	0.53
20	25	94	210	32	132	46.5	138 / 138	176 / 175	0.93
25	32	94	210	32	132	46.5	138 / 138	176 / 175	0.96

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Pressure relief valve  
**SDD 911**

12-03-2021

D-911.03-EN-AB

**911-03/2**

# Pneumatic 3-way ball valves single or double acting VP3V S4-PVC



- PVC Valves from ND 10 up to ND 50
- Pneumatic actuator  
Single or double acting
- Position pointer
- Options:  
Limit switches box  
Pilot valve

## DESCRIPTION

These 3-way ball valves, L or T bored, with pneumatic actuator, or single or double acting, are useful for redirecting or to stop the flow of liquids in piping systems. These valves are suitable for applications with aggressive liquids. All operating modes (according bore shapes) are described in the data-sheet da913-20.

## TECHNICAL FEATURES

### 3-way ball valve :

Body	PVC
Seals	EPDM or FPM
Ball	PVC, T or L bored
Ball seat	PTFE
Fittings	Unions , socked-ends for solvent welding
Pressure limit	10 bar

### Pneumatic actuator:

Models	Single acting N.O., or single acting N.C., or double acting
Operating pressure	Min.: 6 bar; Max. 8 bar
Fittings	BSP 1/4" female

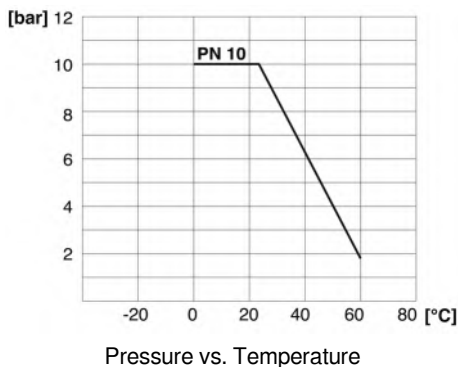
Conformity with NAMUR VDI / VDE 3845 and ISO 5211

### Accessories:

(See data-sheet da913-10)

- Limit switches box
- 3/2-way pilot valves for single acting versions
- 5/2-way pilot valves for double-acting version
- Silencer, damper, brass versions

**EC Conformity:** The instrument meets the legal requirements of the current European Directives.



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Pneumatic 3-way ball valves  
single or double acting  
**VP3V S4-PVC**

08-11-2019

D-913.02-EN-AA

PLAS

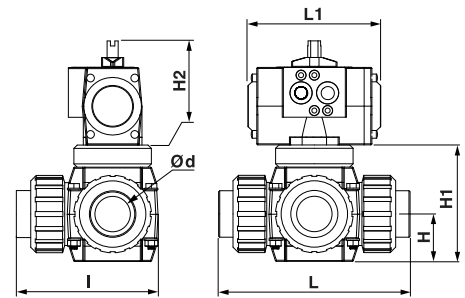
913-02/1

## CODE NUMBERS AND REFERENCES

ND	d	Single acting				Double acting			
		Ball L bored		Ball T bored		Ball L bored		Ball T bored	
		EPDM seals	FPM seals	EPDM seals	FPM seals	EPDM seals	FPM seals	EPDM seals	FPM seals
10	16	913 061	913 068	913 103	913 110	913 089	913 096	913 131	913 138
15	20	913 062	913 069	913 104	913 111	913 090	913 097	913 132	913 139
20	25	913 063	913 070	913 105	913 112	913 091	913 098	913 133	913 140
25	32	913 064	913 071	913 106	913 113	913 092	913 099	913 134	913 141
32	40	913 065	913 072	913 107	913 114	913 093	913 100	913 135	913 142
40	50	913 066	913 073	913 108	913 115	913 094	913 101	913 136	913 143
50	63	913 067	913 074	913 109	913 116	913 095	913 102	913 137	913 144

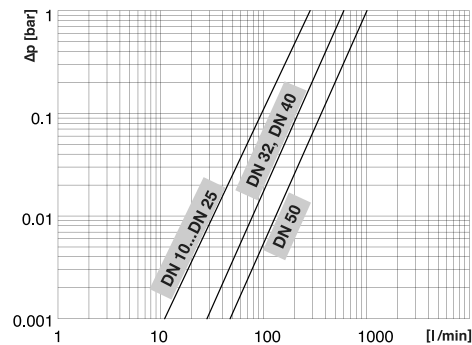
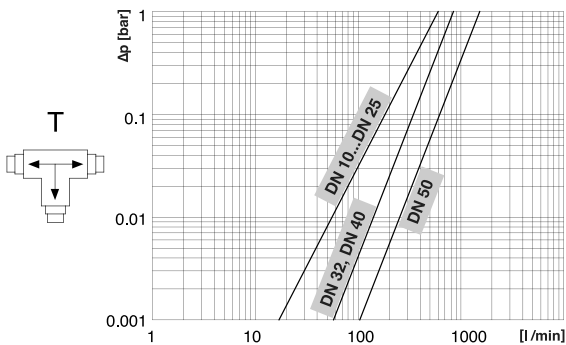
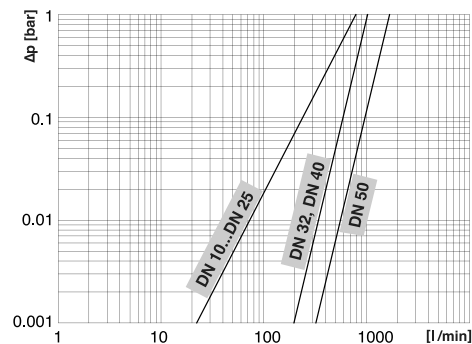
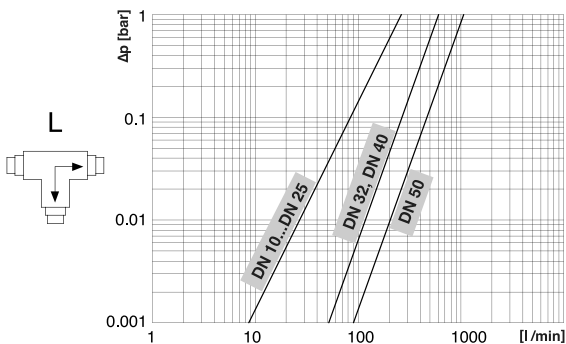
## DIMENSIONS [mm]

ND	d	Single acting						Double acting									
		H	H1	H2	L	L1	I	H	H1	H2	L	L1	I				
10	16																
15	20	33	86	91	138	119	95	33	86						138		95
20	25	40	100	112	163	160	116	40	100	91	163	119	160	116			
25	32	43	106		169		119	43	106		169			119			
32	40	51	130		222	119	161	51	130		222			161			
40	50	56	155		231	160	166	56	155	231	166						
50	63	64	168		264	175	192	64	168	264	192						



## PHYSICAL FEATURES

Pressure drop vs. flow (water at 20 °C)



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**Pneumatic 3-way ball valves  
 single or double acting  
 VP3V S4-PVC**

08-11-2019

D-913.02-EN-AA

**PLAS**

**913-02/2**

# Pneumatic butterfly valve single or double acting VPP FE-PVC



- PVC valve from ND 50 up to ND 200
- Radial mounting and dismounting
- Pneumatic actuator  
Single or double acting,  
Single acting: or N.C., or N.O.
- Position pointer
- **OPTIONS:**  
Limit switches box  
Pilot valve

## DESCRIPTION

These butterfly valves with pneumatic actuator single acting (or N.C., or N.O.) or double acting, allow stop the flow of liquid in piping system. Wet parts are only the seat, seals and the disk. These valves are suitable for applications even with aggressive liquids.

## TECHNICAL FEATURES

### Butterfly valve :

Body	PVC
Seat and seals	EPDM
Disk	PVC
Wafer mounting	Between flanges

### Pneumatic actuator:

Models	Single acting N.O., or single acting N.C., or double acting
Operating pressure	Min. 6 bar; Max. 8 bar
Fittings	BSPF 1/4" (female)

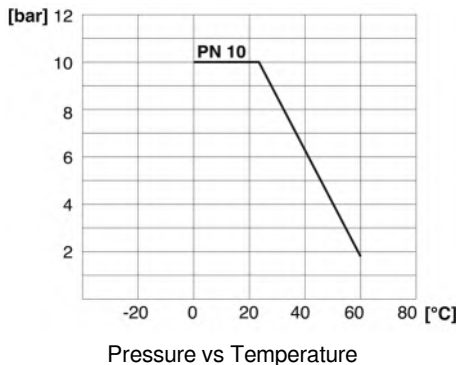
In conformity with NAMUR VDI/VDE 3845 and ISO 5211

### Accessories:

(See data-sheet da913-10)

- Limit switches box
- 3/2-way pilot valve for single acting versions
- 5/2-way pilot valves for double-acting version

**EC conformity:** The instrument meets the legal requirements of the current European Directives.



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Pneumatic butterfly valve  
single or double acting  
**VPP FE-PVC**

09-06-2020

D-913.03-EN-AB

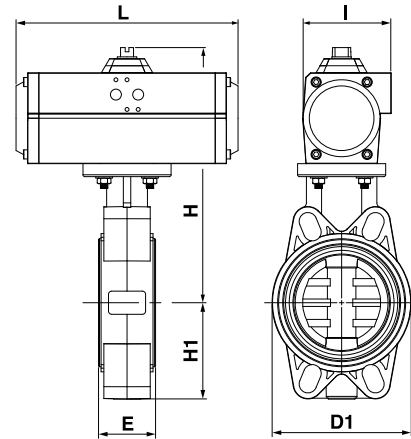
PLAS

913-03/1

## CODE NUMBERS AND REFERENCES

ND	d	Single acting N.C.	Single acting N.O.	Double acting
50	63	913 201	913 211	913 221
65	75	913 202	913 212	913 222
80	90	913 203	913 213	913 223
100	110	913 204	913 214	913 224
125	(*) 140	913 205	913 215	913 225
150	160	913 206	913 216	913 226
200	(**) 225	913 207	913 217	913 227

(\*): Suitable for ND 125 and Ø 125 mm  
 (\*\*): Suitable for DN 200 and Ø 200 mm



## DIMENSIONS [mm]

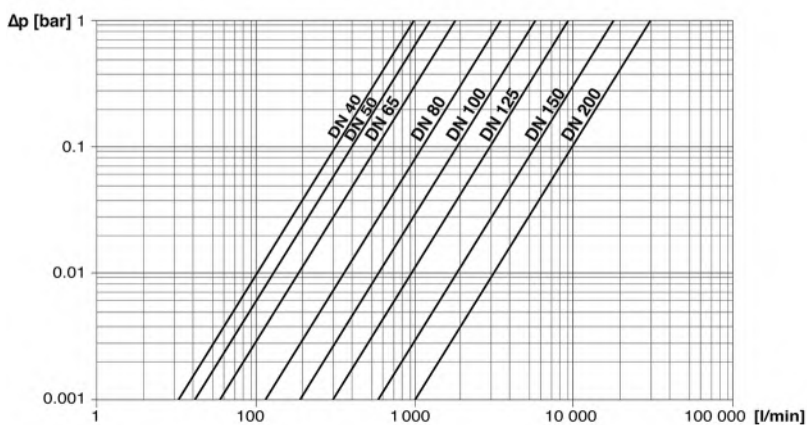
ND	BSP	Single acting (N.O. or N.C.)						Double acting					
		D1	E	I	L	H	H1	D1	E	I	L	H	H1
50	2"	147	43	101	175	236.5	70	147	43	86	160	204	70
65	2 1/2"	165	46	101	175	260	80	165	46	86	160	239	80
80	3"	130	49	138	246	328	90	130	49	101	175	261,5	90
100	4"	150	56	138	246	362	105	150	56	101	175	279	105
125	5"	185	64	138	290	363	121	185	64	96	239	310	121
150	6"	210	70	151		388	132	210	70	138	290	354	132
200	8"	325	71	185	361	475	161	325	71	138	246	423	161

## Wafer mounting, tightening torques:

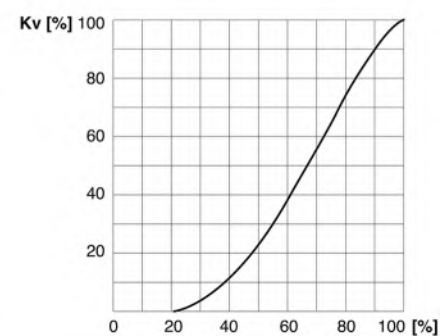
ND 65: 15 N.m	ND 80: 18 N.m	ND 100: 20 N.m	ND 150: 40 N.m	ND 200: 55 N.m
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## PHYSICAL FEATURES

Pressure drop vs. flow ( Water at 20 °C)



Kv vs. Opening angle (in %)



## Flow Factor Kv (water at 20 °C):

ND 50	ND 65	ND 80	ND 100	ND 125	ND150	ND 200
1,285 l/min	1,700 l/min	3,550 l/min	5,900 l/min	9,850 l/min	18,700 l/min	30,500 l/min

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Pneumatic butterfly valve  
 single or double acting  
**VPP FE-PVC**

09-06-2020

D-913.03-EN-AB

PLAS

913-03/2

# Pneumatically actuated 3-way ball valves, single or double acting VP3V S4-PPH



- PPH valve from ND 10 to ND 50
- Pneumatic actuator  
Single or double acting
- Position pointer
- Options:  
Limit switches box  
Pilot valves

## DESCRIPTION

Pneumatically actuated 3-way ball valves, L or T bore, controlled by single or double acting pneumatic actuator, allow many possibilities of controlling the direction of liquid(s) in a piping system. These models are designed for aggressive liquids. Their different operating modes are described in the documentation da 913.20 (Bores L or T).

## TECHNICAL FEATURES

### 3-way ball valve:

Body	PPH
Seals	EPDM or FPM
Ball	PPH, bore L or T1, or T2 or T3
Ball seat	PTFE
Fittings	Union (female ends for fusion welding)
Pressure limit	10 bar

### Pneumatic actuator:

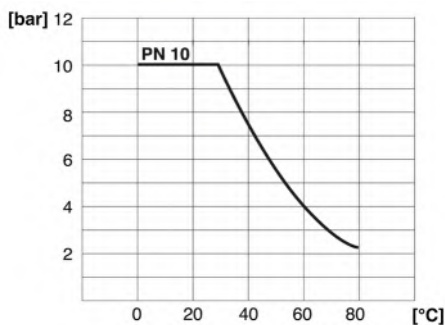
Models	Single acting or N.O. or N.C., or double acting
Operating pressure	Min. 6 bar; Max. 8 bar
Fittings	BSPF 1/4"G (female)
Conformity:	NAMUR VDI/VDE 3845 and ISO 5211

### Accessories:

(See data-sheet da913-10)

- Limit switches box
- 3/2-way pilot solenoid valves (for single acting version)
- 5/2-way pilot solenoid valve (for double acting version)
- Exhaust silencer, Brass, 1/4" G

**EC Conformity:** The instrument meets the legal requirements of the current European Directives.



Pressure vs. Temperature

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Pneumatically actuated 3-way ball  
valves, single or double acting

## VP3V S4-PPH

09-06-2020

D-913.05-EN-AA

PLAS

913-05/1

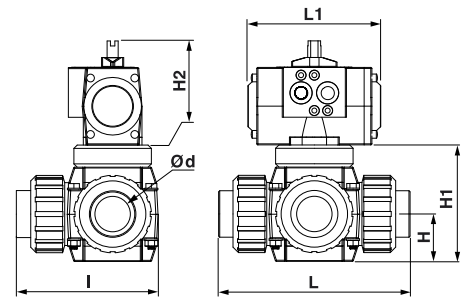


## CODE NUMBERS AND REFERENCES

ND	d	Single acting				Double acting			
		Ball L bored		Ball T bored		Ball L bored		Ball T bored	
		EPDM seal	FPM seal	EPDM seal	FPM seal	EPDM seal	FPM seal	EPDM seal	FPM seal
10	16	913 361	913 368	913 403	913 410	913 389	913 396	913 431	913 438
15	20	913 362	913 369	913 404	913 411	913 390	913 397	913 432	913 439
20	25	913 363	913 370	913 405	913 412	913 391	913 398	913 4313	913 440
25	32	913 364	913 371	913 406	913 413	913 392	913 399	913 434	913 441
32	40	913 365	913 372	913 407	913 414	913 393	913 400	913 435	913 442
40	50	913 366	913 373	913 408	913 415	913 394	913 401	913 436	913 443
50	63	913 367	913 374	913 409	913 416	913 395	913 402	913 437	913 444

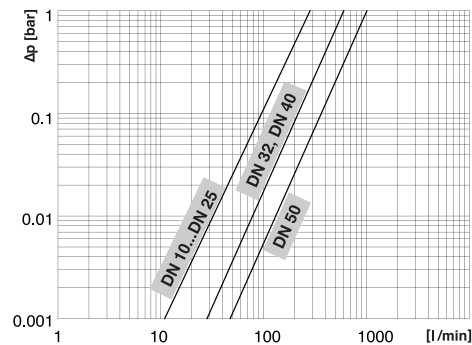
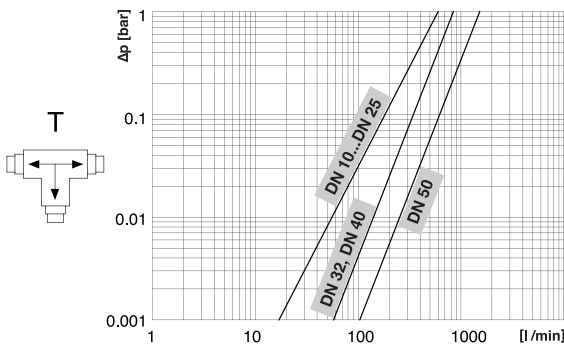
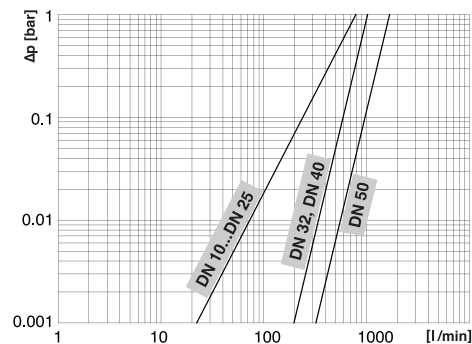
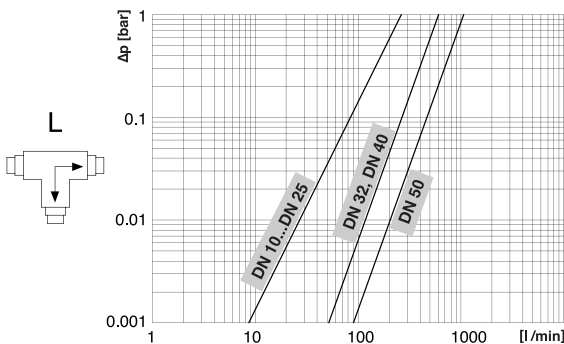
## DIMENSIONS [ mm ]

ND	d	Single acting						Double acting											
		H	H1	H2	L	L1	I	H	H1	H2	L	L1	I						
10	16																		
15	20	33	86	91	138	119	95	33	86						138				95
20	25	40	100	112	163	160	116	40	100	91	163	119	116	166	169	119	119	166	119
25	32	43	106		169		119	43	106		169		119		161		130		
32	40	51	130		222	119	161	51	130		222	231	160		166				
40	50	56	155		231	160	166	56	155		231	264	160		192				
50	63	64	168		132.5	264	175	192	64		168	264	160		192				



## PHYSICAL FEATURES

Pressure drop vs. flow (Water at 20 ° C)



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Pneumatically actuated 3-way ball valves, single or double acting

## VP3V S4-PPH

09-06-2020

D-913.05-EN-AA

PLAS

913-05/2

# Pneumatic butterfly valves, single or double acting VPP K4-PPH



- Valves in PPG from ND 65 up to ND 200
- Radial mounting and dismounting
- Pneumatic actuator  
Single or double acting  
Status N.C. or N.O.
- Position pointer
- OPTIONS:  
Limit switches box  
Pilot valve

## DESCRIPTION

Pneumatic actuated butterfly valves controlled by pneumatic actuator single acting (N.C. or N.O) or double acting, are useful to allow or to stop the flow of liquids in piping systems. Wet parts are only the seat, seals and the disk. These valves are suitable for applications even with aggressive liquids.

## TECHNICAL FEATURES

### Butterfly valve :

Body	PP-G (glass-fiber reinforced)
Seat and seals	EPDM or FPM
Disk	PP
Wafer mounting	Between flanges

### Pneumatic actuator

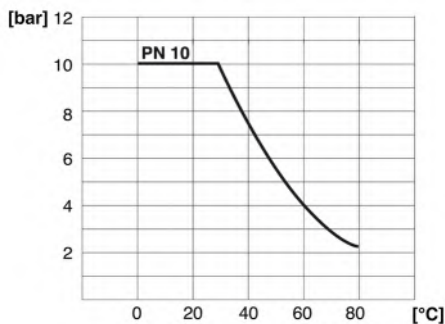
Models	Single acting (or N.O or N.C) versions, or double acting version
Operating pressure	6 bar min., 8 bar max.
Fittings	BSP 1/4" Female

In conformity with directive **NAMUR VDI/VDE 3845 and ISO 5211**

### Accessories:

- (See data-sheet da913-10)
- Limit switches box
  - 3/2-way pilot valves (For single acting versions)
  - 5/2-way pilot valves (For double acting version)

**EC Conformity:** The instrument meets the legal requirements of the current European Directives.



Pressure vs. Temperature

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Pneumatic butterfly valves,  
single or double acting  
**VPP K4-PPH**

29-06-2020

D-913.06-EN-AA

PLAS

913-06/1

## CODE NUMBERS AND REFERENCES

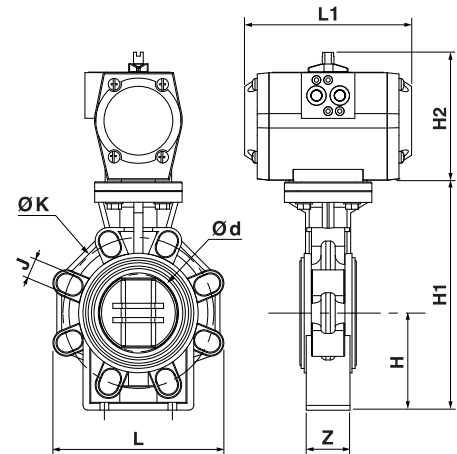
ND	d	Single acting N.C.		Single acting N.O.		Double acting	
		EPDM Seals	FPM seals	EPDM seals	FPM seals	EPDM seals	FPM seals
65	75	913 445	913 450	913 455	913 460	913 465	913 470
80	90	913 446	913 451	913 4556	913 461	913 466	913 471
100	110	913 447	913 452	913 4557	913 462	913 467	913 472
150	160	913 448	913 453	913 4558	913 463	913 468	913 473
200	225	913 449	913 454	913 4559	913 464	913 469	913 474

## DIMENSIONS [mm]

ND	d	H	H1	H2	L	L1	Z	K	J
65	75	100	232	111	133	160	46	127 / 145	19
80	90		239	133	176	175	49	146 / 160	
100	110	115	269	143	206	230	56	175 / 190.5	23
150	160	148	333	162	261	239	70	234.5 / 241.5	
200	225	175	395	196	314	246	71	290 / 298.5	

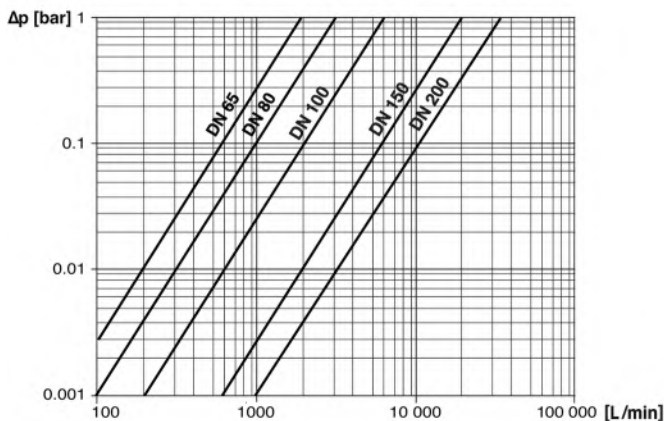
### Tightening torques, wafer mounting:

ND 65	ND 80	ND 100	ND 150	ND 200
15 N.m	18 N.m	20 N.m	40 N.m	55 N.m

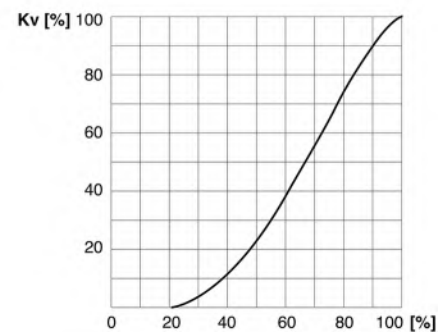


## PHYSICAL FEATURES

Pressure drop vs. flow ( Water at 20°C )



Kv vs. Opening angle (in %)



### Flow Factor ( Kv):

ND 65		ND 80		ND 100		ND 150		ND 200	
Pressure drop									
1 bar	0.001 bar	1 bar	0.001 bar	1 bar	0.001 bar	1 bar	0.001 bar	1 bar	0.001 bar
1,900 l/min	60 l/min	3,100 l/min	100 l/min	6,000 l/min	190 l/min	19,000 l/min	600 l/min	35,000 l/min	1,100 l/min

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**Pneumatic butterfly valves,  
 single or double acting  
 VPP K4-PPH**

29-06-2020

D-913.06-EN-AA

**PLAS**

**913-06/2**

# Pneumatic 3-way ball valves, single or double acting VP3V S4-PVDF



- PVDF Valves from ND 10 up to ND 50
- Pneumatic actuator  
Single or double acting
- Position pointer
- Options:  
Limit switches box; Pilot valves

## DESCRIPTION

Pneumatically actuated 3-way ball valves, bored in L or T, controlled by single or double acting pneumatic actuator, allow many possibilities of controlling the direction of the fluid(s) in a piping system. These valves are suitable for applications even with aggressive liquids. Their different operating modes (bore L, T1, T2 or T3) are described in the documentation 913.20

## TECHNICAL FEATURES

### 3-way ball valve:

Body	PVDF
Seals	FPM
Ball	PVDF
Ball seat	PTFE
Fittings	Unions, socket ends for fusion welding
Pressure limit	10 bar at 20 °C

### Pneumatic actuator

Models	Single acting (or N.O., or N.C.), or double acting
Operating pressure	Min. 6 bar; Max. 8 bar
Fittings	BSP-F 1/4"

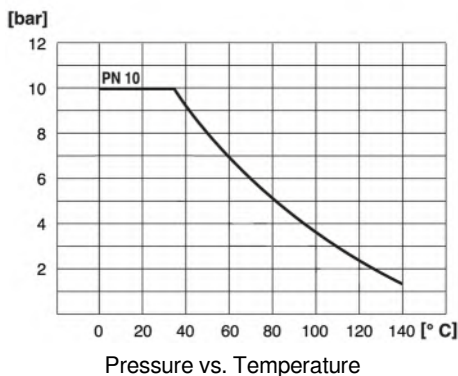
In conformity with directive NAMUR VDI / VDE 3845 and ISO 5211

### Accessories:

(see data-sheet 913.10)

- Limit switches box
- 3/2-way pilot valve (For single acting versions)
- 5/2-way pilot valve (For double acting version)
- Exhaust silencer, Brass, BSP 1/4"

**EC Conformity:** The instrument meets the legal requirements of the current European Directives



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Pneumatic 3-way ball valves,  
single or double acting  
**VP3V S4-PVDF**

01-07-2020

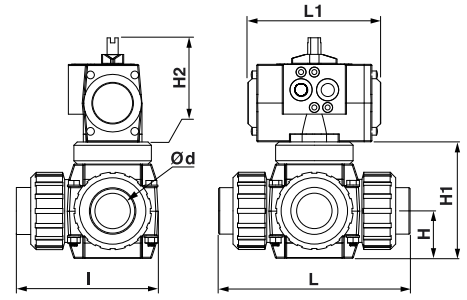
D-913.08-EN-AA

PLAS

913-08/1

## CODE NUMBERS AND REFERENCES

ND	d	Single acting		Double acting	
		Ball, L shape	Ball, T shape	Ball, L shape	Ball, T shape
10	16	913 631	913 652	913 645	913 666
15	20	913 632	913 653	913 646	913 667
20	25	913 633	913 654	913 647	913 668
25	32	913 634	913 655	913 648	913 669
32	40	913 635	913 656	913 649	913 670
40	50	913 636	913 657	913 650	913 671
50	63	913 637	913 658	913 651	913 672

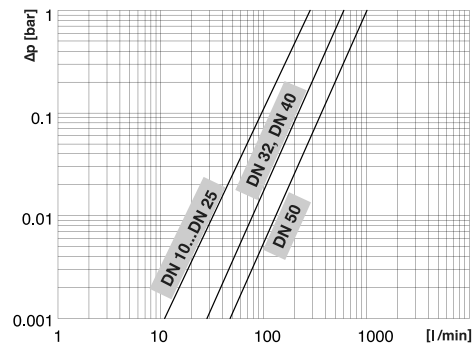
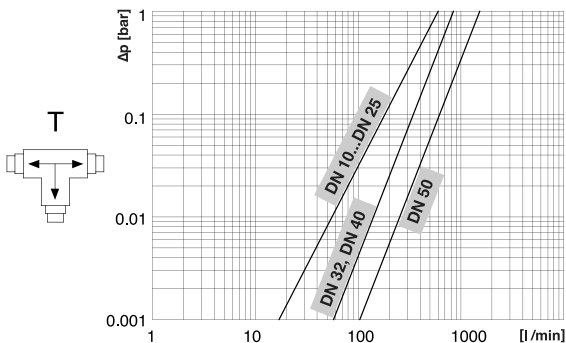
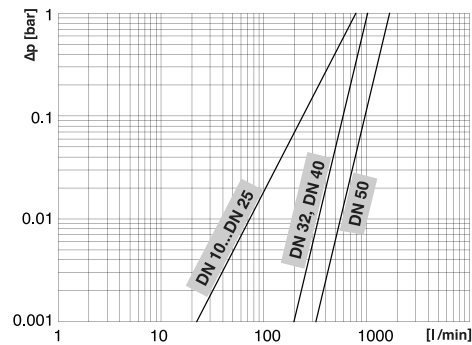
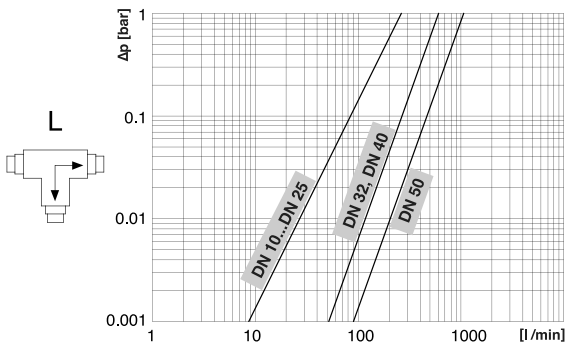


## DIMENSIONS [mm]

ND	d	Simple acting						Double acting								
		H	H1	H2	L	L1	I	H	H1	H2	L	L1	I			
10	16	33	86	91	138	119	95	33	86	91	138	119	95			
15	20															
20	25	40	100	112	163	160	116	40	100	91	163	119	116			
25	32	43	106		169									119	43	106
32	40	51	130		222									119	51	130
40	50	56	155	132.5	231	160	166	56	155	112	231	160	166			
50	63	64	168		264									175	64	168

## PHYSICAL FEATURES

Pressure drop vs. flow ( Water at 20 °C)



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**Pneumatic 3-way ball valves,  
 single or double acting  
 VP3V S4-PVDF**

01-07-2020

D-913.08-EN-AA

**PLAS**

**913-08/2**

# Pneumatic butterfly valves, single or double acting VPP K4-PVDF



- PVDF valves ND 65 ... ND 200
- Radial mounting and dismounting
- Pneumatic actuator  
Single or double acting  
Or N.C. or N.O.
- Position pointer
- **OPTIONS:**  
Limit switches box  
Pilot valve

## DESCRIPTION

Butterfly valves controlled by pneumatic actuator single acting (N.C. or N.O) or double acting, are useful to allow or to stop the flow of liquids in piping. Wet parts are the seat, seals and the disk. These valves are suitable for applications even with aggressive liquids.

## TECHNICAL FEATURES

### Butterfly valve

Body	PP-G ( glass-fiber reinforced)
Seat and seals	FPM
Disk	PVDF
Wafer mounting	Between flanges

### Pneumatic actuator

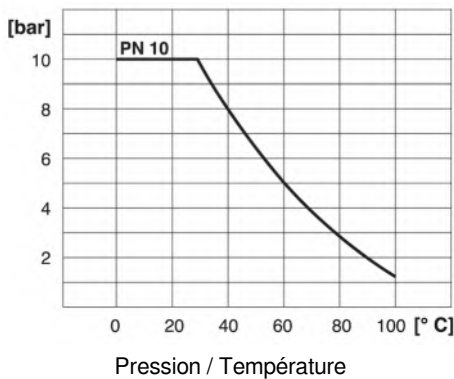
Models	Single acting (or N.O. or N.C.) versions, or double acting version
Operating pressure	Min. 6 bar; Max. 8 bar
Fittings	BSP-F 1/4 "

**In conformity with directive NAMUR VDI/VDE 3845 and ISO 5211**

### Accessories:

- (Sea data-sheet da913.10)
- Limit switches box
  - 3/2-way pilot valves (For single acting versions)
  - 5/2-way pilot valves (For double acting version)

**EC Conformity:** The instrument meets the legal requirements of the current European Directives



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**Pneumatic butterfly valves,  
single or double acting  
VPP K4-PVDF**

29-06-2020

D-913.09-EN-AA

**PLAS**

**913-09/1**

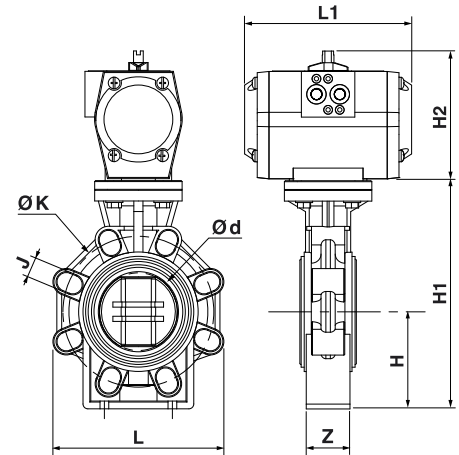


## CODE NUMBERS AND REFERENCES

ND	d	Single acting N.C.	Single acting N.O.	Double acting
65	75	913 673	913 678	913 683
80	90	913 674	913 679	913 684
100	110	913 675	913 680	913 685
150	160	913 676	913 681	913 686
200	225	913 677	913 682	913 687

## DIMENSIONS [mm]

ND	d	H	H1	H2	L	L1	Z	K	J
65	75	100	232	111	133	160	46	127 / 145	19
80	90		239	133	176	175	49	146 / 160	
100	110	115	269	143	206	230	56	175 / 190.5	23
150	160	148	333	162	261	239	70	234.5 / 241.5	
200	225	175	395	196	314	246	71	290 / 298.5	

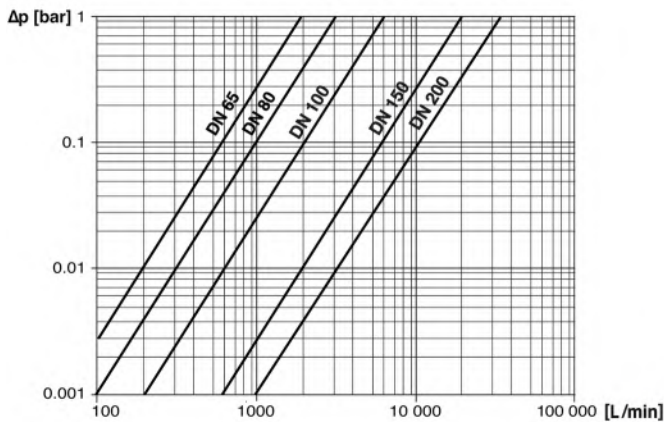


## Tightening torques, wafer mounting:

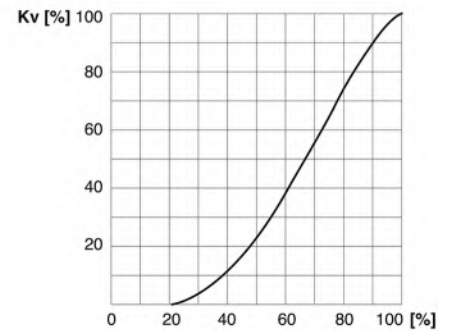
ND 65	ND 80	ND 100	ND 150	ND 200
15 N.m	18 N.m	20 N.m	40 N.m	55 N.m

## PHYSICAL FEATURES

Pressure drop vs. flow ( water at 20 °c)



Kv vs. Opening angle ( in %)



## Flow factor ( Kv)

ND 65		ND 80		ND 100		ND 150		ND 200	
Pressure drop									
1 bar	0.001 bar	1 bar	0.001 bar	1 bar	0.001 bar	1 bar	0.001 bar	1 bar	0.001 bar
1,900 l/min	60 l/min	3,100 l/min	100 l/min	6,000 l/min	190 l/min	19,000 l/min	600 l/min	35,000 l/min	1,100 l/min

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Pneumatic butterfly valves,  
 single or double acting  
**VPP K4-PVDF**

29-06-2020

D-913.09-EN-AA

**PLAS**

**913-09/2**

# Accessories for pneumatic actuators

## SV61- BE41



Solenoid valve SV61



Limit switch box BE41

- Pilot solenoid valves
- Limit switches Box
- Exhaust silencers
- Exhaust dampers

### APPLICATIONS

Recommended accessories to operate pneumatically actuated valves (see data sheets 913-xx).

### DESCRIPTION

- Pilot solenoid valve controls air distribution to the actuator moving the valve.
- Limit switch box BE 41 with its 2 free potential contacts, informs on the valve status.
- Exhaust silencers (Fig. A) are useful to limit noise.
- Exhaust dampers (Fig. B) are useful to increase the operating time of valve and prevent the water hammer effect.

### TECHNICAL FEATURES

#### Pilot solenoid valves: SV61 & SV62

Pilot mode	Electric mode
Mono-stable (type SV61)	3/2 or 5/2 -way
Bi-stable (type SV62)	3/2 or 5/2 -way
Power supply	24 V AC / DC or 220 V DC
Power	3 W / 4,5 VA
Electric connections	DIN Connector, plug
Protection	IP 65
Compressed air fittings	1/4" G
Kv	10.5
Conformity to NAMUR	VDI/VDE 3845 and ISO 5211

#### Limit switches box BE 41 with 2 free potential contacts

Electric connections	Screw terminals; wires max. 0.5 mm <sup>2</sup>
Protection	IP 65
Body	Polymer
Micro-switch	Polyamide
Position indicator	Polymer
Seals	NBR (Nitrile)
Screws	AISI 304

**EC Conformity: The devices meet the legal requirements of the current European Directives**

### CODE NUMBERS AND REFERENCES



Fig. A



Fig. B

Code	Description	Code	Description
913 901	SV61, 1/4" G, 24 V AC	913 907	Limit switches box BE 41
913 902	SV61, 1/4" G, 24 V DC	913 909	Exhaust damper; Brass 1/4" G
913 903	SV61, 1/4" G, 220 V AC	913 910	Exhaust silencer; Brass, 1/4" G
913 904	SV62, 1/4" G, 24 V DC	913 911	Elbow connector 1/4" G / 6 mm
913 905	SV62, 1/4" G, 24 V AC	913 912	Straight connector 1/4" G / 6 mm
913 906	SV62, 1/4" G, 220 V AC		

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Accessories for pneumatic actuators  
**SV61- BE41**

26-06-2018

D-913.10-EN-AA

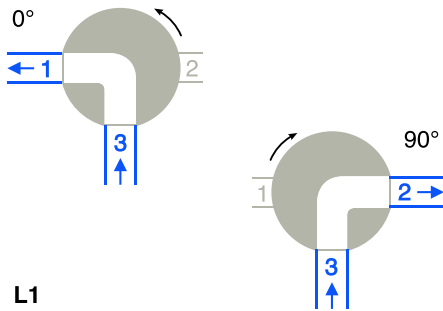
PLAS

913-10/1

# Operating modes for 3-way ball valves MF-3V

Our 3-way ball valves are supplied in a standard operating mode according to anti-clockwise movement (rotation 90°)

## Operating mode, 3-way ball drilled: L Shape



L1

### Mode L1:

Distribution to 2 downstream circuits  
1 Inlet; 2 Outlets

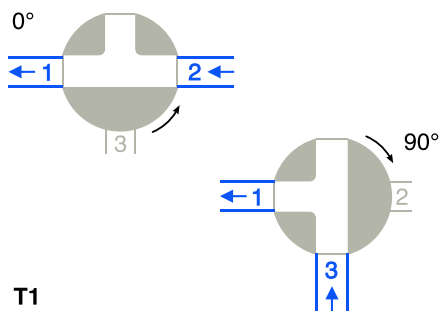
### Start at 0°

Inlet: Channel N° 3  
Outlet: Channel N° 1

### End at 90°

Inlet: Channel N° 3  
Outlet: Channel N° 2

## Operating mode, 3-way ball drilled: T Shape



T1

### Mode T1:

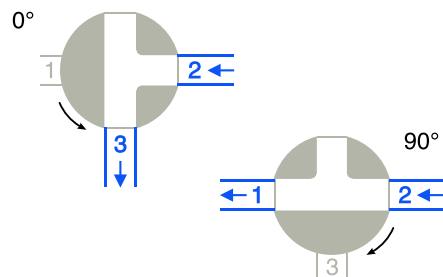
Mixing  
2 Inlets; 1 Outlet

### Start at 0°

Inlet: Channel N° 2  
Outlet: Channel N° 1

### End at 90°

Inlet: Channel N° 3  
Outlet: Channel N° 1



T2

### Mode T2:

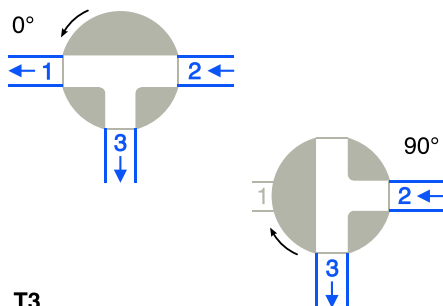
Distribution  
1 Inlet; 2 Outlets

### Start at 0°

Inlet: Channel N° 2  
Outlet: Channel N° 3

### End at 90°

Inlet: Channel N° 2  
Outlet: Channel N° 1



T3

### Mode T3:

Distribution; Direct flow  
Start 0°: 1 Inlet; 2 Outlets  
End 90°: 1 Inlet; 1 Outlet

### Start at 0°

Inlet: Channel N° 2  
Outlets: Channel N° 1 & 3

### End at 90°

Inlet: Channel N° 2  
Outlet: Channel N° 3

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Operating modes for 3-way  
ball valves  
**MF-3V**

26-06-2018

D-913.20-EN-AA

PLAS

913-20/1

# Pneumatically actuated 2-way ball valves VP2V M1



- PVC-U or PPH or PVDF valves  
From ND 10 up to ND 100
- Pneumatic actuator  
Single or double acting
- **OPTIONS:**  
Limit switches box  
Pilot valves

## APPLICATIONS

These valves are suitable for applications even with aggressive liquids.

## DESCRIPTION

Pneumatically actuated 2-way ball valves controlled by pneumatic actuator single acting (N.C. or N.O) or double acting, are useful to allow or to stop the flow of liquids in piping systems. The PTFE seat of the ball provides this valve with a long service life.

These modular valves receive various accessories for pneumatic actuators, such as limit switches, pilot valves, exhaust silencer and exhaust damper. For complete information on accessories, refer to data sheet da913-10.

## TECHNICAL FEATURES

### 2-way ball valves:

Body	PVC-U, PPH, or PVDF
Seals	EPDM or FPM <i>(With PVDF body: FPM seals only)</i>
Ball	Material identical to the valve body
Ball seat	PTFE
Fittings	Female unions (socket-ends), PVC, PPH or PVDF

**Accessories:** Mounting bracket for fixing and raising  
*(Availability: For valves DN 10 to DN 50)*

### Pneumatic actuators

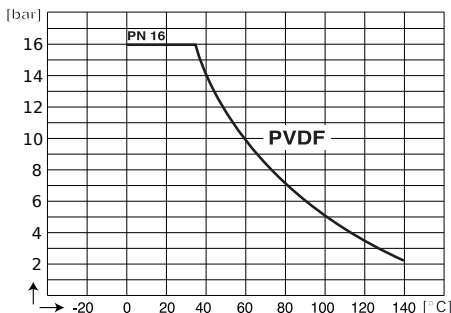
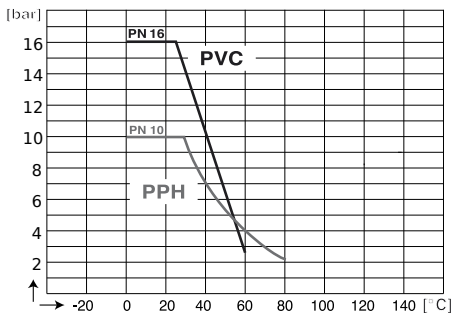
Models	Single acting (N.O. or N.C.) versions, or double acting version
Operating pressure	Min. 6 bar; Max. 8 bar
Fittings	BSP 1/4" G female
<b>Conformity</b>	<b>NAMUR VDI/VDE 3845 and ISO 5211</b>

### Accessories:

*(See data sheet da 913-10)*

- Limit switches box
- 3/2-way pilot valves for single acting version
- 5/2-way pilot valves for double acting version
- Exhaust silencer
- Exhaust damper

**EC Conformity:** The instrument meets the legal requirements of the current European Directives.



Pressure vs. Temperature

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Pneumatically actuated 2-way  
ball valves  
**VP2V M1**

19-11-2019

D-913.21-EN-AA

PLAS

913-21 /1

## CODE NUMBERS AND REFERENCES

### PVC-U valves — PN 16

ND	d	Single acting N.C.		Single acting N.O.		Double acting	
		EPDM seals	FPM seals	EPDM seals	FPM seals	EPDM seals	FPM seals
10	16	913 001 M	913 011 M	913 021 M	913 031 M	913 041 M	913 051 M
15	20	913 002 M	913 012 M	913 022 M	913 032 M	913 042 M	913 052 M
20	25	913 003 M	913 013 M	913 023 M	913 033 M	913 043 M	913 053 M
25	32	913 004 M	913 014 M	913 024 M	913 034 M	913 044 M	913 054 M
32	40	913 005 M	913 015 M	913 025 M	913 035 M	913 045 M	913 055 M
40	50	913 006 M	913 016 M	913 026 M	913 036 M	913 046 M	913 056 M
50	63	913 007 M	913 017 M	913 027 M	913 037 M	913 047 M	913 057 M
65	75	913 008 M	913 018 M	913 028 M	913 038 M	913 048 M	913 058 M
80	90	913 009 M	913 019 M	913 029 M	913 039 M	913 049 M	913 059 M
100	110	913 010 M	913 020 M	913 030 M	913 040 M	913 050 M	913 060 M

### PPH valves — PN 10

ND	d	Single acting N.C.		Single acting N.O.		Double acting	
		EPDM seals	FPM Seals	EPDM seals	FPM seals	EPDM seals	FPM seals
10	16	913 301 M	913 311 M	913 321 M	913 331 M	913 341 M	913 351 M
15	20	913 302 M	913 312 M	913 322 M	913 332 M	913 342 M	913 352 M
20	25	913 303 M	913 313 M	913 323 M	913 333 M	913 343 M	913 353 M
25	32	913 304 M	913 314 M	913 324 M	913 334 M	913 344 M	913 354 M
32	40	913 305 M	913 315 M	913 325 M	913 335 M	913 345 M	913 355 M
40	50	913 306 M	913 316 M	913 326 M	913 336 M	913 346 M	913 356 M
50	63	913 307 M	913 317 M	913 327 M	913 337 M	913 347 M	913 357 M
65	75	913 308 M	913 318 M	913 328 M	913 338 M	913 348 M	913 358 M
80	90	913 309 M	913 319 M	913 329 M	913 339 M	913 349 M	913 359 M
100	100	913 310 M	913 320 M	913 330 M	913 340 M	913 350 M	913 360 M

### PVDF valves — PN 16

ND	d	Single acting N.C.	Single acting N.O.	Double acting
		FPM seals	FPM seals	FPM seals
10	16	913 601 M	913 611 M	913 621 M
15	20	913 602 M	913 612 M	913 622 M
20	25	913 603 M	913 613 M	913 623 M
25	32	913 604 M	913 614 M	913 624 M
32	40	913 605 M	913 615 M	913 625 M
40	50	913 606 M	913 616 M	913 626 M
50	63	913 607 M	913 617 M	913 627 M
65	75	913 608 M	913 618 M	913 628 M
80	90	913 609 M	913 619 M	913 629 M
100	110	913 610 M	913 620 M	913 630 M

### Mounting accessory (up to ND 50)

Code	Description
141776	Mounting accessory, dual function, for valves M1: ND 10, 15 and 20
141777	Mounting accessory, double function, for valves M1: ND 25, 32, 40 and 50

Detailed information about mounting accessories is on the data sheet da934-04.

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Pneumatically actuated 2-way  
ball valves  
**VP2V M1**

19-11-2019

D-913.21-EN-AA

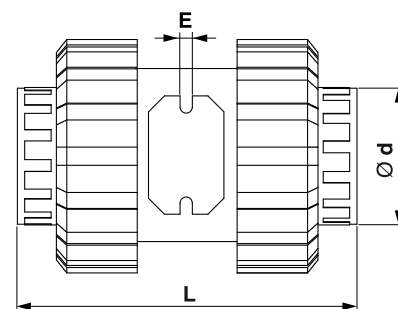
**PLAS**

**913-21 /2**

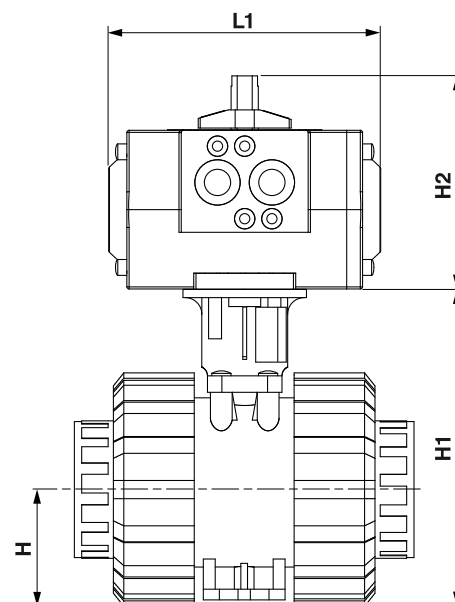
## DIMENSIONS [mm]

SE\* : Single acting -- DE\*\* : Double acting

PVC-U valves — PN 16						SE*		DE**	
ND	d	H	L	E	H1	L1	H2	L1	H2
10	16	33	83	5.5	113	119	91	119	91
15	20				125.5				
20	25	40	98.5						
25	32	43	106	6.5	131	160	112	160	112
32	40	51	121.5		148				
40	50	56	149		159				
50	63	64	175	8.3	173.5	175	132.5	160	112
65	75	85	211		221.5				
80	90	100	265.5	10.3	259.5	239	112	175	132
100	110		284						



Corps de vanne PP-H — PN 10						SE*		DE**	
ND	d	H	L	E	H1	L1	H2	L1	H2
10	16	33	98.5	5.5	114	119	91	119	91
15	20				126.5				
20	25	40	113						
25	32	43.5	123	6.5	133	160	112	160	112
32	40	51	141		148				
40	50	56.5	164		161				
50	63	64.5	194.5	8.3	176	175	132.5	160	112
65	75	85	231		223.5				
80	90	100	283.5	10.3	268	239	112	175	132
100	110		291.5						



PVDF valves — PN 16						SE*		DE**	
ND	d	H	L	E	H1	L1	H2	L1	H2
10	16	33	98.5	5.5	114	119	91	119	91
15	20				126.5				
20	25	40	113						
25	32	43.5	123	6.5	133	160	112	160	112
32	40	51	141		148				
40	50	56.5	164		161				
50	63	64.5	194.5	8.3	176	175	132.5	160	112
65	75	85	228,8		223.5				
80	90	100	282	10.3	268	239	112	175	132
100	110		251						

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**Pneumatically actuated 2-way  
 ball valves  
 VP2V M1**

19-11-2019

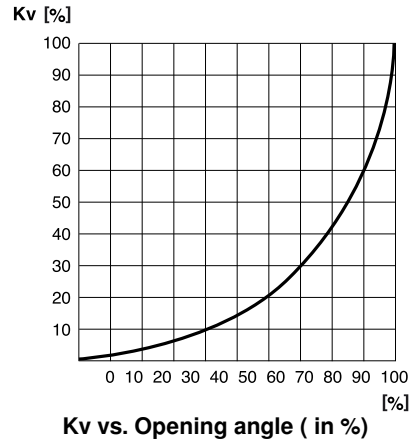
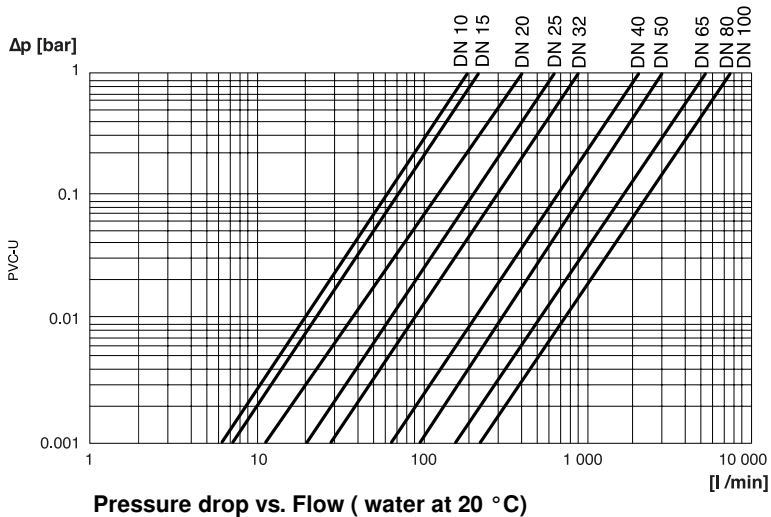
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**PLAS**

**913-21 /3**



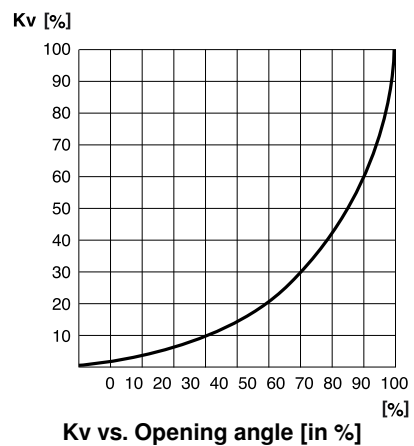
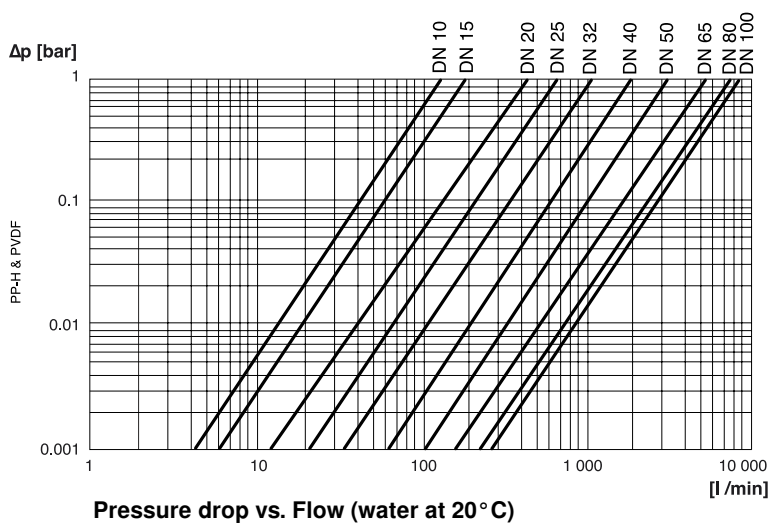
**PHYSICAL FEATURES PVC-U Valves**



Flow factor: Kv (water at 20 °C)

PVC-U : PN 16	ND 10	ND 15	ND 20	ND 25	ND 32	ND 40	ND 50	ND 65	ND 80	ND 100
	d 16	d 20	d 25	d 32	d 40	d 50	d 63	d 75	d 90	d 110
Pressure drop 1 bar, Q [l/min]	198	225	400	630	900	2120	3000	5150	7600	
Pressure drop 1 mbar, Q [l/min]	6.2	7.1	12.6	19.9	28.4	67	94.8	162.8	240.3	

**PHYSICAL FEATURES — PP-H & PVDF valves**



Flow factor Kv (water at 20 °C)

PP-H: PN 10	ND 10	ND 15	ND 20	ND 25	ND 32	ND 40	ND 50	ND 65	ND 80	ND 100
PVDF: PN 16	d 16	d 20	d 25	d 32	d 40	d 50	d 63	d 75	d 90	d 110
Pressure drop 1 bar, Q [l/min]	130	190	440	650	1080	1980	3240	5200	7500	8850
Pressure drop 1 mbar, Q [l/min]	4.1	6.0	13.9	20.6	34.2	62.6	102.5	164.4	237.1	279.8

913

913

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**Pneumatically actuated 2-way ball valves**  
**VP2V M1**  
 19-11-2019 D-913.21-EN-AA

**PLAS**  
**913-21 /4**

# Electrically actuated 3-way ball valves VE3V S4-PVC



- PVC ball valves ND 10 to ND 50
- In-line pattern
- Electric actuator, position index, manual emergency action

## DESCRIPTION

Electrically actuated 3-way ball valves are useful to distribute or to mix liquids. These valves are designed for aggressive liquids; Assistance with manual operation for maintenance or emergency (with position index). Actuator power supply is switched off before a manual operation. Operating modes: see data-sheet D-913.20.

## TECHNICAL FEATURES

### 3-way ball valve:

Body	PVC
Sealing	EPDM or FPM
Ball shape T or L	PVC
Seat seals	PTFE
Process connections	Unions (sockets; for solvent welding)
Pressure limit	10 bar

### Electric actuator

Operation	90°
Emergency operation	Manual operating
Duty rating	30 %
Protection	IP 65
Electrical connections	1 cable gland ISO M20 DIN 43650 plug; 3-wire + earth
Power	15 W
Power supply	100 ... 240 V AC - 50/60 Hz and 100 ... 350 V DC or 24 V AC - 50/60 Hz and 24 V DC

OPTIONS *On request*

**EC Conformity: The device meets the legal requirements of the current European Directives.**

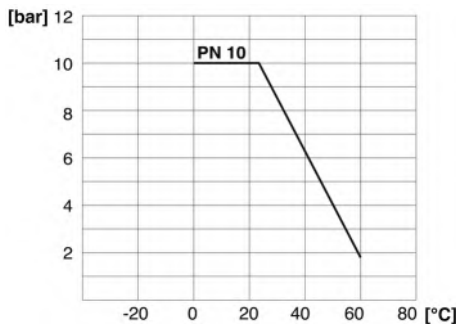


Diagram: Pressure vs. Temperature

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Electrically actuated 3-way  
ball valves  
**VE3V S4-PVC**

15-11-2019

D-914.02-EN-AE

PLAS

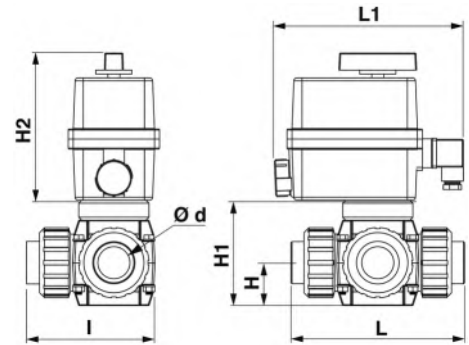
914-02/1

## CODE NUMBERS AND REFERENCES

DN	d	L shape				T shape			
		24 V AC & 24 V DC		100 ... 240 V AC & 100 ... 350 VDC		24 V AC & 24 V DC		100 ... 240 V AC & 100 ... 350 VDC	
		EPDM sealing	FPM sealing	EPDM sealing	FPM sealing	EPDM sealing	FPM sealing	EPDM sealing	FPM sealing
10	16	914 041	914 048	914 055	914 062	914 069	914 076	914 083	914 090
15	20	914 042	914 049	914 056	914 063	914 070	914 077	914 084	914 091
20	25	914 043	914 050	914 057	914 064	914 071	914 078	914 085	914 092
25	32	914 044	914 051	914 058	914 065	914 072	914 079	914 086	914 093
32	40	914 045	914 052	914 059	914 066	914 073	914 080	914 087	914 094
40	50	914 046	914 053	914 060	914 067	914 074	914 081	914 088	914 095
50	63	914 047	914 054	914 061	914 068	914 075	914 082	914 089	914 096

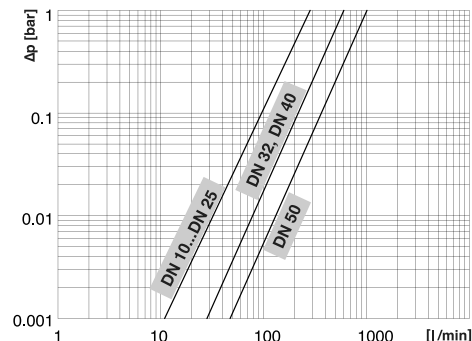
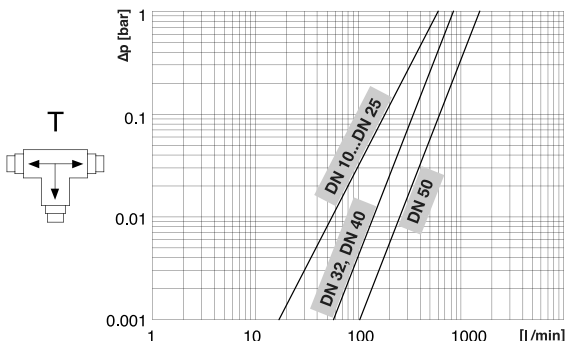
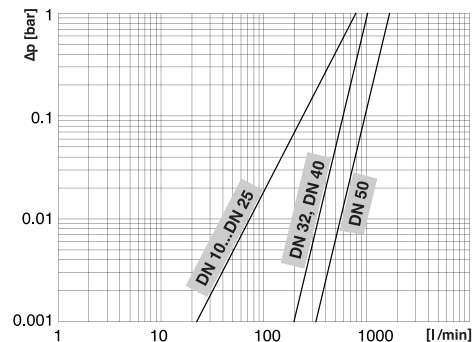
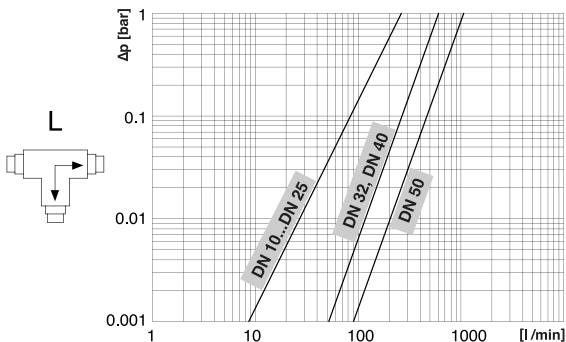
## DIMENSIONS (mm)

DN	d	H	H1	H2	L	L1	I	
10	16	33	86	148	138	190	95	R20
15	20				163			
20	25	169						
25	32	222						
32	40	231						
40	50	264						
50	63							



## PRESSURE LOSS

Diagram: Pressure loss vs. Flow (at 20 °C)



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Electrically actuated 3-way  
 ball valves  
**VE3V S4-PVC**

15-11-2019

D-914.02-EN-AE

PLAS

914-02/2

# Electrically actuated butterfly valves VEP FE-PVC



- PVC Valve from ND 50 up to ND 200
- In-line pattern
- Electric actuator; Position index; Manual operating for emergency

## DESCRIPTION

These valves operated through an electric actuator, allow or prohibit the passage of fluid in a piping system. Only sealing and butterfly are in contact with the liquid.

These valves are designed for aggressive liquids, they include a position index and are manually operated for maintenance or emergency.

## TECHNICAL FEATURES

### Butterfly valves:

Body	PVC
Sealing	EPDM
Butterfly	PVC
Mounting	Wafer (between flanges)
Pressure limit	10 bar at 20 °C

### Electric actuators:

Control	On/Off mode and 3-points modulating mode
Rotation	90°
Manual override	Manual override knob
Limit switches	2 Adjustable contacts (max. 5A)

### Actuators specific features for ND 50 to 125

Multi-voltage power supplies	100 ... 240 V AC 50/60 Hz; 100 ... 350 V DC 24 V AC 50/60 Hz; 24 V DC
Consumption	15 W (ND 50); 45 W (ND 65 to 125)
Duty cycle	30% (CEI34)
Protection	IP 65
Electrical connections	1 cable gland ISO M20 and 1 DIN 43650 plug; 3-wire + earth

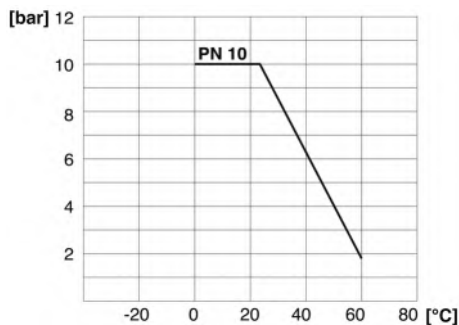
### Actuators specific features for ND 150 to 200

Multi-voltage power supplies	100 ... 240 V AC 50/60 Hz; 100 ... 350 V DC 15 ... 30 V AC 50/60 Hz; 12 ... 48 V DC
Consumption	45 W
Duty cycle	50% (CEI34)
Protection	IP 68
Electrical connections	2 cable glands ISO M20

### Options:

Fail safe version (back to position 0° in case of power failure).

**EC Conformity:** The instrument meets the legal requirements of the current European Directives.



Pressure vs. Temperature

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Electrically actuated butterfly  
valves  
**VEP FE-PVC**

17-10-2019

D-914.03-EN-AD

PLAS

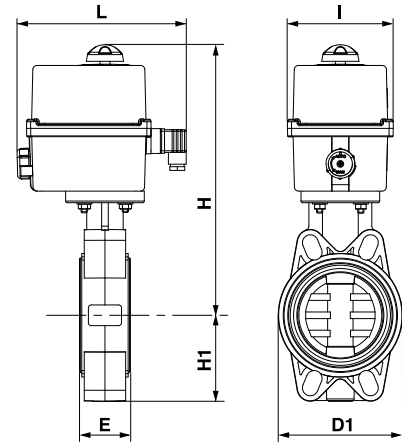
914-03/1

## CODE NUMBERS AND REFERENCES

DN	d	24 V AC; 24 V DC	90 ... 240 V AC; 90 ... 350 V DC
50	63	914 251	914 261
65	75	914 252	914 262
80	90	914 253	914 263
100	110	914 254	914 264
125	140*	914 255	914 265
		15 ... 30 V AC; 12 ... 48 V DC	
150	160	914 256	914 266
200	225**	914 257	914 267

\* : Convenient for ND 125 ; Ø 125 mm

\*\* : Convenient for ND 200; Ø 200



## DIMENSIONS [ mm ]

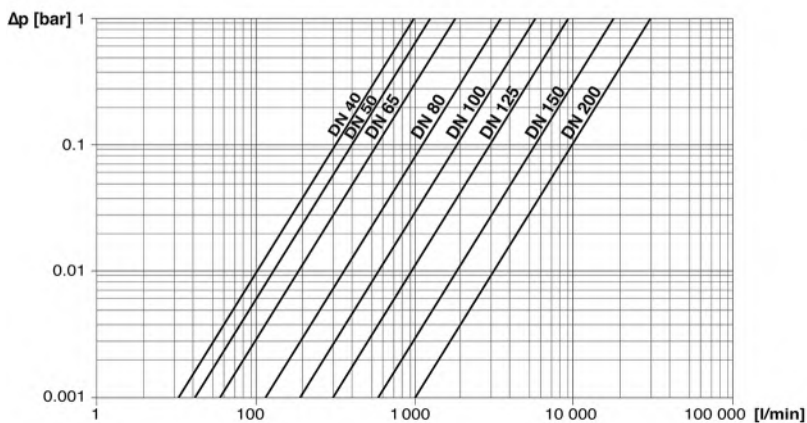
ND	NB	D1	E	I	L	H	H1	
50	2"	147	43	92	193	255	70	R60
65	2 ½"	165	46	92	193	280	80	
80	3"	130	49	128	208	308	90	
100	4"	150	56	128	208	323	105	R100
125	5"	185	64	128	208	343	101	S150
150	6"	210	70	170	275	438	132	
200	8"	325	71	170	275	485	161	

## Tightening torques wafer mounting:

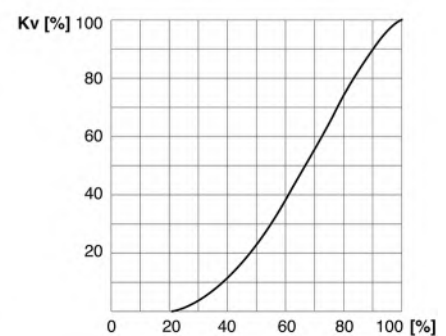
ND 65: 15 Nm	ND 80: 18 Nm	ND 100: 20 Nm	ND 150: 40 Nm	ND 200: 55 Nm
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## SPECIFIC FEATURES

Pressure drop vs. Flow-rate (water at 20 °C)



Kv vs. % of opening angle



## Kv factor (water at 20 °C):

ND 40	ND 50	ND 65	ND 80	ND 100	ND 125	ND 150	ND 200
1,000 l/min	1,285 l/min	1,700 l/min	3,550 l/min	5,900 l/min	9,850 l/min	18,700 l/min	30,500 l/min

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Electrically actuated butterfly valves  
**VEP FE-PVC**

17-10-2019

D-914.03-EN-AD

**PLAS**

**914-03/2**

# Electric 3-way ball valves VE3V S4-PPH



- PPH valves from ND 10 up to ND 50
- Radial mounting and dismounting
- Electric actuator with pointer and emergency manual override

## DESCRIPTION

Electrically actuated 3-way ball valves allow many possibilities of controlling the direction of the fluid(s) in a piping system. These valves are suitable for applications with aggressive liquids, with a pointer, with a manual operating for emergency. Actuator power supply is switched off before a manual operation. All operating modes (according ball bores) are described in the data-sheet 913-20.

## TECHNICAL FEATURES

### 3-way ball valve:

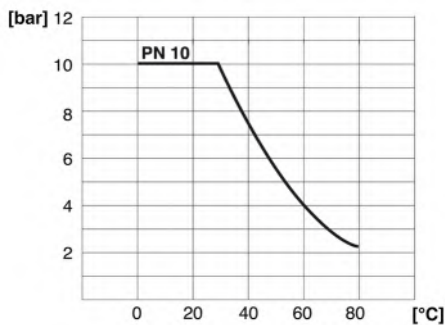
Body	PPH
Seals	EPDM or FPM
Ball bores in L or T	PPH
Ball seat	PTFE
Fittings	Unions (socket ends; for fusion welding)
Pressure limit	10 bar at 20 °C

### Electric actuator:

Emergency operation	Manual operating
Duty rating	30 %
Protection	IP 65
Connections	1 Cable gland M20 - ISO 1 connector 3 poles + ground, DIN 43650
Consumption	15 W
Multi-voltage power supplies	Or 100 ... 240 V AC and 100 ... 350 V DC Or 24 V AC 50/60 Hz and 24 V DC

OPTIONS *On request*

**EC Conformity:** The instrument meets the legal requirements of the current European Directives.



Pressure vs. Temperature

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Electric 3-way ball valves  
**VE3V S4-PPH**

01-07-2020

D-914.05-EN-AA

PLAS

914-05/1

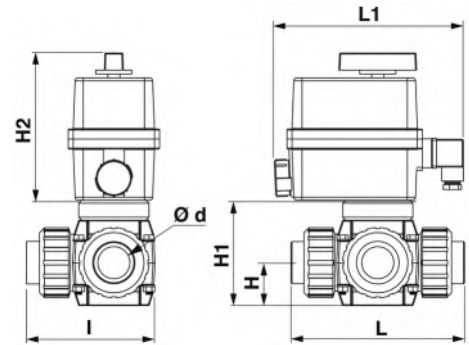


## CODE NUMBERS AND REFERENCES

ND	d	Ball, L shape				Ball, T shape			
		24 V AC & 24 V DC		100 ... 240 V AC & 100 ... 350 V DC		24 V AC & 24 V DC		100 ... 240 V AC & 100 ... 350 V DC	
		EPDM seals	FPM seals	EPDM seals	FPM seals	EPDM seals	FPM seals	EPDM seals	FPM seals
10	16	914 341	914 348	914 355	914 362	914 369	914 376	914 383	914 390
15	20	914 342	914 349	914 356	914 363	914 370	914 377	914 384	914 391
20	25	914 343	914 350	914 357	914 364	914 371	914 378	914 385	914 392
25	32	914 344	914 351	914 358	914 365	914 372	914 379	914 386	914 393
32	40	914 345	914 352	914 359	914 366	914 373	914 380	914 387	914 394
40	50	914 346	914 353	914 360	914 367	914 374	914 381	914 388	914 395
50	63	914 347	914 354	914 361	914 368	914 375	914 382	914 389	914 396

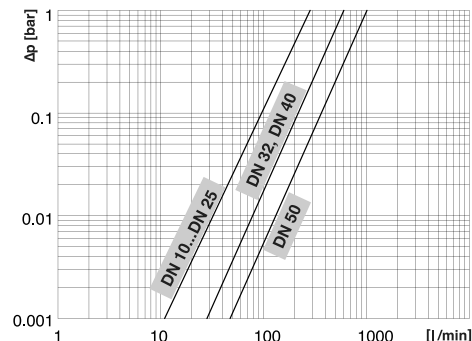
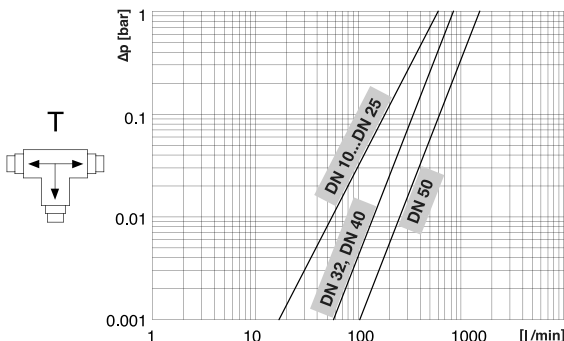
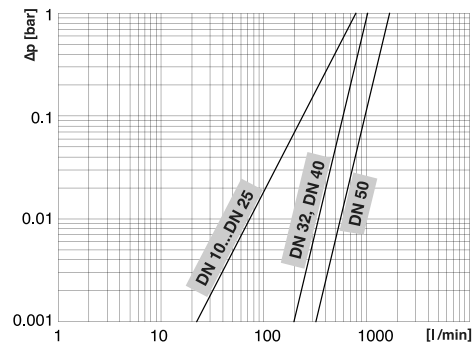
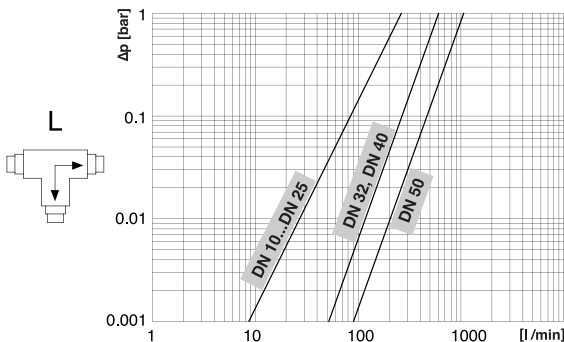
## DIMENSIONS [mm]

ND	d	H	H1	H2	L	L1	I
10	16	33	86	148	138	190	95
15	20				163		
20	25	40	100		169		116
25	32	43	106		222		119
32	40	51	130		231		161
40	50	56	155		264		166
50	63	64	168				192



## PHYSICAL FEATURES

Pressure drop vs. flow (Water 20°C)



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Electric 3-way ball valves  
**VE3V S4-PPH**

01-07-2020

D-914.05-EN-AA

**PLAS**

**914-05/2**

# Electric butterfly valve VEP K4-PPH



- PPH valves from ND 50 up to ND 200
- Radial mounting and dismounting
- Electric actuator with pointer and emergency manual override

## DESCRIPTION

Electrically actuated butterfly valves are useful to allow or to stop the flow of liquids in piping systems. Wet parts are only the seat, seals and the disk.

These valves are suitable for applications with aggressive liquids, with a pointer, with a manual operating for emergency.

## TECHNICAL FEATURES

### Butterfly valve:

Body	PP-GF
Seals and seat	EPDM or FPM
Disk	PPH
Wafer mount	Between flanges

### Electric actuators:

Operating mode	On-Off mode or 3-points modulating mode
Movement	90°
Emergency override	Manual
Contacts	2 Adjustable limit switches (max. 5A)

### Features for ND65 up to ND 125

Multi-voltage power supplies	Or 100 ... 240 V AC 50/60 Hz and 100 ... 350 V DC Or 24 V AC 50/60 Hz and 24 V DC
Consumption	45 W
Duty rating	30 % (Norme IEC34)
Protection	IP 65
Connections	1 Cable gland M20 - ISO 1 connector 3-pole + ground, DIN 43650

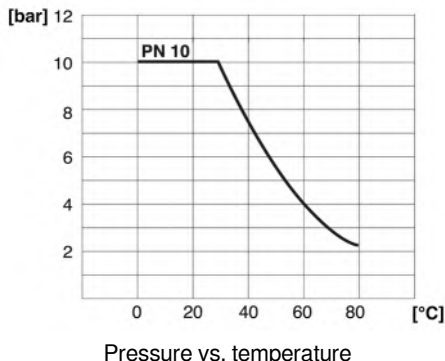
### Features for ND 150 up to ND 200

Multi-voltage power supplies	Or 100 ... 240 V AC 50/60 Hz and 100 ... 350 V DC Or 15 ... 30 V AC and 12 ... 48 V DC
Consumption	45 W
Duty rating	50 % (Norme IEC34)
Protection	IP 68
Connections	2 Cable glands M20 - ISO

### Options:

Back to 0° in case of power failure

**EC Conformity:** The instrument meets the legal requirements of the current European Directives



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Electric butterfly valve  
**VEP K4-PPH**

01-07-2020

D-914.06-EN-AA

PLAS

914-06/1

## CODE NUMBERS AND REFERENCES

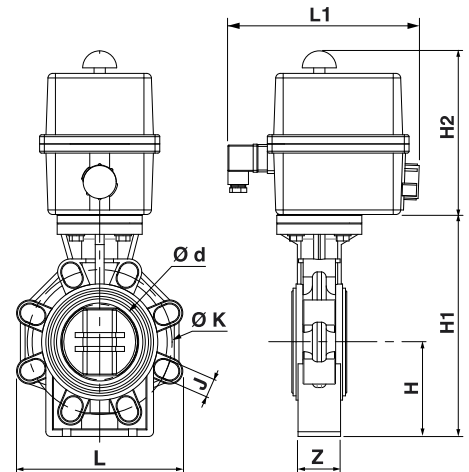
ND	d	24 V AC & 24 V DC		100...240 V AC & 100...350 V DC	
		EPDM seals	FPM seals	EPDM seals	FPM seals
65	75	914 397	914 402	914 407	914 412
80	90	914 398	914 403	914 408	914 413
100	110	914 399	914 404	914 409	914 414
15...30 V AC & 12...48 V DC					
150	160	914 400	914 405	914 410	914 415
200	225	914 401	914 406	914 411	914 416

## DIMENSIONS

ND	d	H	H1	H2	L	L1	Z	K	J	
65	75	100	232	177	133	205	46	127 / 145	19	R60
80	90		239		176		49	146 / 160		R100
100	110		269		206		56	175 / 190.5		
150	160	148	333	258	261	275	70	234.5 / 241.5	23	S300
200	225	175	395		314	276	71	290 / 298.5		

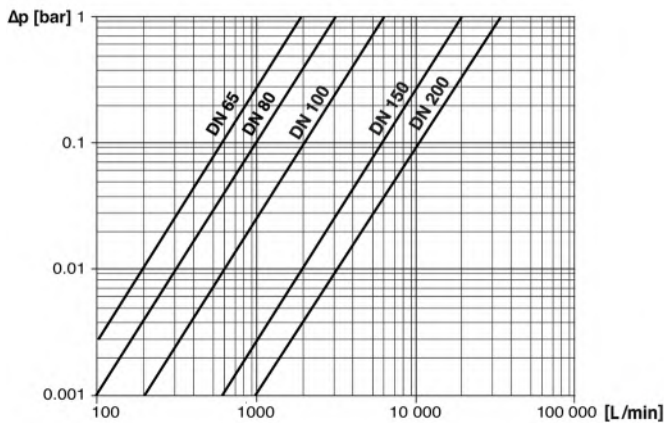
### Tightening torques wafer mounting:

ND 65	ND 80	ND 100	ND 150	ND 200
15 N.m	18 N.m	20 N.m	40 N.m	55 N.m

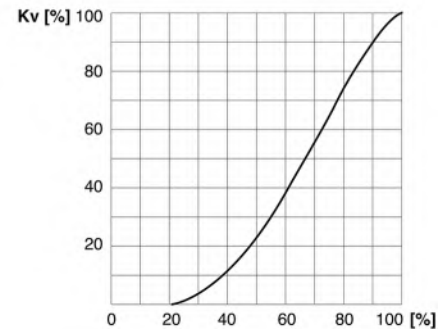


## PHYSICAL FEATURES

Pressure drop vs. flow ( Water at 20°C )



Kv vs. Opening angle (in %)



### Flow Factor ( Kv ):

ND 65		ND 80		ND 100		ND 150		ND 200	
Pressure drop									
1 bar	0.001 bar	1 bar	0.001 bar	1 bar	0.001 bar	1 bar	0.001 bar	1 bar	0.001 bar
1900 l/min	60 l/min	3100 l/min	100 l/min	6000 l/min	190 l/min	19000 l/min	600 l/min	35000 l/min	1100 l/min

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Electric butterfly valve  
**VEP K4-PPH**

01-07-2020

D-914.06-EN-AA

**PLAS**

**914-06/2**

# Electrically actuated 3-way PVDF ball valves VE3V S4-PVDF



- PVDF valves from ND10 up to ND50
- Radial mounting and dismounting
- Electric actuator with position pointer and manual operating for emergency

## DESCRIPTION

These 3-way ball valves, with electric actuator, are useful for redirecting or to stop the flow of liquids in piping systems. These valves are designed for aggressive liquids; Assistance with manual operation for maintenance or emergency (plus position pointer).

Actuator power supply is switched off before a manual operation. Operating modes, bore shapes L or T: see data-sheet da913-20.

## TECHNICAL FEATURES

### 3-way ball valves:

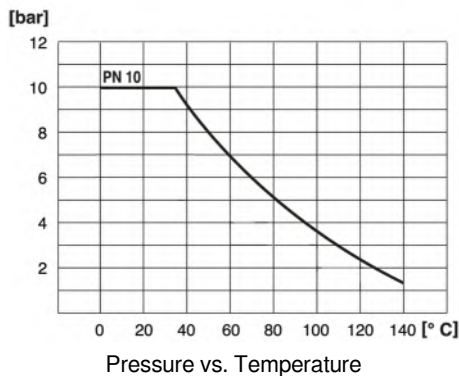
Body	PVDF
Seals	FPM
Ball, T or L bore shape	PVDF
Ball seat	PTFE
Fittings	Unions, socket ends for fusion welding
Pressure limit	10 bar

### Electric actuators:

Emergency operation	Manual operating
Duty rating	30 %
Protection	IP 65
Connections	1 cable gland ISO M20 DIN 43650 plug; 3-wire + earth
Consumption	15 W
Power supply	100 ... 240 V AC 50/60 Hz and 100 ... 350 V DC or 24 V AC 50/60 Hz and 24 V DC

OPTIONS *On request*

**EC Conformity: The instrument meets the legal requirements of the current European Directives.**

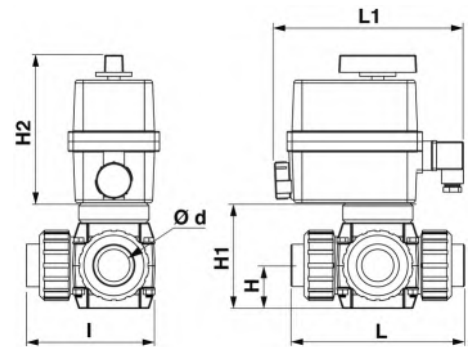


## CODE NUMBERS AND REFERENCES

ND	d	Ball bore L	Ball bore T	Ball bore L	Ball bore T
		24 V AC and 24 V DC		100 ... 240 V AC and 100 ... 350 V DC	
10	16	914 621	914 635	914 628	914 642
15	20	914 622	914 636	914 629	914 643
20	25	914 623	914 637	914 630	914 644
25	32	914 624	914 638	914 631	914 645
32	40	914 625	914 639	914 632	914 646
40	50	914 626	914 640	914 633	914 647
50	63	914 627	914 641	914 634	914 648

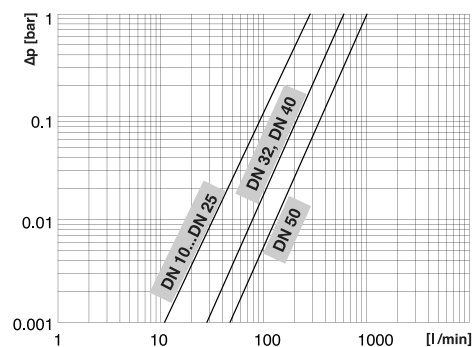
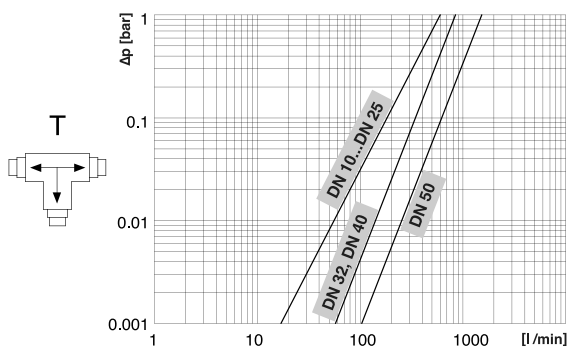
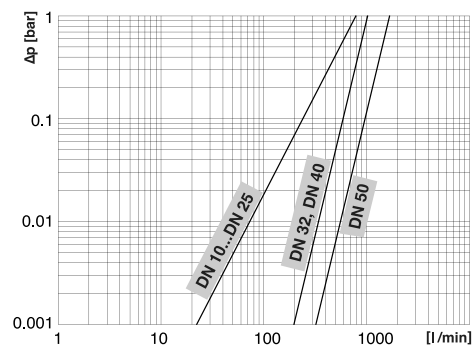
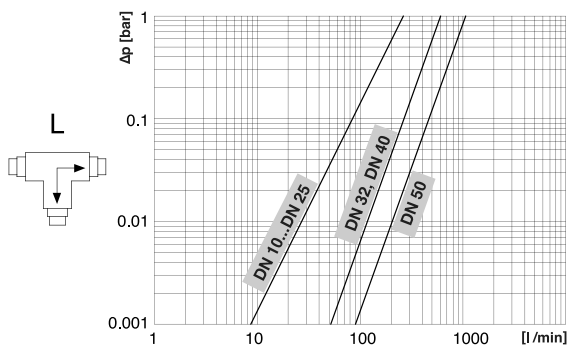
## DIMENSIONS [mm]

ND	d	H	H1	H2	L	L1	I	
10	16	33	86	148	138	190	95	R20
15	20							
20	25	40	100		116			
25	32	43	106		119			
32	40	51	130		161			
40	50	56	155		166			
50	63	64	168		192			



## PHYSICAL FEATURES

Pressure drop vs. flow (water at 20 °C)



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Electrically actuated 3-way  
 PVDF ball valves  
**VE3V S4-PVDF**

14-11-2019

D-914.08-EN-AB

**PLAS**

**914-08/2**

# Electrically actuated butterfly valves VEP K4-PVDF



- Butterfly valves ND50 to ND200
- Radial mounting and dismounting
- Electric actuator with position pointer and manual operating for emergency

## DESCRIPTION

Electrically actuated butterfly valves are useful to allow or to stop the flow of liquids in piping systems; Wet parts are only the sealings, seat and disk.

These valves are designed for aggressive liquids; They include a position pointer and may be manually operated for maintenance or emergency operations.

## TECHNICAL FEATURES

### Butterfly valves:

Body	PP-G (glass-fiber reinforced)
Seat and Seals	FPM
Disk	PVDF
Wafer mounting	Between flanges

### Electric actuators:

Control	On/Off mode and 3-points modulating mode
Rotation	90°
Manual operation	Manual override knob (clutch)
Limit switches	2 Adjustable contacts (max. 5A)

### Actuators, features for ND 65 to ND 125

Power supplies	100 ... 240 V AC 50/60 Hz and 100 ... 350 V DC or 24 V AC 50/60 Hz and 24 V DC
Consumption	45 W
Duty rating	30 % (according IEC34)
Protection	IP 65
Electrical connections	1 cable gland ISO M20 and 1 DIN 43650 plug; 3-wire + earth

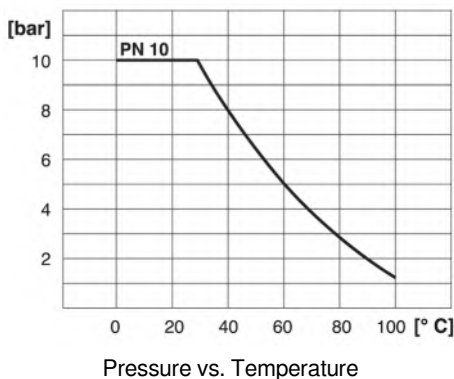
### Actuators, features for ND 150 to ND 200

Power supplies	100 ... 240 V AC 50/60 Hz and 100 ... 350 V DC or 15 ... 30 V AC 50/60 Hz and 12 ... 48 V DC
Consumption	45 W
Duty rating	50 % (according IEC34)
Protection	IP 68
Electrical connections	2 cable glands ISO M20

### Options:

Fail safe version (back to position 0° in case of power failure).

**EC Conformity:** The instrument meets the legal requirements of the current European Directives.



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Electrically actuated butterfly valves  
**VEP K4-PVDF**

19-11-2019

D-914.09-EN-AA

PLAS

914-09/1



## CODE NUMBERS AND REFERENCES

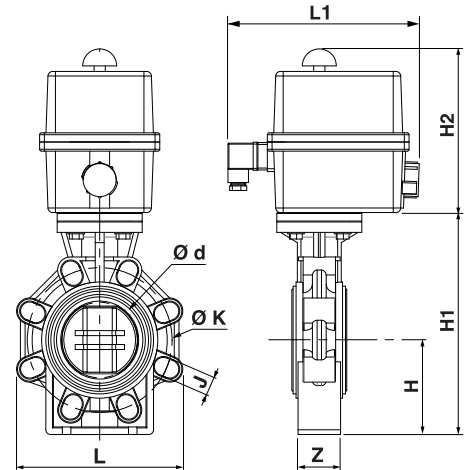
ND	d	24 V AC & 24 V DC	100 ... 240 V AC & 100 ... 350 V DC
65	75	914 649	914 654
80	90	914 650	914 655
100	110	914 651	914 656
		15 ... 30 V AC & 12 ... 48 V DC	
150	160	914 652	914 657
200	225	914 653	914 658

## DIMENSIONS [mm]

ND	d	H	H1	H2	L	L1	Z	K	J	
65	75	100	232	177	133	205	46	127 / 145	19	R60
80	90		239		49		146 / 160	R100		
100	110	115	269	258	206	275	56	175 / 190,5	23	S300
150	160	148	333		261		234,5 / 241,5			
200	225	175	395		314		290 / 298,5			

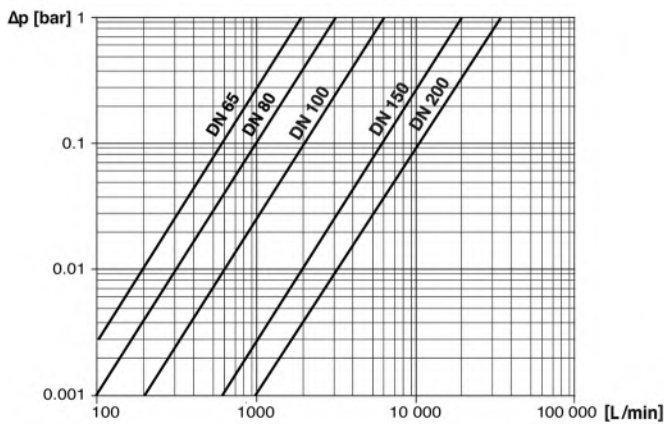
## Tightening torques wafer mounting:

ND 65	ND 80	ND 100	ND 150	ND 200
15 N.m	18 N.m	20 N.m	40 N.m	55 N.m

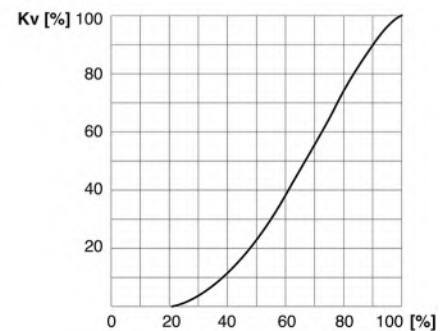


## PHYSICAL FEATURES

Pressure drop vs. Flow rate (water at 20 °C)



Kv vs. Opening angle [ % ]



## Kv factor (water at 20 °C):

ND 65		ND 80		ND 100		ND 150		ND 200	
Pressure drop									
1 bar	1 mbar	1 bar	1 mbar	1 bar	1 mbar	1 bar	1 mbar	1 bar	1 mbar
1,900 l/min	60 l/min	3,100 l/min	100 l/min	6,000 l/min	190 l/min	19,000 l/min	600 l/min	35,000 l/min	1,100 l/min

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Electrically actuated butterfly valves  
**VEP K4-PVDF**

19-11-2019

D-914.09-EN-AA

PLAS

914-09/2

# Electrically actuated 2-way PVC ball valves VE2V M1



- PVC-U, PP-H, PVDF valves from ND 10 to ND 100
- Electric actuator with position pointer and manual operating for emergency

## APPLICATIONS

These valves are suitable for applications with aggressive liquids.

## DESCRIPTION

Electrically actuated 2-way ball valves are useful to stop the flow of fluids and to isolate part of a piping system. In open position they do not induce pressure drop. The seat of the PTFE ball gives to the valve a long service life. The closing time for the angle of 90° is about 10 seconds. These valves have a manual emergency control with visual position indicator. Power supply must be switched off before manual operating.

## TECHNICAL FEATURES

### 2-way ball valves:

Body	PVC-U, PP-H or PVDF
Sealing	Seals EPDM or FPM (PVDF body -> FPM seals only)
Ball	Material identical to valve body
Ball seat	PTFE
Fittings	Female unions fittings (smooth ends), PVC, PPH or PVDF

### Accessory

Mounting bracket for fixing / raising  
(Available for valves ND 10 to ND 50)

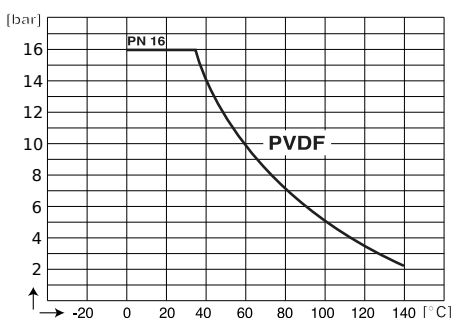
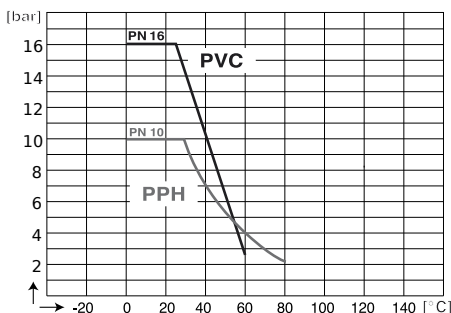
### Electric actuator:

Operation	90°
Emergency operation	Manual operating
Duty rating	30 %
Protection	IP 65
Electrical connections	1 cable gland ISO M20 DIN 43650 plug; 3-wire + earth
Power	15 W (ND 10...ND 50); 45 W (ND 65...ND 100)
Multi-voltage power supplies	100 ... 240 V AC 50/60 Hz; 100 ... 350 V DC or 24 V AC 50/60 Hz; 24 V DC

### OPTIONS

Back to 0° in case of power failure  
Electronic positioning system 4-20 mA  
Or 0-20 mA, or 0-10 V

**EC Conformity : The instrument meets the legal requirements of the current European Directives.**



Pressure vs. Temperature

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Electrically actuated 2-way  
PVC ball valves  
**VE2V M1**

13-11-2020

D-914.21-EN-AA

PLAS

914-21 /1

## CODE NUMBERS AND REFERENCES

PVC-U valve body — PN 16					
		24 V AC / 24 V DC		100-240 V AC / 100-350 V DC	
ND	d	EPDM seals	FPM seals	EPDM seals	FPM seals
10	16	914 001 M	914 011 M	914 021 M	914 031 M
15	20	914 002 M	914 012 M	914 022 M	914 032 M
20	25	914 003 M	914 013 M	914 023 M	914 033 M
25	32	914 004 M	914 014 M	914 024 M	914 034 M
32	40	914 005 M	914 015 M	914 025 M	914 035 M
40	50	914 006 M	914 016 M	914 026 M	914 036 M
50	63	914 007 M	914 017 M	914 027 M	914 037 M
65	75	914 008 M	914 018 M	914 028 M	914 038 M
80	90	914 009 M	914 019 M	914 029 M	914 039 M
100	110	914 010 M	914 020 M	914 030 M	914 040 M

		Valve body PP-H — PN 10				PVDF valve body - PN 16	
		24 V AC / 24 V DC		100-240 V AC / 100-350 V DC		24 V AC / 24 V DC	100-240 V AC / 100-350 V DC
ND	d	EPDM seals	FPM seals	EPDM seals	FPM seals	FPM seals	FPM seals
10	16	914 301 M	914 311 M	914 321 M	914 331 M	914 601 M	914 611 M
15	20	914 302 M	914 312 M	914 322 M	914 332 M	914 602 M	914 612 M
20	25	914 303 M	914 313 M	914 323 M	914 333 M	914 603 M	914 613 M
25	32	914 304 M	914 314 M	914 324 M	914 334 M	914 604 M	914 614 M
32	40	914 305 M	914 315 M	914 325 M	914 335 M	914 605 M	914 615 M
40	50	914 306 M	914 316 M	914 326 M	914 336 M	914 606 M	914 616 M
50	63	914 307 M	914 317 M	914 327 M	914 337 M	914 607 M	914 617 M
65	75	914 308 M	914 318 M	914 328 M	914 338 M	914 608 M	914 618 M
80	90	914 309 M	914 319 M	914 329 M	914 339 M	914 609 M	914 619 M
100	110	914 310 M	914 320 M	914 330 M	914 340 M	914 610 M	914 620 M

### Mounting accessories

Code	Description
141776	Mounting accessory; double function, for valves M1: ND 10, 15 and 20
141777	Mounting accessory; double function, for valves M1: ND 25, 32, 40 and ND 50

Detailed information on mounting accessories is described on the data-sheet 934-04.

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Electrically actuated 2-way  
 PVC ball valves  
**VE2V M1**

13-11-2020

D-914.21-EN-AA

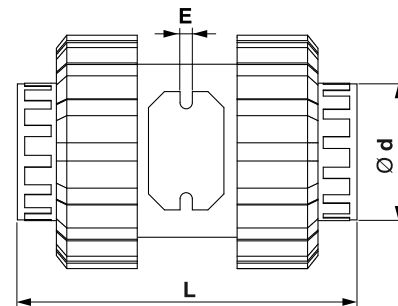
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**914-21 /2**

## DIMENSIONS [ mm ]

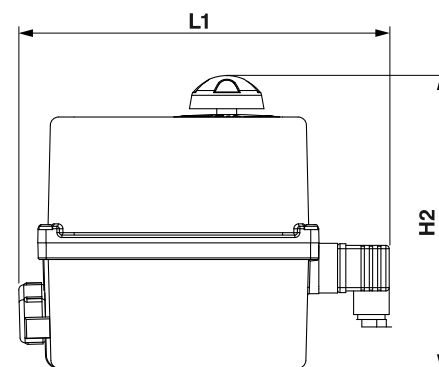
### PVC valve body — PN 16

ND	d	H	L	E	H1	L1	H2
10	16	33	83	5,5	113	190	148
15	20				125.5		
20	25	40	98.5				
25	32	43	106	6,5	131		
32	40	51	121.5		148		
40	50	56	149		159		
50	63	64	175	8,3	173.5		
65	75	85	211		221.5		
80	90	100	265.5	10,3	259.5	206	180
100	110		284				



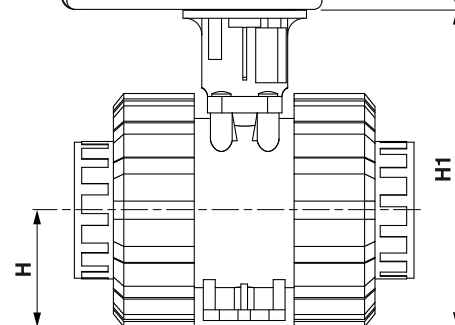
### Valve body PP-H — PN 10

ND	d	H	L	E	H1	L1	H2
10	16	33	98.5	5,5	114	190	148
15	20				126.5		
20	25	40	113				
25	32	43,5	123	6,5	133		
32	40	51	141		148		
40	50	56,5	164		161		
50	63	64,5	194,5	8,3	176		
65	75	85	231		223,5		
80	90	100	283,5	10,3	268	206	180
100	110		291,5				



### PVDF valve body - PN 16

ND	d	H	L	E	H1	L1	H2
10	16	33	98.5	5,5	114	190	148
15	20				126.5		
20	25	40	113				
25	32	43,5	123	6,5	133		
32	40	51	141		148		
40	50	56,5	164		161		
50	63	64,5	194,5	8,3	176		
65	75	85	228,5		223,5		
80	90	100	282	10,3	268	206	180
100	110		251				



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**Electrically actuated 2-way  
 PVC ball valves  
 VE2V M1**

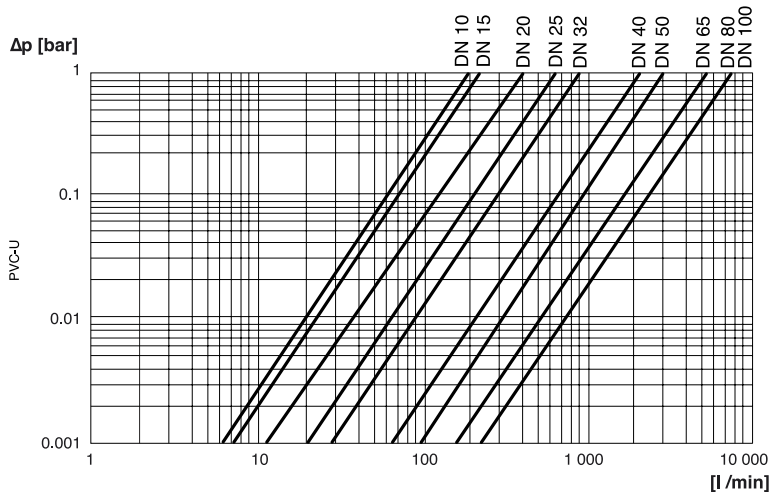
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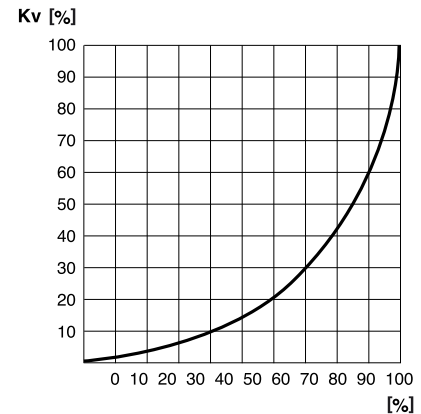
**PLAS**

**914-21/3**

## PHYSICAL CHARACTERISTICS — PVC-U



Pressure drop vs. Flow rate (water at 20 °C)

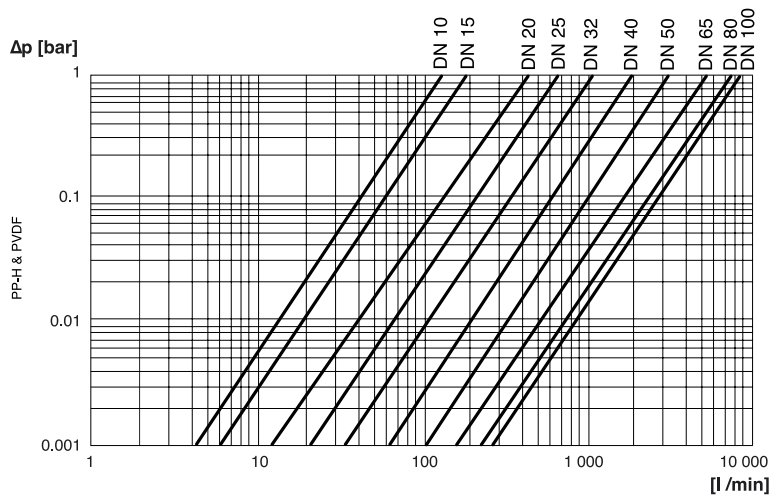


Kv vs. Opening angle [ % ]

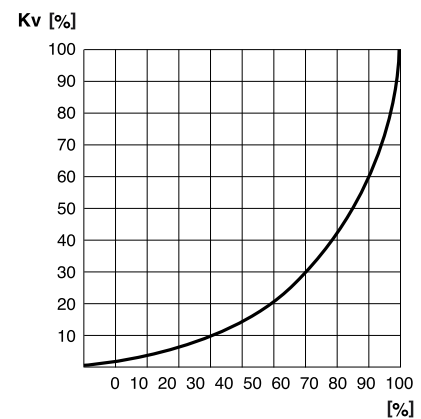
Flow coefficient Kv (at 20 ° C):

PVC-U: PN 16	ND 10	ND 15	ND 20	ND 25	ND 32	ND 40	ND 50	ND 65	ND 80	ND 100
	d 16	d 20	d 25	d 32	d 40	d 50	d 63	d 75	d 90	d 110
Pressure drop at 1 bar [l/min]	198	225	400	630	900	2120	3000	5150	7600	
Pressure drop at 0.001 bar [l/min]	6.2	7.1	12.6	19.9	28.4	67	94.8	162.8	240.3	

## PHYSICAL CHARACTERISTICS — PP-H & PVDF



Pressure drop vs. Flow rate (water at 20 °C)



Kv vs. Opening angle [ % ]

Flow coefficient Kv (at 20 ° C)

PP-H : PN 10	ND 10	ND 15	ND 20	ND 25	ND 32	ND 40	ND 50	ND 65	ND 80	ND 100
PVDF : PN 16	d 16	d 20	d 25	d 32	d 40	d 50	d 63	d 75	d 90	d 110
Pressure drop at 1 bar [l / min]	130	190	440	650	1080	1980	3240	5200	7500	8850
Pressure drop at 0.001 bar [l / min]	4.1	6.0	13.9	20.6	34.2	62.6	102.5	164.4	237.1	279.8

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Electrically actuated 2-way  
 PVC ball valves  
**VE2V M1**

13-11-2020

D-914.21-EN-AA

**PLAS**

**914-21 /4**

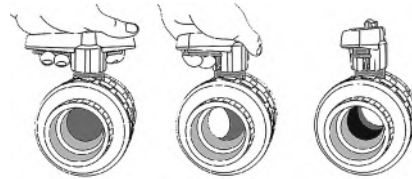
# Manually operated 2-way ball valves, industrial series VM2V M1

- Secure and lockable handle
- In-line pattern
- 100% free way



## DESCRIPTION

The 2-way ball valves, type S4, are designed for industrial and chemical applications with various materials combination. The ball seat made of PTFE allows a long operating time. A secured and lockable handle prevents of any accidental operation. These modular valves, can receive limit switches, or even supporting adapters to mount electric or pneumatic actuator.



## TECHNICAL FEATURES

Body	PVC-U or PP-H or PVDF
Sealing	Seals in EPDM or FPM
Ball	Same material as the body
Ball seat	PTFE
Fittings	Unions (female) PVC, PPH or PVDF Other types or materials on request

### Accessories:

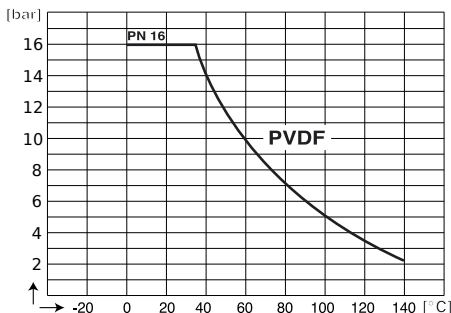
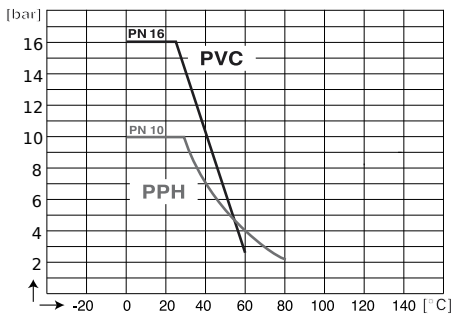
- Supporting adapters, 2 models:
- Adapter to mount an electric or pneumatic actuator.
- Adapter for limit switches

**EC Conformity:** The instrument meets the legal requirements of the current European Directives.

## CODE NUMBERS: refereing to NB "nominal bore"

Body	PVC-U		PP-H		PVDF
	EPDM	FPM	EPDM	FPM	FPM
<b>NB 10</b>	AD128809	AD128819	BD124084	BD124140	CD124091
<b>NB 15</b>	AD128810	AD128820	BD124085	BD124141	CD124092
<b>NB 20</b>	AD128811	AD128821	BD124086	BD124142	CD124093
<b>NB 25</b>	AD128812	AD128822	BD124087	BD124143	CD124094
<b>NB 32</b>	AD128813	AD128823	BD124088	BD124144	CD124095
<b>NB 40</b>	AD128814	AD128824	BD124089	BD124145	CD124096
<b>NB 50</b>	AD128815	AD128825	BD124090	BD124146	CD124097
<b>NB 65</b>	AD124227	AD124230	BD124280	BD124283	CD124292
<b>NB 80</b>	AD124228	AD124231	BD124281	BD124284	CD124293
<b>NB 100</b>	AD124229	AD124232	BD124282	BD124285	CD124294

Pressure vs. Temperature



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Manually operated 2-way ball  
valves, industrial series  
**VM2V M1**

16-10-2019

D-934.04-EN-AD

PLAS

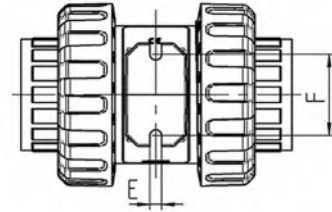
934-04/1



## DIMENSIONS [ mm ]

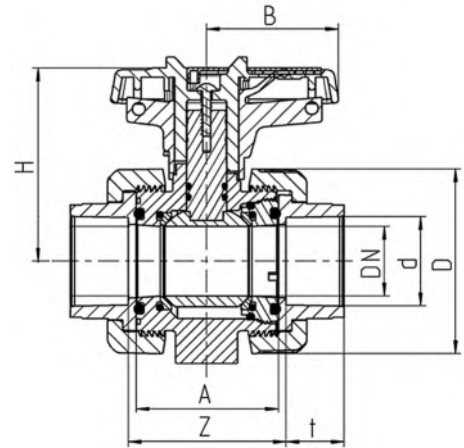
### Body in PVC-U – PN 16

	d	A	B	C	D	E	F	H	t	Z
NB 10	16	45	39.5	33	55.5	5.5	34	70.5	16	51
NB 15	20	45	39.5	33	55.5	5.5	34	70.5	16.55	50
NB 20	25	53.5	51	40	62	5.5	36	77	19.5	59.5
NB 25	32	54	51	43	70	6.5	38	79.5	23	60
NB 32	40	62	63.5	51	84	6.5	40	98	26.5	68.5
NB 40	50	78	72	56	101	6.5	45	105.5	31.5	86
NB 50	63	87	84	64	115	6.5	50	114	38.5	98
NB 65	75	111.5	110	85	149	8.3	65	142	44.5	122
NB 80	90	135.5	132	100	182	10.3	80	153	56.5	152.5
NB 100	110	135.5	132	100	182	10.3	80	153	61	162



### Body in PP-H – PN 10

	d	A	B	C	D	E	F	H	t	Z
NB 10	16	61,5	40	33	58	5,4	34	74,5	14,5	69,5
NB 15	20	61,5	40	33	58	5,4	34	74,5	16	66,5
NB 20	25	69	51,5	40	68,5	5,4	36	83	17,5	78
NB 25	32	73	51,5	43,5	75,5	6,4	38	85,5	19,5	84
NB 32	40	83	64	51	92	6,4	40	104,5	22	97
NB 40	50	94	73	56,5	108	6,4	45	113	25,5	114
NB 50	63	109	85	64,5	127,5	6,4	50	121,5	29	136,5
NB 65	75	131,5	110	85	160	8,3	65	151,5	34,5	162
NB 80	90	156,5	132	100	196,5	10,3	80	167	38,5	206,5
NB 100	110	156,5	132	100	196,5	10,3	80	167	42	207,5



### Body in PVDF – PN 16

	d	A	B	C	D	E	F	H	t	Z
NB 10	16	61,5	40	33	56,5	5,4	34	74,5	14,5	69,5
NB 15	20	61,5	40	33	56,5	5,4	34	74,5	16	67
NB 20	25	69	51,5	40	67	5,4	36	83	17	78
NB 25	32	73	51,5	43,5	73,5	6,4	38	85,5	19,5	84
NB 32	40	83	64	51	90	6,4	40	104,5	22	97
NB 40	50	94	73	56,5	105,5	6,4	45	113	25	113
NB 50	63	108,5	85	64,5	124,5	6,4	50	121,5	29	136
NB 65	75	131,5	110	85	157,5	8,3	65	151,5	35	158,5
NB 80	90	156,5	132	100	192,5	10,3	80	167	38,5	205
NB 100	110	156,5	132	100	192,5	10,3	80	167	44	163

## Mass [ kg ]

	NB 10	NB 15	NB 20	NB 25	NB 32	NB 40	NB 50	NB 65	NB 80	NB 100
PVC-U	0.22	0.22	0.33	0.41	0.65	1.03	1.55	3.24	5.44	5.44
PP-H	0.22	0.22	0.33	0.41	0.65	1.03	1.55	3.24	5.44	5.44
PVDF	0.25	0.25	0.38	0.49	0.81	1.22	1.91	3.82	6.43	6.43

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**Manually operated 2-way ball  
valves, industrial series  
VM2V M1**

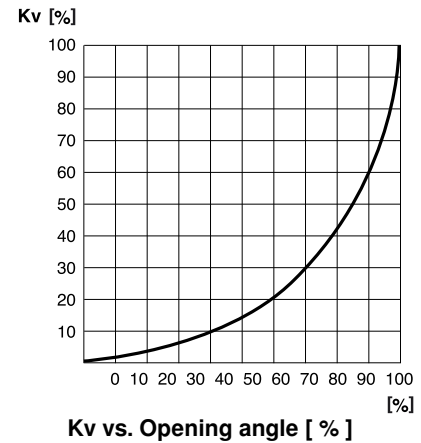
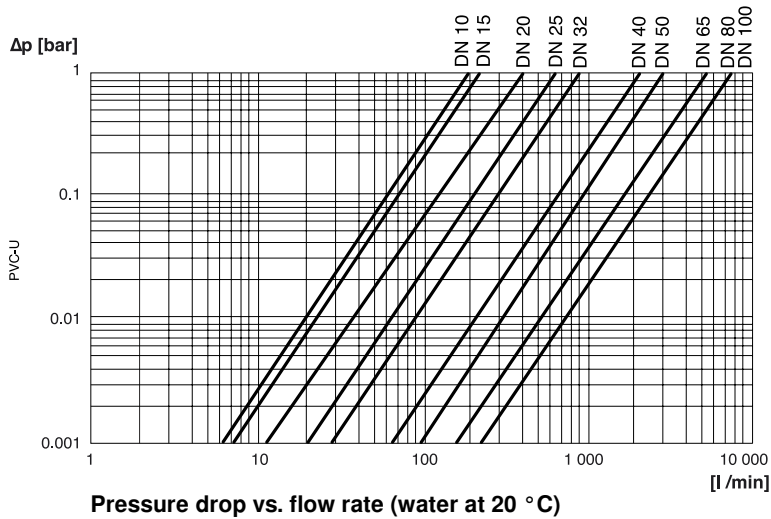
16-10-2019

D-934.04-EN-AD

**PLAS**

**934-04/2**

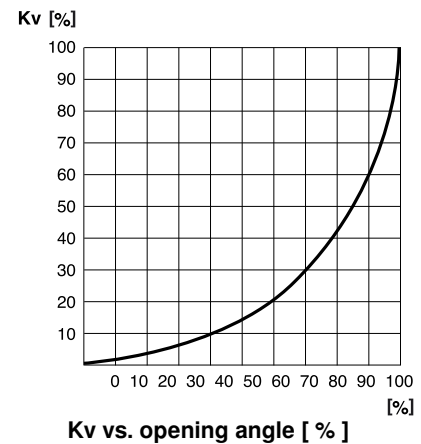
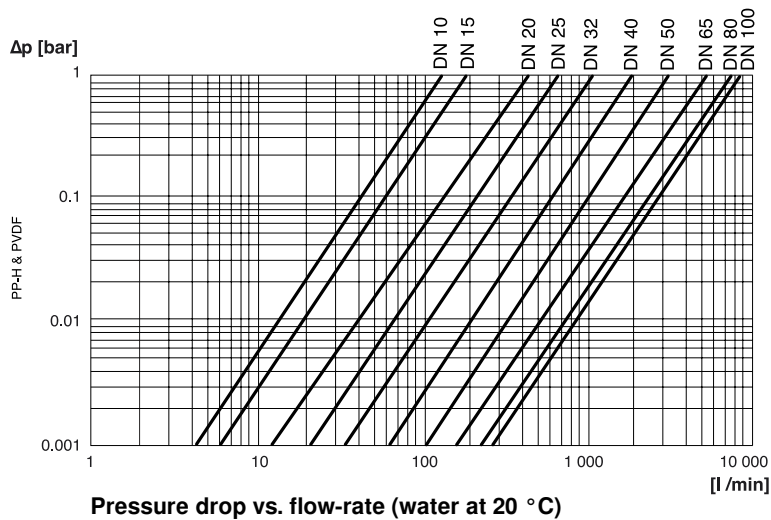
## PVC-U Valves, specificities



Kv values table (water at 20 °C):

NB	10	15	20	25	32	40	50	65	80	100
d	16	20	25	32	40	50	63	75	90	110
Kv [ l/min ] at pressure drop 1 bar	198	225	400	630	900	2120	3000	5150	7600	
Kv [ l/min ] at pressure drop 0.001 bar	6,2	7,1	12,6	19,9	28,4	67	94,8	162,8	240,3	

## PP-H and PVDF valves, specificities



Kv values table (water at 20 °C):

ND	10	15	20	25	32	40	50	65	80	100
d	16	20	25	32	40	50	63	75	90	110
Kv [ l/min ] at pressure drop 1 bar	130	190	440	650	1080	1980	3240	5200	7500	8850
Kv [ l/min ] at pressure drop 0.001 bar	4,1	6,0	13,9	20,6	34,2	62,6	102,5	164,4	237,1	279,8

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Manually operated 2-way ball valves, industrial series  
**VM2V M1**

16-10-2019

D-934.04-EN-AD

**PLAS**

**934-04/3**

## ACCESSORIES

### Mounting support, double function, for valves M1 series

#### Description

- 1 accessory, 2 applications: As a blocking support or as a spacer
- Material: PA-G (black; fiber glass reinforced)
- For mounting on valves ND 10 up to ND 50



Function: As a Blocking support

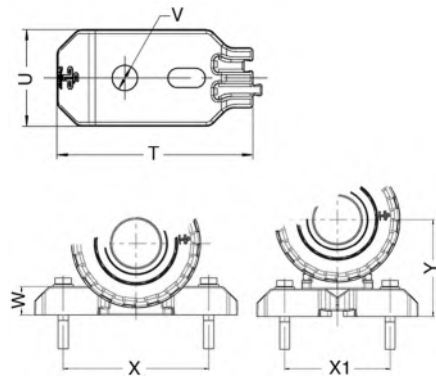


Function: As a spacer



Bore for threaded bushing

<b>NB</b>	<b>10</b>	<b>15</b>	<b>20</b>	<b>25</b>	<b>32</b>	<b>40</b>	<b>50</b>
<b>d</b>	<b>16</b>	<b>20</b>	<b>25</b>	<b>32</b>	<b>40</b>	<b>50</b>	<b>63</b>
<b>T</b>	54			65			
<b>U</b>	25			32			
<b>V</b>	6.5			8.5			
<b>W</b>	16			22			
<b>X</b>	90	94	107	109	114	119	
<b>X1</b>	70			85			
<b>Y</b>	49	56	65	73	78	86	



#### Code numbers

Code	Description
AD141776	Mounting support, double function for valves M1: NB 10, 15 and 20
AD141777	Mounting support, double function for valves M1: NB 25, 32, 40 and 50

### Mounting adapters for actuators on M1 series

#### Description:

- Material: PA-G (fiber glass reinforced)
- Stainless steel screws, included
- For mounting on valves NB 10 up to NB 80
- *More information: on request*

#### Code numbers:

Code	Description
AD129011	Adaptater for valves M1: NB 10 and 15
AD129012	Adaptater for valves M1: NB 20 and 25
AD129013	Adaptater for valves M1: NB 32
AD129014	Adaptater for valves M1: NB 40 and 50
AD210631	Adaptater for valves M1: NB 65
AD210632	Adaptater for valves M1: NB 80



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Manually operated 2-way ball  
 valves, industrial series  
**VM2V M1**

16-10-2019

D-934.04-EN-AD

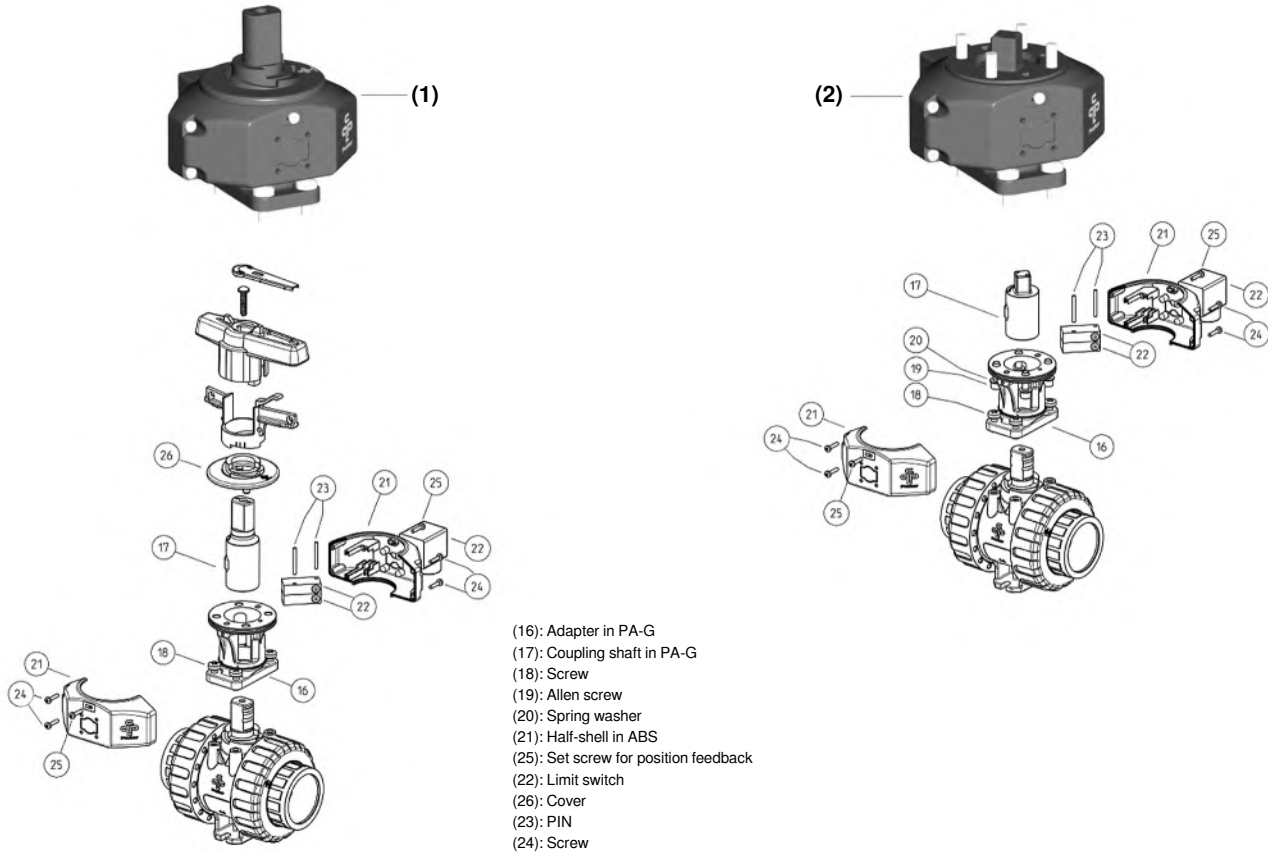
PLAS

934-04/4

## Limit switches kits for valves M1 series

### Description:

- For manually operated valves (1) or electric/ pneumatic actuators of our supply (2)
- Adjustable switches IP67; contact Ag-Ni: N.O. (NC\*), rated 15 ... 250 V AC (15...30 V DC); Limits 100 mA - 5A  
Contact Au\*: N.O.\* (N.C.\*), rated 5 ... 250 V AC (5 ... 30 V DC), Limits 1 mA - 3 A (\* : on request)
- Inductive contact IP 67, PNP\*/ NPN\*, rated 10 ... 30 V DC, Limits 0-100 mA or NAMUR\* 8 V DC (\* : on request)
- Operating temperature: -10 ... +50 °C
- Connector DIN IP 65
- Screws are not supplied



### Limit switches kit for manually operated valves M1 series:

Code	Description	Code	Description
AD129031	Kit, contacts N.O. (Ag-Ni), for NB 10 and 15	AD210635	Kit, inductive contacts PNP, for NB 10 and 15
AD129032	Kit, contacts N.O. (Ag-Ni), for NB 20 and 25	AD210635	Kit, inductive contacts PNP for NB 20 and 25
AD129033	Kit, contacts N.O. (Ag-Ni), for NB 32	AD210637	Kit, inductive contacts PNP for NB 32
AD129034	Kit, contacts N.O. (Ag-Ni), for NB 40 and 50	AD210638	Kit, inductive contacts PNP for NB 40 and 50
AD210633	Kit, contacts N.O. (Ag-Ni), for NB 65	AD210639	Kit, inductive contacts, PNP, 10 ... 30 V DC for NB 65
AD210634	Kit, contacts N.O. (Ag-Ni), for NB 80	AD210640	Kit, inductive contacts, PNP, 10 ... 30 V DC for NB 80

### Limit switches kit for actuated valves M1 series:

Code	Description	Code	Description
AD129159	Kit, contacts N.O. (Ag-Ni), for NB 10 and 15	AD210643	Kit, inductive contacts PNP, for NB 10 and 15
AD129160	Kit, contacts N.O. (Ag-Ni), for NB 20 and 25	AD210644	Kit, inductive contacts PNP, for NB 20 and 25
AD129161	Kit, contacts N.O. (Ag-Ni), for NB 32	AD210645	Kit, inductive contacts PNP, for NB 32
AD129162	Kit, contacts N.O. (Ag-Ni), for NB 40 and 50	AD210646	Kit, inductive contacts PNP, for NB 40 and 50
AD210641	Kit, contacts N.O. (Ag-Ni), for NB 65	AD210647	Kit, inductive contacts PNP, for NB 65
AD210642	Kit, contacts N.O. (Ag-Ni), for NB 80	AD210648	Kit, inductive contacts PNP, for NB 80

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**Manually operated 2-way ball  
valves, industrial series  
VM2V M1**

16-10-2019

D-934.04-EN-AD

**PLAS**

**934-04/5**

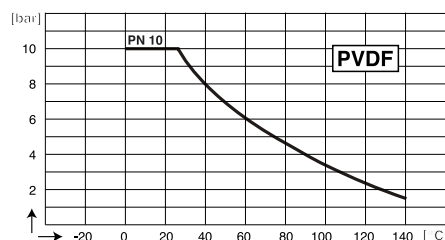
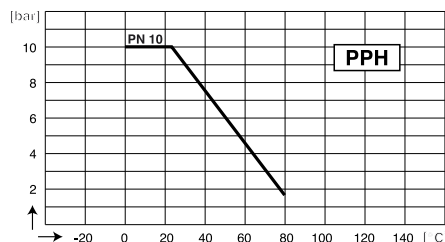
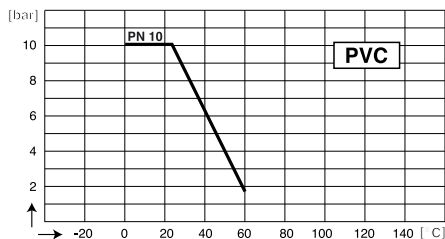
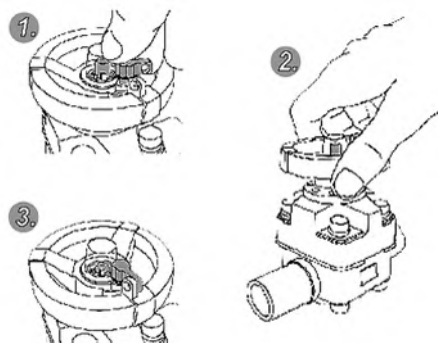
# Manual diaphragm valve VMM T4

- Secure and padlockable handwheel
- Radial mounting and dismounting
- Position pointer



## DESCRIPTION

Diaphragm valves T4, manual type, can be used in the most demanding applications. The different materials available allow the use with many chemicals, corrosives, in pipings for aggressive and/ or polluted liquids. The replacement of the diaphragm and wet seals is done without special tools. These valves are equipped with a secure and padlockable handwheel.



Pressure vs. Temperature

## TECHNICAL FEATURES

Body	PVC PPH PVDF (only with FPM seals)
Seals	EPDM or FPM
Diaphragm	EPDM or EPDM PTFE coated
Seat	PTFE
Fittings	Female unions (socket ends)

**EC Conformity:** The instrument meets the legal requirements of the current European Directives.

## CODE NUMBERS AND REFERENCES

ND	Body Material / Seals Material				
	PVC / EPDM	PVC / FPM	PPH / EPDM	PPH / FPM	PVDF / FPM
15	AD 122 212	AD 122 832	BD 125 038	BD 125 050	CD 125 074
20	AD 122 213	AD 122 834	BD 125 039	BD 125 051	CD 125 075
25	AD 122 214	AD 122 835	BD 125 040	BD 125 052	CD 125 076
32	AD 122 215	AD 122 836	BD 125 041	BD 125 053	CD 125 077
40	AD 122 216	AD 122 837	BD 125 042	BD 125 054	CD 125 078
50	AD 122 217	AD 122 838	BD 125 043	BD 125 055	CD 125 079
	(1) ↑	(2) ↑	(1) ↑	(2) ↑	(2) ↑

- (1) : Diaphragm, EPDM  
(2) : Diaphragm, EPDM coated with PTFE

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Manual diaphragm valve  
**VMM T4**

22-10-2020

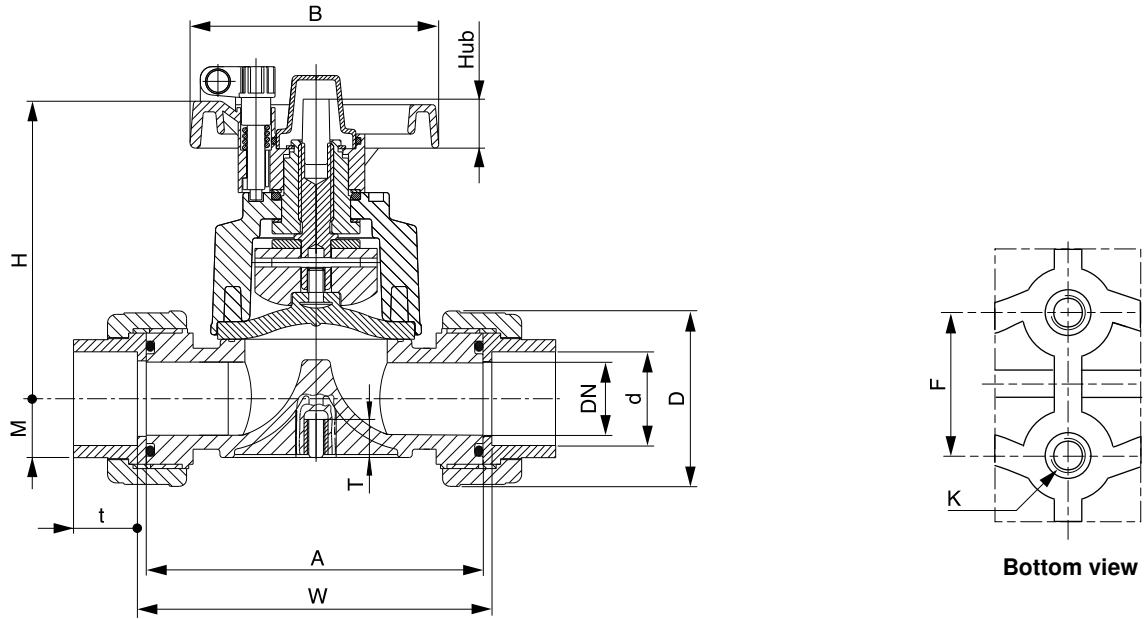
D-940.02-EN-AA

PLAS

940-02/1

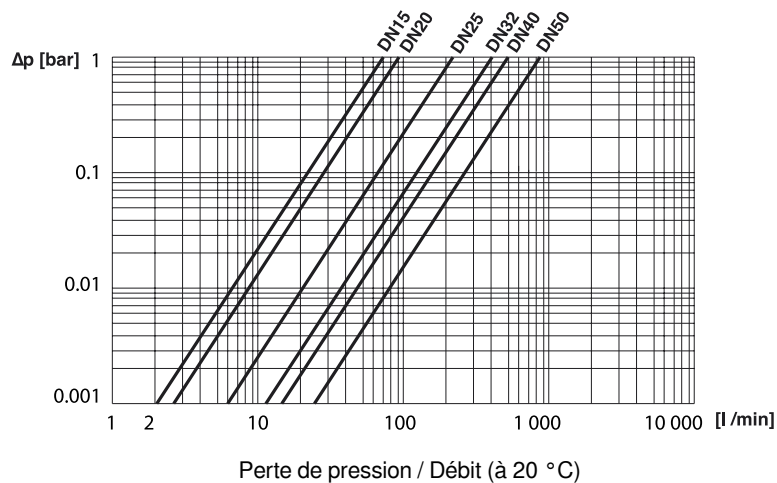


## DIMENSIONS [mm]



ND	d	A	W	t (PVC)	t	T	Hub	D	H	B	M (PVC)	M	F (PVC)	F	K
15	20	90.0	96.0	16.0	28.5	12.0	9.0	43.0	100.0	86.0	17.0	16.5	25.0	24.5	M6
20	25	108.0	114.0	19.0	36.0		11.0	53.0							
25	32	116.0	122.0	22.0	38.5		22.0	74.0	107.0		144.0	21.0			
32	40	136.0	142.0	26.0	38.5	15.0	22.0	74.0	144.0	136.0	33.0	31.5	45.0	43.5	M8
40	50	154.0	160.0	31.0	46.0		28.0	83.0							
50	63	184.0	190.0	38.0	46.0		28.0	103.0	170.0		40.3	38.6			

## CHARACTERISTICS



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### Manual diaphragm valve VMM T4

PLAS

940-02/2

22-10-2020

D-940.02-EN-AA



# Manual butterfly valves, chemistry series VMP K4



- Secure and padlockable handle
- 10 adjustment positions
- Wafer mounting, between flanges: DIN, ANSI, JIS

## DESCRIPTION

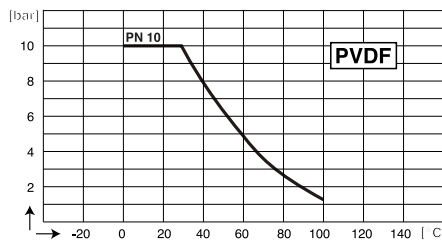
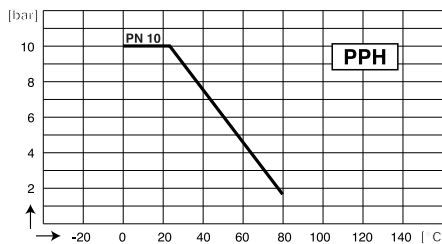
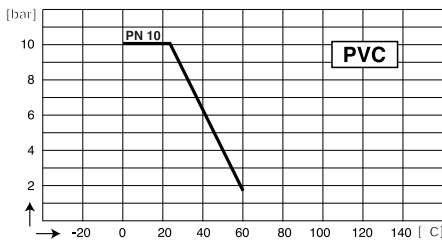
These manual valves are designed for a wafer mounting between flanges of various standards. The "secure handle" version has a metal adapter located between the end of the valve shaft and the handle, preventing premature wear. The "Wheel" version allows easy handling of the valve. Wet parts concern the disc, sleeve and sealing. The different materials available make this product suitable for the most demanding applications.

## TECHNICAL FEATURES

Body	PP-GF
Sleeve	EPDM or FPM
Disc	PVC, PPH, PVDF
Mounting	Wafer, between flanges DIN 2501, ANSI B 16.5, JIS 10 K, BS Table D&E
Operating pressure	10 bar

**EC Conformity:** The instrument meets the legal requirements of the current European Directives

## CODE NUMBERS AND REFERENCES



Pressure vs. Temperature

ND	Handle version / PVC disc		Wheel version / PVC disc	
	EPDM sealing	FPM sealing	EPDM sealing	FPM sealing
65	AD 125 860	AD 125 865	AD 126 010	AD 126 015
80	AD 125 861	AD 125 866	AD 126 011	AD 126 016
100	AD 125 862	AD 125 867	AD 126 012	AD 126 017
125	AD 128 456	AD 128 457	AD 128 761	AD 128 763
150	AD 125 863	AD 125 868	AD 126 013	AD 126 018
200	AD 125 864	AD 125 869	AD 126 014	AD 126 019

ND	Handle version / PPH disc		Wheel version / PPH disc	
	EPDM sealing	FPM sealing	EPDM sealing	FPM sealing
65	BD 125 870	BD 125 875	BD 126 020	BD 126 025
80	BD 125 871	BD 125 876	BD 126 021	BD 126 026
100	BD 125 872	BD 125 877	BD 126 022	BD 126 027
125	BD 128 458	BD 128 459	-	-
150	BD 125 873	BD 125 878	BD 126 023	BD 126 028
200	BD 125 874	BD 125 879	BD 126 024	BD 126 029

ND	Handle version / PVDF disc	Wheel version / PVDF disc
	FPM sealing	FPM sealing
65	CD 125 880	CD 126 030
80	CD 125 881	CD 126 031
100	CD 125 882	CD 126 032
125	CD 128 460	CD 128 765
150	CD 125 883	CD 126 033
200	CD 125 884	CD 126 034

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Manual butterfly valves,  
chemistry series  
**VMP K4**

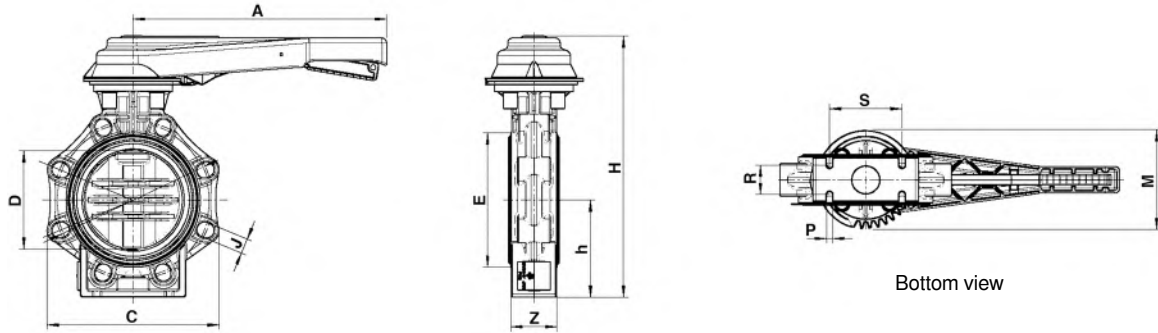
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D-945.04-EN-AB

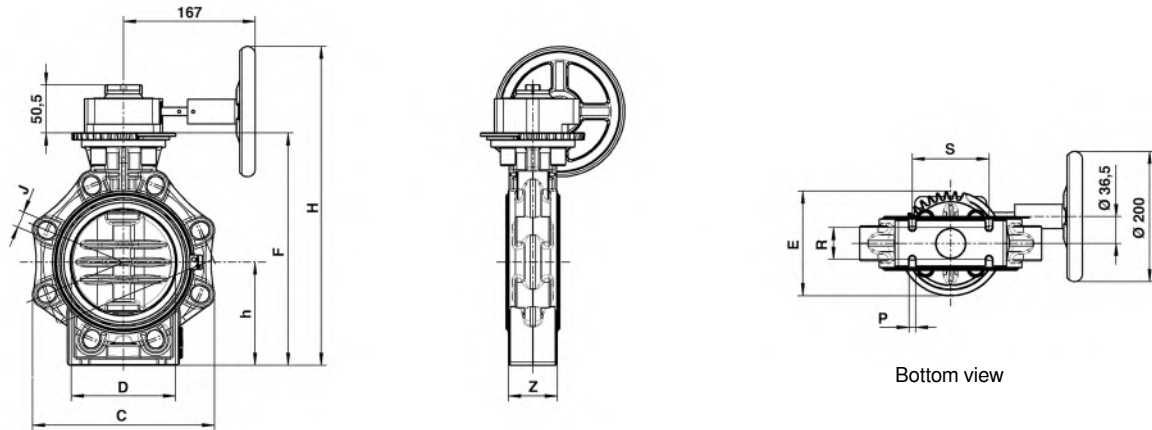
**PLAS**

**945-04/1**

## DIMENSIONS [mm]



ND	d	A	D	C	H	h	E	J	M	Z	P	R	S	PN
65	75	230	65	133	285	100	98	19	114	46	7	25	55	10
80	90		80	176	292		116			49	30	70		
100	110	300	100	206	322	115	146			56	35	85		
150	160	386	150	261	396	147,5	196	23	150	70	9	45	110	
200	225		200	314	458	175	251			71	40	145		

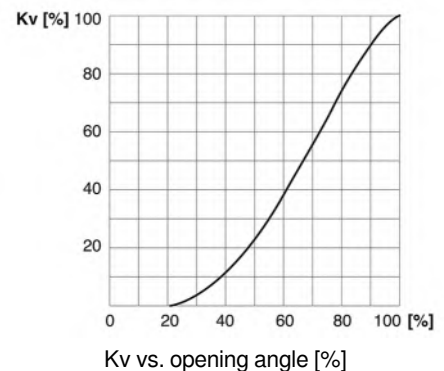


ND	d	D	C	H	h	F	J	Z	P	R	E	PN
65	75	65	133	362.5	100	232	19	46	7	25	114	10
80	90	80	176	369.5		239		49	30			
100	110	100	206	399.5	115	269		56	35			
150	160	150	261	463.5	147.5	333	23	70	9	45	150	
200	225	200	314	525.5	175	395		71	40			

## PHYSICAL FEATURES

Flow factor Kv (at 20 ° C):

	Pressure drop 1 bar	Pressure drop 0.001 bar
ND 65	1,900 l/min	60 l/min
ND 80	3,100 l/min	100 l/min
ND 100	6,000 l/min	190 l/min
ND 150	19,000 l/min	600 l/min
ND 200	35,000 l/min	1,100 l/min



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**Manual butterfly valves,  
 chemistry series  
 VMP K4**

15-02-2021

D-945.04-EN-AB

**PLAS**

**945-04/2**

# Liquid dosing tube PM 958



Example: Dosing tube,  
scale in ml, with 2  
valves

- Liquid dosing tube
- Tube in transparent PVC
- Dimensions: Custom made
- Option: Manual valves

## APPLICATIONS

For dosing samples or mixtured solutions in laboratory or WWTP.

## DESCRIPTION

A graduated transparent reservoir is fitted at the top with a plug for filling and at the bottom with a ball valve for visually dosing.

- Reservoir could be of O.D. 63, 90 or 110 mm
- Inlet and outlet plugs are of ND 10 to 20 mm
- Graduated scale and unit, are on application to your request.
- A manufacturing drawing is submitted for approval.

## TECHNICAL FEATURES

Materials	PVC
Seals	EPDM or FPM
Operating temperature	From 0 to 50 °C
Pressure	Atmospheric
Graduated scale	cm, ml, cl, litre, etc. (Others on request)

## CODE NUMBERS AND REFERENCES

Code	Reference	Description
958 000	PM 958	Liquid dosing tube custom made

## DIMENSIONS

### Example:

Liquid dosing tube Ø 63 mm, scale 0 to 500 ml, with 2 ball valves ND 15

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Liquid dosing tube  
**PM 958**

16-01-2019

D-958.01-EN-AB

**PLAS**

**958-01 /1**



Liquid Control Solutions

## The company

**BAMO Mesures SAS:**  
*French manufacturer of sensors and instruments for the monitoring and analysis of liquids*

**BAMO** has expertise in:

- . Analysis and measuring of fluids, pH, chlorine, conductivity water hardness, turbidity and dissolved oxygen
- . Control and level measurement, flow, pressure and temperature
- . Motorized valves and automatic valves

Our skills and expertise include hydraulic, mechanical, electronic and plastic injection control systems.

Since its foundation in 1978, the company has continued to grow under the same family ownership.

Manufacturing and product development are conducted in accordance with **ISO 9001:2000** procedures.

Our technical and commercial presence now spans Europe.

**BAMO Mesures** is always oriented towards the satisfaction of its loyal clientele.

**BAMO IER GmbH**, our subsidiary (design, manufacture and sales) has operated in Germany and Austria for 44 years.

The company is **ISO 9001** certified, respecting all applicable legal requirements and European standards, testing in its own EMC lab, as well as by external approval authorities (i.e. TÜV, DIBt etc.),

**BAMO GlobalÁgua** supports our customers for Spain and Portugal.

**BAMO Polska Sp. z o.o.** supports all our programm in Poland.

Many exclusive distributors complete this scheme around the world.



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