LEVEL

Level Switches

Barksdale
CONTROL PRODUCTS
CRANE
Barksdale, Inc./Barksdale GmbH
A Subsidiary of Crane Co.

Index

Introduction

Application

Where fluids must be stored or handled the Barksdale level switches with their large variety from a simple compact switch to multi level stations with lengths up to three meters are a logic choice (longer on request).

When temperature and level measurement are required at the same time in tanks or reservoirs it is practical and economical to combine these in the level switches UNS-1000 with temperature sensor and UNS-2000 with additional temperature switch.

Application

Level

All level switches are equipped with hermetically sealed reed switches. The contact is switched by an annular rod bar magnet which is positioned within the float.

The reed switch is available as normally closed, normally open or SPDT-contact. The only moving part of the level switch is the float sliding along the stem.

Contact modes (NO or NC) are defined on the basis of an empty tank and for installation through the top or through the bottom (when specified as “-U”).

NO: (= Contact mode 1)
Normally open,
- Closing contact by rising level
- Opening contact by falling level

NC: (= Contact mode 2)
Normally closed,
- Opening contact by rising level
- Closing contact by falling level

The density (specific gravity) of the medium will influence the floating position of the float. In very light oils or solvents the float might change (lower) it’s position up to 15...20 mm or more. If this is critical in your application consult us for details.

When not specified we will position the switch point for density 1 (water) and the switch action to be on moving upward.

Due to the hysteresis (dead band) of the reed contacts the action on rising level (reactuation point) will be several millimetres lower than the specified switch point.

Temperature Measuring (optional)

For temperature measurement we offer a PT 100 temperature sensor in our UNS-1000 and UNS-2000.
In the series UNS-2000 we also offer temperature switch functions.
The bi-metal element (TP type / PEPI) is hermetically sealed, has fixed setpoints in steps of 5 °C and is installed in the bottom of the stem.

The TP type has gold plated contacts, is very good for low voltage and mA applications, and can still handle large contact loads up to 3 amp at 24 VDC or 12 V AC. Setpoints are available at +50 °C, +70 °C and +90 °C (other temperatures on request), the hysteresis is only 3...10 K at mid range (depending on the operating temperature).

The coding of the temperature switch is simple, just specify TP then the setpoint in °C and 2 for the contact mode (contact mode 1 on request).
I.e. TP 70/2 for setpoint +70 °C contact NC and opens on increasing temperature at +70 ±5 °C.

Consult factory for availability of your required version.

Typical Applications for Level Switches with integrated Temperature Sensor

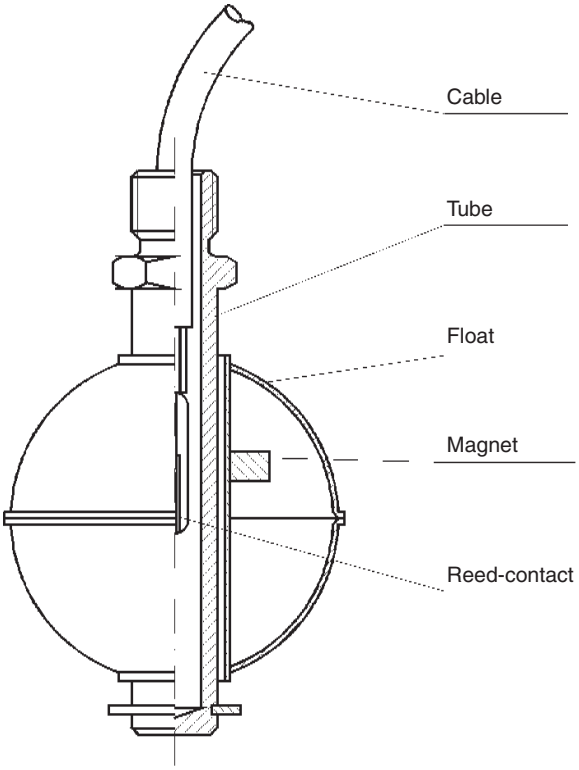
- switching on heaters to avoid freezing of the medium, or

- high or low temperature alarm in hydraulic tanks (TP type)

Type UNS-2100 Ex is also available with temperature switch and ATEX-approval.
(Other UNS-versions with ATEX-EEx ia on request)

12 / 04 UNS US 04/1

Introduction



Features and Benefits:

- Only moving part: The wearlessly working float.
- NO linkage, bellows or dynamic seals to wear, no service or spare parts needed.
- Easy to install, no calibration needed.
- Welded hollow floats in Stainless Steel and foamed floats in Buna-N (BN) are mostly used. The BN float is a closed cell Buna rubber, very light and very good in most hydrocarbons and water.
- Many special floats are available, consult us for details.
- The position of the float on the stem determines the contact status, open or close. By rotating the float the switch function will be reversed.
- Hysteresis of switch action only a few mm depending on type of contact and float.
- Reed contacts are designed to operate under vibration and are ideal for industrial applications.
- The UNS-1000 and UNS-2000 offer “custom made” specials at standard pricing.
- DNV-, GL- and BV-shipboard approvals with the series UNS-1000 S, UNS-2000 S and UNS-VA SB (ABS-, LR- und RINA-approvals on request).
- Option for high temperature -40 °C...+150 °C, specify -HT
- Option for splash or protection tube, specify: -DR
- Option for vertical adjustment, specify: - VV
- Option for additional temperature switch(es) specify: -TP
- Option for temperature sensor PT100, specify: - PT100
- Mounting normally vertical downwards through the top, specify -U when mounting will be through the bottom vertical upwards.
- For pressures over 50 bar and/or very low density fluids we have special solutions, consult us for details.
- Many years of experience in level switches and many specials since, include many “exotics” in Hastelloy, Titanium, Plastic or Teflon, will help us to design the special version you might need.

Approval data:

Series UNS-2100-EX with ATEX-approval
(UNS-, UNS-1000 and UNS-2000 on request)
Intrinsically safe acc. to
Approval: Ⓔx II 1 GD EEx ia IIC T6 (-EEx ia IIB T6)
Certificate- No.: ISSeP03ATEX119X

IP6X T 100 °C

Max. ambient temperature: -40 °C ...+75 °C

Electrical data for intrinsically safe applications:

Ui = 28 V
Ii = 50 mA
Ci = 40 pF
Li = 4 µH

12 / 04 UNS US 04/1

Introduction

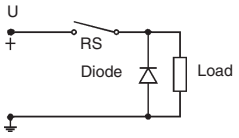


Fig. 1
Protection at DC and inductive load with free-wheeling diode.

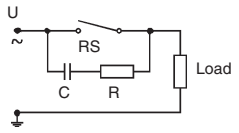
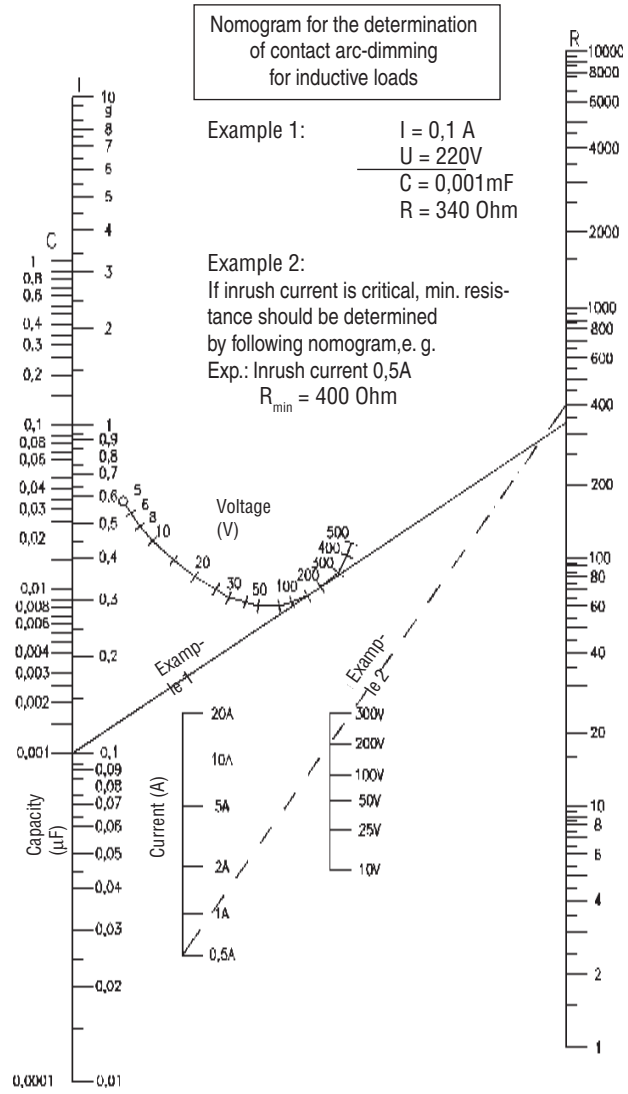


Fig. 2
Protection at AC and inductive load with free-wheeling diode.

Fig. 3



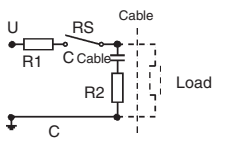


Fig. 4
Protection against high discharge current of condensers. Depends upon circuit R1 or R2 or both should be used.

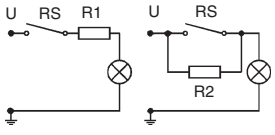


Fig. 5
Lamp loads with parallel or serial resistor to switch.

General Technical Information

The indicated values for power, voltage and capacity are valid for purely resistive loads. Quite frequently though, the loads are surrounded by inductive and capacitive com-ponents. Very often lamp loads must be switched.
In this case, protection of the reed switch against voltage and power peaks must be considered. Of course, each case must be evaluated seperately. But we would like to give some guidelines concerning the wiring of reeds for different loads to avoid premature failure.

1. Inductive loads

Contact protection is relatively simple for direct current (DC). A free-wheel diode is wired parallel to the load. Polarity must be established in such a way that the diode will inhibit at normal operational voltage (current) and short-circuit the power peaks which occur in the opposite direction when the switch opens. (see fig. 1).

It is not possible to use a diode for AC. Here an arc-dimming unit has to be used. Generally this unit is a RC-unit wired parallel to the switch and hence in series with the load. Sizing of such an arc-dimming unit can be performed according to the nomogram shown in fig. 2 and 3.

2. Capacitative loads and lamp loads

Contrarily to the inductive loads, there are inrush currents for capacitive loads and lamp loads which can lead to disturbance - even to the point of fusing of the contacts. During the wiring of loaded condensators (e.g. cable capacities) a sudden discharge will occur, with an intensity depending on the capacity and length of supply cable to the switch (can be regarded as series resistor). The discharge peak of the current is largely reduced by a series resistor to the condensator. Its size is deter-mined by the possibilities offered by the respective power circuit. It should be as high as possible in order to limit the discharge current to a permitted value. These criteria are valid analogously for the charging of condensors (see fig. 4).

Finally we want to give some details regarding the wiring of lamp loads. Cold incandescent filaments (switched off) have ten times smaller resistance than switched on filaments. That means during switch-on - even for a short period of time only - the current flow is ten times higher than in glowing, static condition of the lamp. This tenfold inrush current can be reduced to an acceptable level by a continously wired limiting resistor. Another possibility is the parallel wiring of a resistance to the switch. This will permanently heat up the switches of the lamp filament only so much as to just prevent it from glowing. Both protective modes result in the loss of capacity (see. fig 5).

General View

Level Switches with one Switchpoint

Material: Metal

UNS - MS

UNS - VA

UNS - 90 - VA

UNS - VA / SB

Type UNS-	MS 1/8 - BN25 VA 1/8 -VA27	MS 1/4 - BN30 VA 1/4 - VA52	MS 3/8 - BN30 VA 3/8 - VA52	90 - MS 3/8 - BN30 90 - VA 3/8-VA52	VA / SB4 VA / SB5
Mounting Position	Through top Through bottom	Through top Through bottom	Through top Through bottom	Side mounted	Side mounted
Stem Material	Brass Stainless Steel 1.4571	Brass Stainless Steel 1.4571	Brass Stainless Steel 1.4571	Brass Stainless Steel 1.4571	Stainless Steel 1.4571
Mounting Element	G1/8 Mounting thread	G1/4 Mounting thread	G3/8 Mounting thread	G3/8 Mounting thread	Mounting bracket
Float	BN25, Ø = 25 mm VA27, Ø = 27 mm	BN30, Ø = 30 mm VA52, Ø = 52 mm	BN30, Ø = 30 mm VA52, Ø = 52 mm	BN30, Ø = 30 mm VA52, Ø = 52 mm	PE33, Ø = 33 mm
Float Material	Buna N = BN Stainl. Steel 1.4571 = VA	Buna N = BN Stainl. Steel 1.4571 = VA	Buna N = BN Stainl. Steel 1.4571 = VA	Buna N = BN Stainl. Steel 1.4571 = VA	Polyethylene PE
Min. Fluid Specific Gravity (g/cm³)	BN25: 0,57 VA27: 0,71	BN30: 0,60 VA52: 0,78	BN30: 0,60 VA52: 0,78	BN30: 0,60 VA52: 0,78	0,80
Max. Pressure (bar)	15 15	15 40	15 40	15 40	3
Max. Temperature	80/100 °C - Buna N 105/150 °C - Stainl. Steel	80/100 °C - Buna N 105/150 °C -Stainl. Steel	80/100 °C - Buna N 105/150 °C - Stainl. Steel	80/100 °C - Buna N 105/150 °C - Stainl. Steel	70 °C
Contact Mode	NO / NC SPDT	NO / NC SPDT	NO / NC SPDT	NO / NC SPDT	NO / NC
Contact Rating	40 VA/W NO / NC 3 VA/W / SPDT	100 VA/W NO / NC 60 VA/W / SPDT	100 VA/W NO / NC 60 VA/W / SPDT	100 VA/W NO / NC 60 VA/W / SPDT	40 VA/W NO / NC
Option	High temperature version	High temperature version	High temperature version	High temperature version	Test equipment
Approval	Shipbuilding approval ATEX approval	Shipbuilding approval ATEX approval	Shipbuilding approval ATEX approval	Shipbuilding approval ATEX approval	Shipbuilding approval ATEX approval
Catalog3 Page No.	P1 - P2	P3 - P4	P5 - P6	P7 - P8	P9 - P10

12 / 04 UNS US 04/1

General View

Level Switches with one Switchpoint

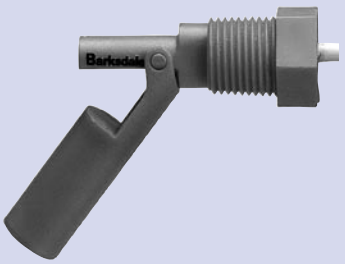
Material: Plastic

12 / 04 UNS US 04/1

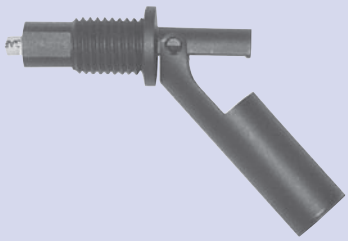
UNS - PVC

UNS - PTFE

UNS - PA



UNS - PP



Type UNS-	PVC1/8-PVC25	PVC3/8-PVC25	PTFE1/4-PTFE55	PA16-PA18 PA1/2“NPT-PA18 PA16-PA18-MS-A	PP16-PP18 PP1/2“NPT-PP18
Mounting Position	Through top Through bottom	Through top Through bottom	Through top Through bottom	Side mounted	Side mounted
Stem Material	PVC-hard	PVC-hard	Teflon	Polyamide 6.6	Polypropylene
Mounting Element	G1/8 Mounting thread	G3/8 Mounting thread	G1/4 Mounting thread	M 16 x 2 1/2“ NPT, G1/2	M 16 x 2 1/2“ NPT
Float	PVC 25, Ø = 25 mm	PVC 25, Ø = 25 mm	PTFE 55, Ø = 55 mm	Ø = 18 mm	Ø = 18 mm
Float Material	PVC-hard	PVC-hard	Teflon	Polyamide 6.6	Polypropylene
Min. Fluid Specific Gravity (g/cm³)	0,70	0,70	1,0	0,70	0,65
Max. Pressure (bar)	3	3	3	5	5
Max. Temperature	65 °C	65 °C	150 °C	60 / 120 °C	60 / 90 °C
Contact Mode	NO / NC SPDT	NO / NC SPDT	NO / NC SPDT	NO / NC	NO / NC
Contact Rating	10 VA/W NO / NC 3 VA/W / SPDT	10 VA/W NO / NC 3 VA/W / SPDT	100 VA/W NO / NC 60 VA/W / SPDT	60 VA/W	60 VA/W
Option	On request	On request	On request	On request	On request
Approval	---	---	---	---	---
Catalog Page No.	P11	P11	P12	P13	P14

General View

Multi Level Switches with one ore more Switchpoints:

Material: Metal

UNS - 1000

UNS - 1000 - S

UNS - 1000 - G

Type UNS-	1000	1000-S	1000-G
Mounting Position	Through top Through bottom	Through top Through bottom	Side mounted
Stem Material	Brass Stainless Steel 1.4571	Stainless Steel 1.4571	Stainless Steel 1.4571
Mounting Element	Flange and thread	Flange and thread	G1/2 side / bottom
Float	BN25, Ø = 25 mm VA27, Ø = 27 mm	BN25, Ø = 25 mm VA27, Ø = 27 mm	VA27, Ø = 27 mm
Float Material	Buna N - BN Stainl. Steel 1.4571 = VA	Buna N - BN Stainl. Steel 1.4571 = VA	Stainl. Steel 1.4571 = VA
Min. Fluid Specific Gravity (g/cm³)	BN25: 0,57 VA27: 0,71	BN25: 0,57 VA27: 0,71	0,71
Max. Pressure (bar)	15	15	15
Max. Temperature	80/100 °C - Buna N 105/150 °C - Stainl. Steel	80/100 °C - Buna N 105/150 °C - Stainl. Steel	90 °C - Stainl. Steel
Contact Mode	NO / NC SPDT	NO / NC SPDT	NO / NC SPDT
Contact Rating	40 VA/W NO / NC 3 VA/W / SPDT	40 VA/W NO / NC 3 VA/W / SPDT	40 VA/W NO / NC 3 VA/W / SPDT
Option	High temp. version, temperature sensor	On request	High temperature version
Approval	ATEX approval	Shipbuilding approval	ATEX approval
Catalog Page No.	P15 - P16	P17 - P18	P19

12 / 04 UNS US 04/1

General View

Multi Level Switches with Ex-Approval

12 / 04 UNS US 04/1

UNS - 2000

UNS - 2000 - S

UNS - 2000 - Ex

Type UNS-	2000	2000-S	2100-Ex
Mounting Position	Through top Through bottom	Through top Through bottom	Through top Through bottom
Stem Material	Brass Stainless Steel 1.4571	Stainless Steel 1.4571	Stainless Steel 1.4571
Mounting Element	Flange and thread	Flange and thread	Flange and thread
Float	BN30, Ø = 30 mm VA52, Ø = 52 mm	BN30, Ø = 30 mm VA52, Ø = 52 mm VA80, Ø = 80 mm	VX44, Ø = 44 mm VX52, Ø = 52 mm VX80, Ø = 80 mm
Float Material	Buna N = BN Stainl. Steel 1.4571 = VA	Stainl. Steel 1.4571 = VA	Stainl. Steel 1.4571 = VA
Min. Fluid Specific Gravity (g/cm³)	BN30: 0,60 VA52: 0,78	BN30: 0,60 VA52: 0,78 VA80: 0,54	VX44: 0,84 VX52: 0,78 VX80: 0,54
Max. Pressure (bar)	15 40	BN30: 15, VA52: 40 VA80: 17	VX44: 15; VX52: 40 VX80: 17
Max. Temperature	80/100 °C = Buna N 105/150 °C = Stainl. Steel	80/100 °C = Buna N 150 °C = Stainl. Steel	T4...T6 +85 °C...+120 °C
Contact Mode	NO / NC SPDT	NO / NC SPDT	NO / NC SPDT
Contact Rating	100 VA/W NO / NC 60 VA/W / SPDT	100 VA/W NO / NC 60 VA/W / SPDT	100 VA/W NO / NC 60 VA/W / SPDT
Option	High temp. version, temp. sensor and switch	On request	acc. ATEX approval (see page 4)
Approval	ATEX approval	Shipbuilding approval	ATEX approval
Catalog Page No.	P21 - P22	P23 - P24	P26 - P27

Type UNS-MS1/8-BN25

Technical Data

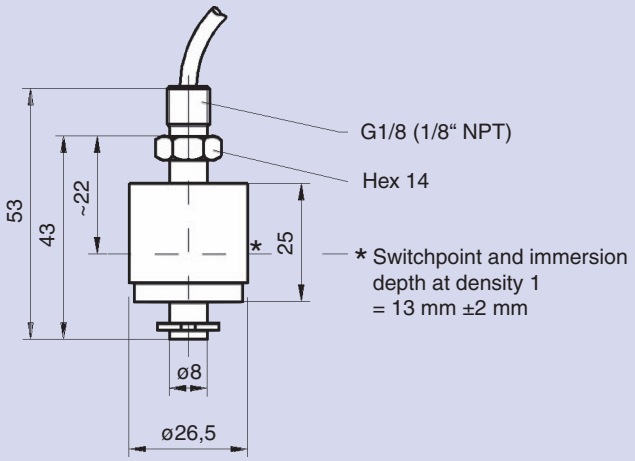
Stem and Mounting Thread	:	MS 1/8 = Brass G1/8 MS 1/8 NPT = Brass 1/8“ NPT
Float	:	BN 25 = Buna N, Ø = 25 mm
Max. Operating Pressure	:	15 bar (Float / +20 °C)
Max. Operating Temperature	:	-20 °C...+100 °C, (Oil) -20 °C...+80 °C, (Water)
Min. Fluid Specific Gravity	:	0,57 g/cm³
Mounting Position	:	vertical, ±30°, through top or bottom
Protection Class	:	IP54
Electrical Connection	:	PVC-cable, max.3 x 0,34 mm² 1 m / 3 m / 5 m length
Contact Mode	:	1 - SPST-switch (NO) 2 - SPST-switch (NC) 3 - SPDT-switch
Max. Contact Rating	:	NO / NC: 230 V AC / DC 2 A, 40 VA / W SPDT: 150 V AC / 100 V DC 0,2 A, 3 VA / W
Weight	:	appr. 40 g
Approval	:	ATEX on request

By turning the float upside down the function of the switch contact can be changed from NO (standard) in NC or vice versa.
(Not possible with SPDT contacts)
The contact modes (NO or NC) are defined on the basis of an empty tank and for a level switch mounted through the top.

Order Numbers

Type	Contact Mode	Cable Type/Length	Order Number
UNS-MS1/8-K1-BN25/1(2)	NO (NC)	PVC / 1 m	0111-464
UNS-MS1/8-K3-BN25/1(2)	NO (NC)	PVC / 3 m	0111-465
UNS-MS1/8-K5-BN25/1(2)	NO (NC)	PVC / 5 m	0111-466
UNS-MS1/8-K1-BN25/3	SPDT	PVC / 1 m	0111-467
UNS-MS1/8-K3-BN25/3	SPDT	PVC / 3 m	0111-468
UNS-MS1/8-K5-BN25/3	SPDT	PVC / 5 m	0111-469

Dimensions (in mm)



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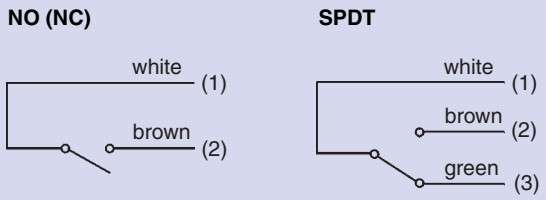


12 / 04 UNS US 04/1

Type UNS-VA1/8 VA27 (-HT)

Technical Data

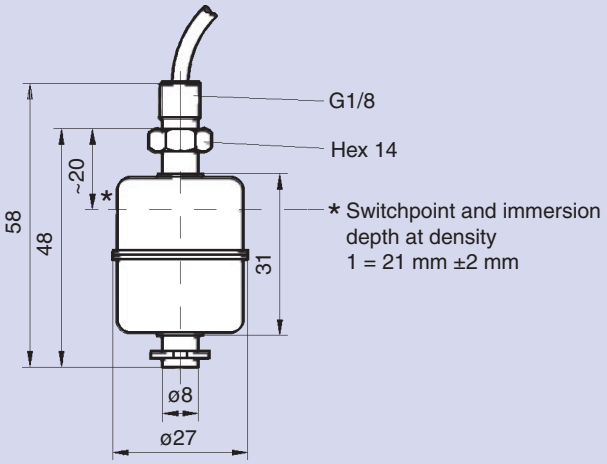
Stem and Mounting Thread	:	VA 1/8 = W.Nr. 1.4571, G1/8
Float	:	VA 27 = W.Nr. 1.4571, ø 27 mm
Max. Operating Pressure	:	15 bar (Float / +20 °C)
Max. Operating Temperature	:	-10 °C...+105 °C, PVC-Cable -40 °C...+150 °C, Silicone cable (-HT)
Min. Fluid Specific Gravity	:	0,71 g/cm³
Mounting Position	:	vertical, ±30°, through top or bottom
Protection Class	:	IP54
Electrical Connection	:	PVC-cable, max.3 x 0,34 mm² Silicone cable (-HT), max. 3 x 0,5 mm² 1 m / 3 m / 5 m length
Contact Mode	:	1 - SPST-switch (NO) 2 - SPST-switch (NC) 3 - SPDT-switch
Max. Contact Rating	:	NO / NC: 230 V AC / DC 2 A, 40 VA / W SPDT: 150 V AC / 100 V DC 0,2 A, 3 VA / W
Weight	:	appr. 90 g
Approval	:	ATEX and shipbuilding on request

By turning the float upside down the function of the switch contact can be changed from NO (standard) in NC or vice versa.
(Not possible with SPDT contacts)
The contact modes (NO or NC) are defined on the basis of an empty tank and for a level switch mounted through the top.

Order Numbers

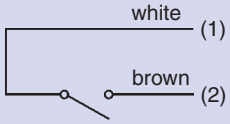
Type	Contact Mode	Cable Type/Length	Order Number
UNS-VA1/8-K1-VA27/1(2)	NO (NC)	PVC / 1 m	0111-449
UNS-VA1/8-K3-VA27/1(2)	NO (NC)	PVC / 3 m	0111-450
UNS-VA1/8-K5-VA27/1(2)	NO (NC)	PVC / 5 m	0111-451
UNS-VA1/8-K1-VA27/3	SPDT	PVC / 1 m	0111-452
UNS-VA1/8-K3-VA27/3	SPDT	PVC / 3 m	0111-453
UNS-VA1/8-K5-VA27/3	SPDT	PVC / 5 m	0111-454
UNS-VA1/8-K1-VA27/1(2)-HT	NO (NC)	Silicone / 1 m	0111-455
UNS-VA1/8-K3-VA27/1(2)-HT	NO (NC)	Silicone / 3 m	0111-456
UNS-VA1/8-K5-VA27/1(2)-HT	NO (NC)	Silicone / 5 m	0111-457
UNS-VA1/8-K1-VA27/3-HT	SPDT	Silicone / 1 m	0111-458
UNS-VA1/8-K3-VA27/3-HT	SPDT	Silicone / 3 m	0111-459
UNS-VA1/8-K5-VA27/3-HT	SPDT	Silicone / 5 m	0111-460

Dimensions (in mm))

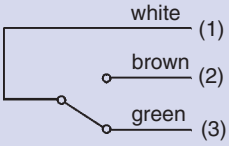


Colour Code

NO (NC)



SPDT



Type UNS-MS1/4-BN30

Technical Data

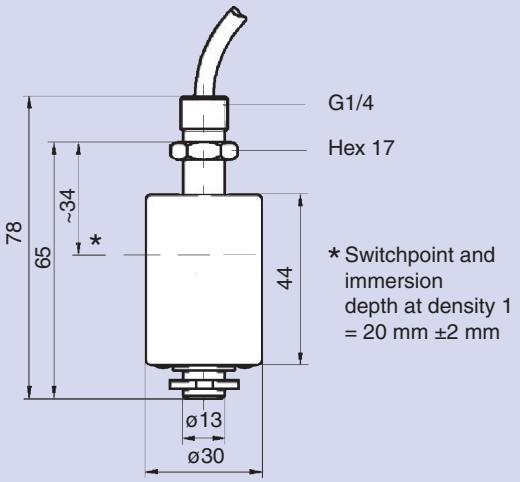
Stem and Mounting Thread	: MS 1/4 = Brass G1/4
Float	: BN 30 = Buna N, Ø = 30 mm
Max. Operating Pressure	: 15 bar (Float / +20 °C)
Max. Operating Temperature	: -20 °C...+100 °C, (Oil) -20 °C...+80 °C, (Water)
Min. Fluid Specific Gravity	: 0,60 g/cm³
Mounting Position	: vertical, ±30°, through top or bottom
Protection Class	: IP54
Electrical Connection	: PVC-cable, max.3 x 0,34 mm² 1 m / 3 m / 5 m length
Contact Mode	: 1 - SPST-switch (NO) 2 - SPST-switch (NC) 3 - SPDT-switch
Max. Contact Rating	: NO / NC: 250 V AC / DC 3 A, 100 VA / W SPDT: 140 V AC / DC 1 A, 60 VA / W
Weight	: appr. 150 g
Approval	: ATEX on request

By turning the float upside down the function of the switch contact can be changed from NO (standard) in NC or vice versa.
(Not possible with SPDT contacts)
The contact modes (NO or NC) are defined on the basis of an empty tank and for a level switch mounted through the top.

Order Numbers

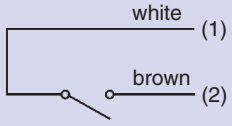
TType	Contact Mode	Cable Type/Length	Order Number
UNS-MS1/4-K1-BN30/1(2)	NO (NC)	PVC / 1 m	0111-470
UNS-MS1/4-K3-BN30/1(2)	NO (NC)	PVC / 3 m	0111-471
UNS-MS1/4-K5-BN30/1(2)	NO (NC)	PVC / 5 m	0111-472
UNS-MS1/4-K1-BN30/3	SPDT	PVC / 1 m	0111-473
UNS-MS1/4-K3-BN30/3	SPDT	PVC / 3 m	0111-474
UNS-MS1/4-K5-BN30/3	SPDT	PVC / 5 m	0111-475

Dimensions (in mm)

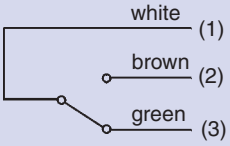


Colour Code

NO (NC)



SPDT



12 / 04 UNS US 04/1

Type UNS-VA1/4 VA52 (-HT)

Technical Data

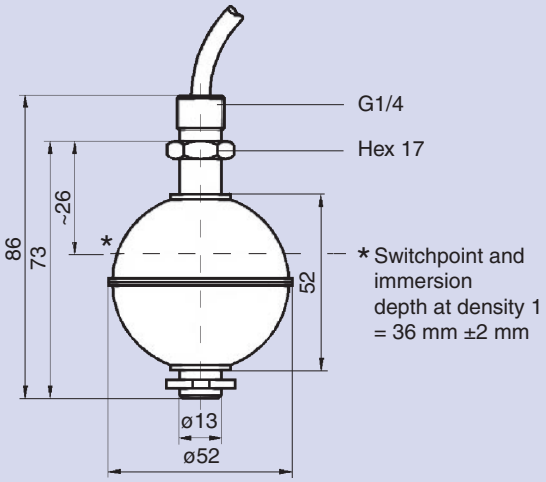
Stem and Mounting Thread	:	VA 1/4 = W.Nr. 1.4571, G1/4
Float	:	VA 52 = W.Nr. 1.4571, ø 52 mm
Max. Operating Pressure	:	40 bar (Float / +20 °C)
Max. Operating Temperature	:	-10 °C...+105 °C, PVC-Cable -40 °C...+150 °C, Silicone cable (-HT)
Min. Fluid Specific Gravity	:	0,78 g/cm³
Mounting Position	:	vertical, ±30°, through top or bottom
Protection Class	:	IP54
Electrical Connection	:	PVC-cable, max.3 x 0,34 mm² Silicone cable (-HT), max. 3 x 0,5 mm² 1 m / 3 m / 5 m length
Contact Mode	:	1 - SPST-switch (NO) 2 - SPST-switch (NC) 3 - SPDT-switch
Max. Contact Rating	:	1 - 250 V AC/DC / 3,0 A / 100 VA/W 2 - 250 V AC/DC / 3,0 A / 100 VA/W 3 - 140 V AC/DC / 1,0 A / 60 VA/W
Weight	:	appr. 150 g
Approval	:	ATEX on request

By turning the float upside down the function of the switch contact can be changed from NO (standard) in NC or vice versa.
(Not possible with SPDT contacts)
The contact modes (NO or NC) are defined on the basis of an empty tank and for a level switch mounted through the top.

Order Numbers

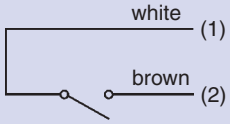
Type	Contact Mode	Cable Type/Length	Order Number
UNS-VA1/4-K1-VA52/1(2)	NO (NC)	PVC / 1 m	0111-482
UNS-VA1/4-K3-VA52/1(2)	NO (NC)	PVC / 3 m	0111-483
UNS-VA1/4-K5-VA52/1(2)	NO (NC)	PVC / 5 m	0111-484
UNS-VA1/4-K1-VA52/3	SPDT	PVC / 1 m	0111-485
UNS-VA1/4-K3-VA52/3	SPDT	PVC / 3 m	0111-486
UNS-VA1/4-K5-VA52/3	SPDT	PVC / 5 m	0111-487
UNS-VA1/4-K1-VA52/1(2)-HT	NO (NC)	Silikon / 1 m	0111-488
UNS-VA1/4-K3-VA52/1(2)-HT	NO (NC)	Silikon / 3 m	0111-489
UNS-VA1/4-K5-VA52/1(2)-HT	NO (NC)	Silikon / 5 m	0111-490
UNS-VA1/4-K1-VA52/3-HT	SPDT	Silikon / 1 m	0111-491
UNS-VA1/4-K3-VA52/3-HT	SPDT	Silikon / 3 m	0111-492
UNS-VA1/4-K5-VA52/3-HT	SPDT	Silikon / 5 m	0111-493

Dimensions (in mm))

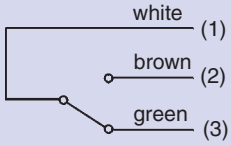


Colour Code

NO (NC)



SPDT



Type UNS-MS3/8-BN30

Technical Data

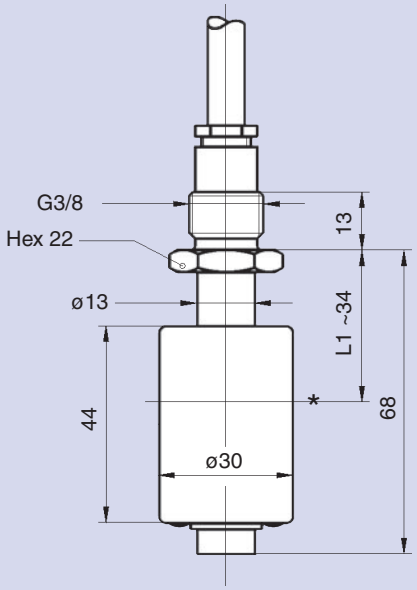
Stem and Mounting Thread	:	MS 3/8 = Brass G3/8
Float	:	BN 30 = Buna N, Ø = 30 mm
Max. Operating Pressure	:	15 bar (Float / +20 °C)
Max. Operating Temperature	:	-20 °C...+100 °C, (Oil) -20 °C...+80 °C, (Water)
Min. Fluid Specific Gravity	:	0,60 g/cm³
Mounting Position	:	vertical, ±30°, through top or bottom
Protection Class	:	IP54
Electrical Connection	:	PVC-cable, max.3 x 0,34 mm² 1 m / 3 m / 5 m length
Contact Mode	:	1 - SPST-switch (NO) 2 - SPST-switch (NC) 3 - SPDT-switch
Max. Contact Rating	:	NO / NC: 250 V AC / DC 3 A, 100 VA / W SPDT: 140 V AC / DC 1 A, 60 VA / W
Weight	:	appr. 250 g
Approval	:	ATEX on request

By turning the float upside down the function of the switch contact can be changed from NO (standard) in NC or vice versa.
(Not possible with SPDT contacts)
The contact modes (NO or NC) are defined on the basis of an empty tank and for a level switch mounted through the top.

Order Numbers

Type	Contact Mode	Cable Type/Length	Order Number
UNS-MS3/8-K1-BN30/1(2)	NO (NC)	PVC / 1 m	0111-476
UNS-MS3/8-K3-BN30/1(2)	NO (NC)	PVC / 3 m	0111-477
UNS-MS3/8-K5-BN30/1(2)	NO (NC)	PVC / 5 m	0111-478
UNS-MS3/8-K1-BN30/3	SPDT	PVC / 1 m	0111-479
UNS-MS3/8-K3-BN30/3	SPDT	PVC / 3 m	0111-480
UNS-MS3/8-K5-BN30/3	SPDT	PVC / 5 m	0111-481

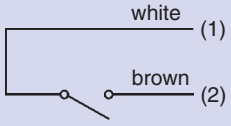
Dimensions (in mm)



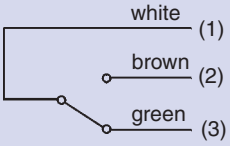
* Switchpoint and immersion depth at density 1 = 20 mm ±2 mm

Colour Code

NO (NC)



SPDT



12 / 04 UNS US 04/1

Type UNS-VA3/8 VA52 (-HT)

Technical Data

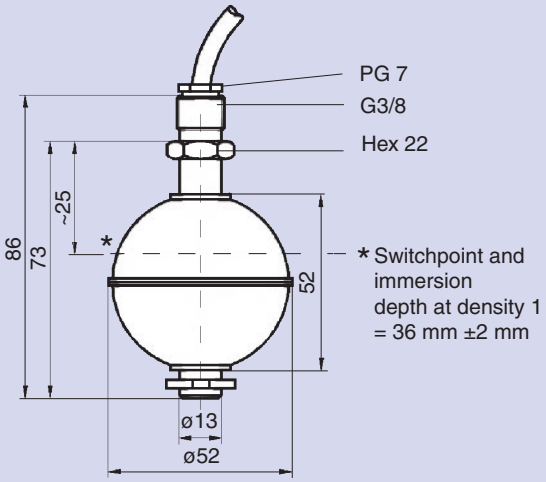
Stem and Mounting Thread	:	VA 3/8 = W.Nr. 1.4571, G3/8
Float	:	VA 52 = W.Nr. 1.4571, ø 52 mm
Max. Operating Pressure	:	40 bar (Float / +20 °C)
Max. Operating Temperature	:	-10 °C...+105 °C, PVC-Cable -40 °C...+150 °C, Silicone cable (-HT)
Min. Fluid Specific Gravity	:	0,78 g/cm³
Mounting Position	:	vertical, ±30°, through top or bottom
Protection Class	:	IP54
Electrical Connection	:	PVC-cable, max.3 x 0,34 mm² Silicone cable (-HT), max. 3 x 0,5 mm² 1 m / 3 m / 5 m length
Contact Mode	:	1 - SPST-switch (NO) 2 - SPST-switch (NC) 3 - SPDT-switch
Max. Contact Rating	:	NO / NC: 250 V AC / DC 3 A, 100 VA / W SPDT: 140 V AC / DC 1 A, 60 VA / W
Weight	:	appr. 250 g
Approval	:	ATEX and shipbuilding on request

By turning the float upside down the function of the switch contact can be changed from NO (standard) in NC or vice versa.
(Not possible with SPDT contacts)
The contact modes (NO or NC) are defined on the basis of an empty tank and for a level switch mounted through the top.

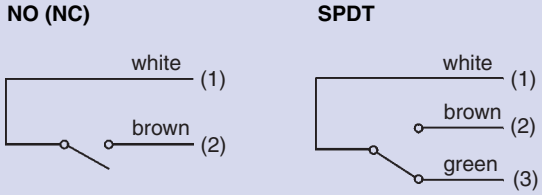
Order Numbers

Type	Contact Mode	Cable Type/Length	Order Number
UNS-VA3/8-K1-VA52/1(2)	NO (NC)	PVC / 1 m	0111-494
UNS-VA3/8-K3-VA52/1(2)	NO (NC)	PVC / 3 m	0111-495
UNS-VA3/8-K5-VA52/1(2)	NO (NC)	PVC / 5 m	0111-496
UNS-VA3/8-K1-VA52/3	SPDT	PVC / 1 m	0111-497
UNS-VA3/8-K3-VA52/3	SPDT	PVC / 3 m	0111-498
UNS-VA3/8-K5-VA52/3	SPDT	PVC / 5 m	0111-499
UNS-VA3/8-K1-VA52/1(2)-HT	NO (NC)	Silikon / 1 m	0111-500
UNS-VA3/8-K3-VA52/1(2)-HT	NO (NC)	Silikon / 3 m	0111-501
UNS-VA3/8-K5-VA52/1(2)-HT	NO (NC)	Silikon / 5 m	0111-502
UNS-VA3/8-K1-VA52/3-HT	SPDT	Silikon / 1 m	0111-503
UNS-VA3/8-K3-VA52/3-HT	SPDT	Silikon / 3 m	0111-504
UNS-VA3/8-K5-VA52/3-HT	SPDT	Silikon / 5 m	0111-505

Dimensions (in mm))



Colour Code



Level Switches made of Brass with G3/8 - Mounting Thread and angled 90°

Type UNS90-MS3/8-BN30

Technical Data

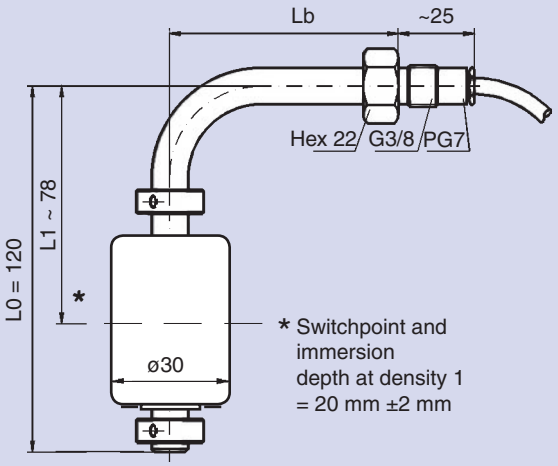
Stem and Mounting Thread	: MS 3/8 = Brass, G3/8/Lb = 75 ± 5 mm
Float	: BN 30 = Buna N, Ø = 30 mm
Max. Operating Pressure	: 15 bar (Float / +20 °C)
Max. Operating Temperature	: -20 °C...+100 °C, (Oil) -20 °C...+80 °C, (Water)
Min. Fluid Specific Gravity	: 0,60 g/cm³
Mounting Position	: vertical, ±30°, side mounted
Protection Class	: IP65
Electrical Connection	: PVC-cable, max.3 x 0,34 mm² 1 m length
Contact Mode	: 1 - SPST-switch (NO) 2 - SPST-switch (NC) 3 - SPDT-switch
Max. Contact Rating	: 1 - 250 V AC/DC / 3,0 A / 100 VA/W 2 - 250 V AC/DC / 3,0 A / 100 VA/W 3 - 140 V AC/DC / 1,0 A / 60 VA/W
Weight	: appr. 250 g
Special Design	: also available as UNS-S-MS... with shipbuilding approval

The contact modes (NO or NC) are defined on the basis of an empty tank and for a level switch mounted through the top.

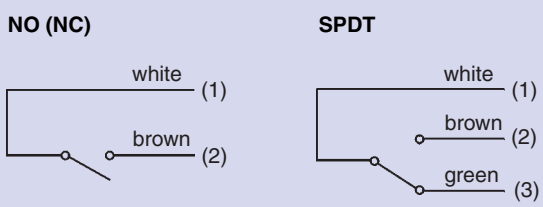
Order Numbers

Type	Contact Mode	Cable Type/Length	Order Number
UNS90-MS3/8-BN30/1	NO	PVC / 1 m	0111-517
UNS90-MS3/8-BN30/2	NC	PVC / 1 m	0111-518
UNS90-MS3/8-BN30/3	SPDT	PVC / 1 m	0111-519

Dimensions (in mm)



Colour Code



12 / 04 UNS US 04/1

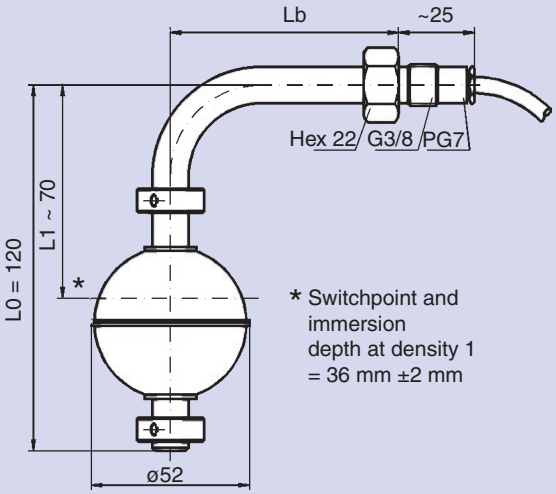
Type UNS90-VA3/8 VA52 (-HT)

Technical Data

Stem and Mounting Thread	: VA 3/8 = W.Nr. 1.4571, G3/8/Lb = 75 ± 5 mm
Float	: VA 52 = W.Nr. 1.4571, ø 52 mm
Max. Operating Pressure	: 40 bar (Float / +20 °C)
Max. Operating Temperature	: -10 °C...+105 °C, PVC-Cable -40 °C...+150 °C, Silicone cable (-HT)
Min. Fluid Specific Gravity	: 0,78 g/cm³
Mounting Position	: vertical, ±30°, side mounted
Protection Class	: IP54
Electrical Connection	: PVC-cable, max.3 x 0,34 mm² Silicone cable (-HT), max. 3 x 0,5 mm² 1 m length
Contact Mode	: 1 - SPST-switch (NO) 2 - SPST-switch (NC) 3 - SPDT-switch
Max. Contact Rating	: 1 - 250 V AC/DC / 3,0 A / 100 VA/W 2 - 250 V AC/DC / 3,0 A / 100 VA/W 3 - 140 V AC/DC / 1,0 A / 60 VA/W
Weight	: appr. 250 g
Special Design	: also available as UNS-S-MS... with shipbuilding approval

The contact modes (NO or NC) are defined on the basis of an empty tank and for a level switch mounted through the top.

Dimensions (in mm))

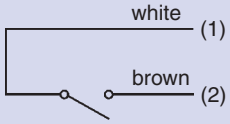


Order Numbers

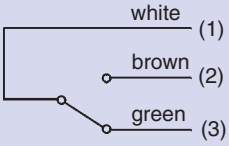
Type	Contact Mode	Cable Type/Length	Order Number
UNS90-VA3/8-VA52/1	NO	PVC / 1 m	0111-346
UNS90-VA3/8-VA52/2	NC	PVC / 1 m	0111-407
UNS90-VA3/8-VA52/3	SPDT	PVC / 1 m	0111-117
UNS90-VA3/8-VA52/1-HT	NO	Silikon / 1 m	0111-520
UNS90-VA3/8-VA52/2-HT	NC	Silikon / 1 m	0111-521
UNS90-VA3/8-VA52/3-HT	SPDT	Silikon / 1 m	0111-522

Colour Code

NO (NC)



SPDT



12 / 04 UNS US 04/1

Type UNS-VA/SB4 Bilge Guard

Technical Data

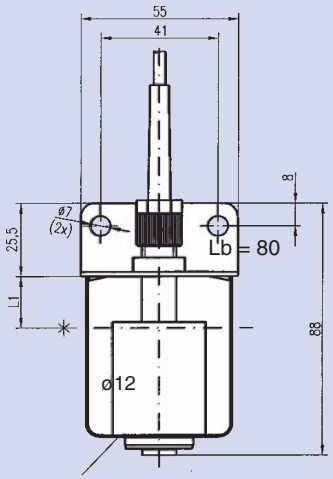
Materials:		
Stem, Bracket and Float Chamber	:	Stainless Steel
Float	:	PE
Cable	:	Polymer, halogen-free, UL-V0
Cap Nut	:	PA
Max. Operating Pressure	:	3 bar (Float / +20 °C)
Max. Operating Temperature	:	-20 °C...+70 °C
Min. Fluid Specific Gravity	:	0,80 g/cm³
Immersion Depth		
at Density 1	:	28 ±2 mm L1 ~18 mm
at Density 0,8	:	35 ±2 mm L1 ~11 mm
Mounting Position	:	Vertical ±15°
Protection Class	:	IP67
Electrical Connection	:	Polymer-cable, 2 x 0,75 mm²
Cable Length	:	2 m / 5 m / 10 m / 15 m
Contact Mode	:	SPST-switch (NO) (marking at bottom) By turning the float upside down: SPST-switch (NC) (marking at top)
Contact Rating	:	max. 230 V AC / DC max. 2,0 A max. 40 VA / W
Weight	:	appr. 175 g
Approvals	:	GL / DNV / BV ATEX on request

The contact modes (NO or NC) are defined on the basis of an empty tank and for a level switch mounted through the top.

Order Numbers

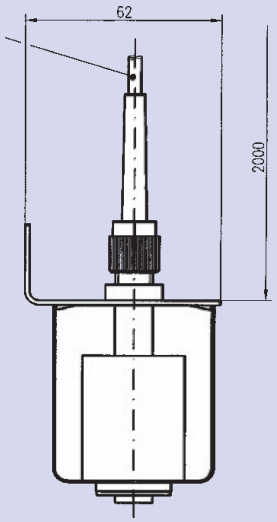
Type	Contact Mode	Cable Type/Length	Order Number
UNS-VA/SB4 Bilge Guard	NC (NO)	Polymere / 2 m	0111-509
	NC (NO)	Polymere / 5 m	0111-529
	NC (NO)	Polymere / 10 m	0111-524
	NC (NO)	Polymere / 15 m	0111-528

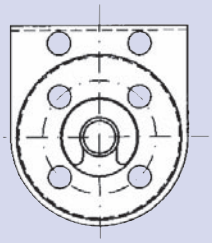
Dimensions (in mm)



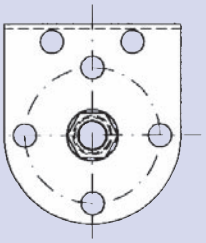
Float marking (notch)

Halogen-free polymer-cable 5,7 mm OD, lead wires 2 x 0,75 mm²



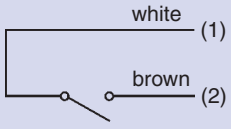


Bottom view



Top view

Colour Code NO (NC)



12 / 04 UNS US 04/1

Type UNS-VA/SB5 Bilge Guard

Technical Data

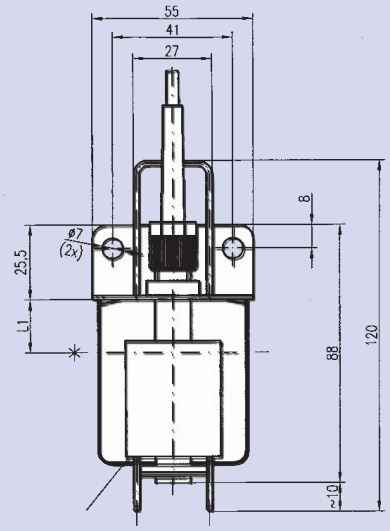
Materials:	
Stem, Bracket and Float Chamber	: Stainless Steel
Float	: PE
Cable	: Polymer, halogen-free, UL-V0
Cap Nut	: PA
Max. Operating Pressure	: 3 bar (Float / +20 °C)
Max. Operating Temperature	: -20 °C...+70 °C
Min. Fluid Specific Gravity	: 0,80 g/cm³
Immersion Depth	
at Density 1	: 28 ±2 mm L1 ~18 mm
at Density 0,8	: 35 ±2 mm L1 ~11 mm
Mounting Position	: Vertical ±15°
Protection Class	: IP67
Electrical Connection	: Polymer-cable, 2 x 0,75 mm²
Cable Length	: 2 m / 10 m / 15 m
Contact Mode	: SPST-switch (NO) (marking at bottom) By turning the float upside down: SPST-switch (NC) (marking at top)
Contact Rating	: max. 230 V AC / DC max. 2,0 A max. 40 VA / W
Weight	: appr. 180 g
Approvals	: GL / DNV / BV ATEX on request

The contact modes (NO or NC) are defined on the basis of an empty tank and for a level switch mounted through the top.

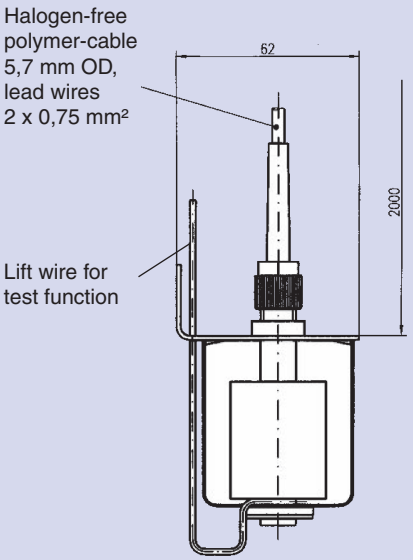
Order Numbers

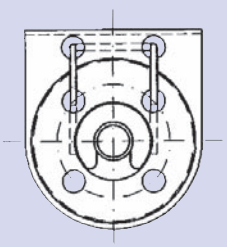
Type Mode	Contact	Cable Type/Length	Order Number
UNS-VA/SB5 Bilge Guard plus	NC (NO)	Polymere / 2 m	0111-510
	NC (NO)	Polymere / 10 m	0111-531
	NC (NO)	Polymere / 15 m	0111-534

Dimensions (in mm))

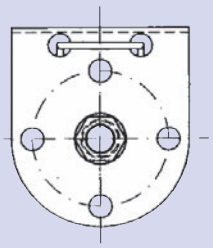


Float marking (notch)



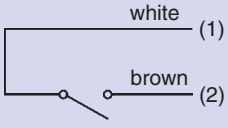


Bottom view



Top view

Colour Code NO (NC)



Level Switch made of PVC-hard with G1/8- resp. G3/8 - Mounting Thread

Type UNS-PVC1/8-PVC25 Type UNS-PVC3/8-PVC25

Technical Data

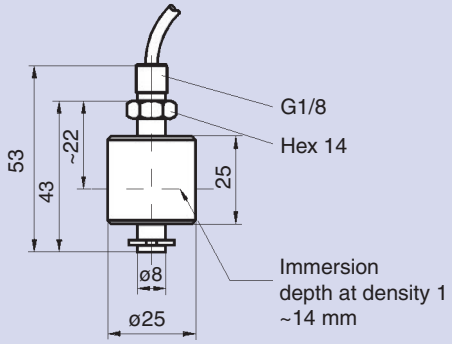
Stem and Mounting Thread	: PVC1/8 = PVC-hard, G1/8 PVC3/8 = PVC-hard, G3/8
Float	: PVC25 = PVC-hard, Ø 25 mm
Max. Operating Pressure	: 3 bar (Float / +20 °C)
Max. Operating Temperature	: -10 °C...+65 °C
Min. Fluid Specific Gravity	: 0,70 g/cm³
Mounting Position	: vertical, ±30°, through top or bottom
Protection Class	: IP54
Electrical Connection	: PVC-cable, max.3 x 0,25 mm² 1 m length (without locknut)
Contact Mode	: 1 - SPST-switch (NO) 2 - SPST-switch (NC) 3 - SPDT-switch
Max. Contact Rating	: NO / NC: 48 V AC / DC 0,5 A, 10 VA / W SPDT: 48 V AC / DC 0,3 A, 3 VA / W
Weight	: appr. 35 g

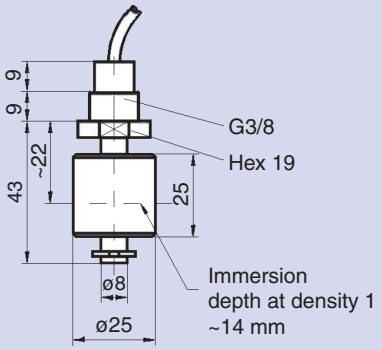
The contact modes (NO or NC) are defined on the basis of an empty tank and for a level switch mounted through the top.

Order Numbers

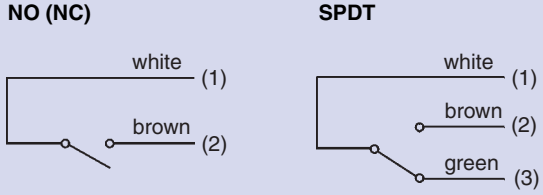
Type	Contact Mode	Cable Type/Length	Order Number
UNS-PVC1/8-PVC25/1	NO	PVC / 1 m	0111-196
UNS-PVC1/8-PVC25/2	NC	PVC / 1 m	0111-425
UNS-PVC1/8-PVC25/3	SPDT	PVC / 1 m	0111-197
UNS-PVC3/8-PVC25/1	NO	PVC / 1 m	0111-198
UNS-PVC3/8-PVC25/2	NC	PVC / 1 m	0111-426
UNS-PVC3/8-PVC25/3	SPDT	PVC / 1 m	0111-427
PVC-Mutter G1/8			901-0524
PVC-Mutter G3/8			901-0525

Dimensions (in mm)





Colour Code



Level Switch made of PTFE with G1/4 - Mounting Thread

Type UNS-PTFE1/4-PTFE55

Technical Data

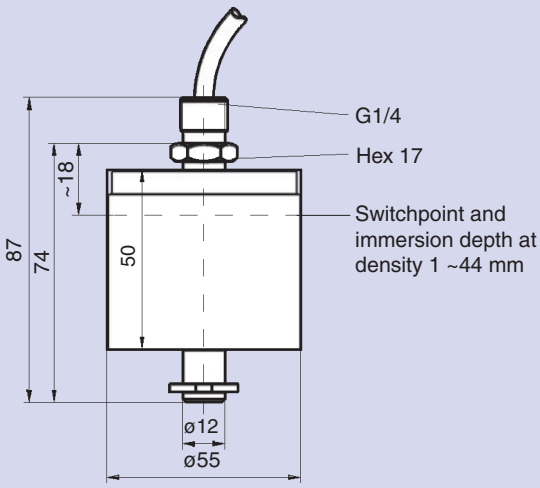
Stem and Mounting Thread	:	PTFE1/4 = Teflon, G1/4
Float	:	PTFE55 = Teflon, Ø = 55 mm
Max. Operating Pressure	:	3 bar (Float / +20 °C)
Max. Operating Temperature	:	-30 °C...+150 °C, PTFE
Min. Fluid Specific Gravity	:	1,0 g/cm³
Mounting Position	:	vertical, ±30°, through top or bottom
Protection Class	:	IP54
Electrical Connection	:	Silicone-cable, max.3 x 0,5 mm² 1 m length (without locknut)
Contact Mode	:	1 - SPST-switch (NO) 2 - SPST-switch (NC) 3 - SPDT-switch
Max. Contact Rating	:	NO / NC: 250 V AC / DC 3,0 A, 100 VA / W SPDT: 140 V AC / DC 1,0 A, 60 VA / W
Weight	:	appr. 135 g

The contact modes (NO or NC) are defined on the basis of an empty tank and for a level switch mounted through the top.

Order Numbers

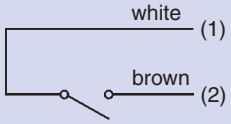
Type	Contact Mode	Cable Type/Length	Order Number
UNS-PTFE1/4-PTFE55/1	NO	Silicone / 1 m	0111-328
UNS-PTFE1/4-PTFE55/2	NC	Silichone / 1 m	0111-376
UNS-PTFE1/4-PTFE55/3	SPDT	Silicone / 1 m	0111-088

Dimensions (in mm))

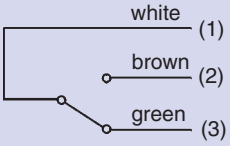


Colour Code

NO (NC)



SPDT



12 / 04 UNS US 04/1

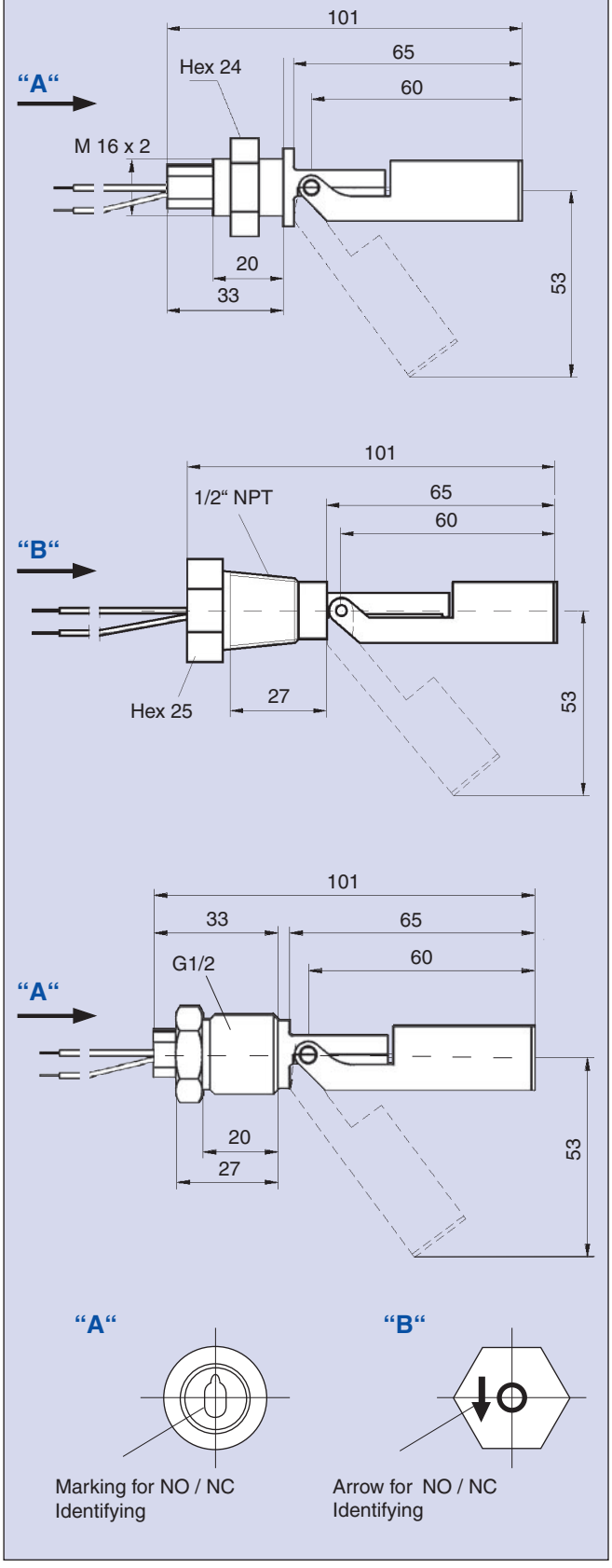
Level Switch made of Polyamide for Side Mounting

Type UNS-PA16-PA18 UNS-PA1/2“NPT-PA18 UNS-PA16-PA18-MS-A

Technical Data

Float and Fitting	:	Polyamide 6.6 (colour: blue)
Gasket	:	Silicone (at M 16 x 2.0 AG)
Mounting Element	:	PA16 = Polyamide, M 16 x 2.0 AG (Mounting thread) PA1/2“ NPT = Polyamide, 1/2“ NPT Thread PA16-MS-A = G1/2-Thread-adapter
Float	:	PA18 = Polyamide, ø = 18 mm
Max. Operating Pressure	:	5 bar (depends on temperature)
Max. Operating Temperature	:	-20 °C...+120 °C (Medium) -20 °C...+60 °C (Ambient)
Min. Fluid Specific Gravity	:	0,70 g/cm³
Mounting Position	:	Horizontal
Protection Class	:	IP54
Electrical Connection	:	PVC-cable, max. 2 x 0,34 mm², 1 m length
Contact Mode	:	1 - SPST-switch (NO) (Marking on top / arrow down) 2 - SPST-switch (NC) (Marking on bottom / arrow up)
Contact Rating	:	230 V AC/DC / 3,0 A / 60 VA/W
Weight	:	appr. 40 g
Max. Starting Torque	:	2,67 Nm Only UNS-PA16-PA18

Dimensions (in mm)



Order Numbers

Type	Contact Mode	Cable Type/Length	Order Number
UNS-PA16/PA18	NO (NC)	PVC / 1 m	0111-199
UNS-PA1/2“NPT-PA18	NO (NC)	PVC / 1 m	0111-203
UNS-PA16-PA18-MS-A	NO (NC)	PVC / 1 m	0111-326

12 / 04 UNS US 04/1

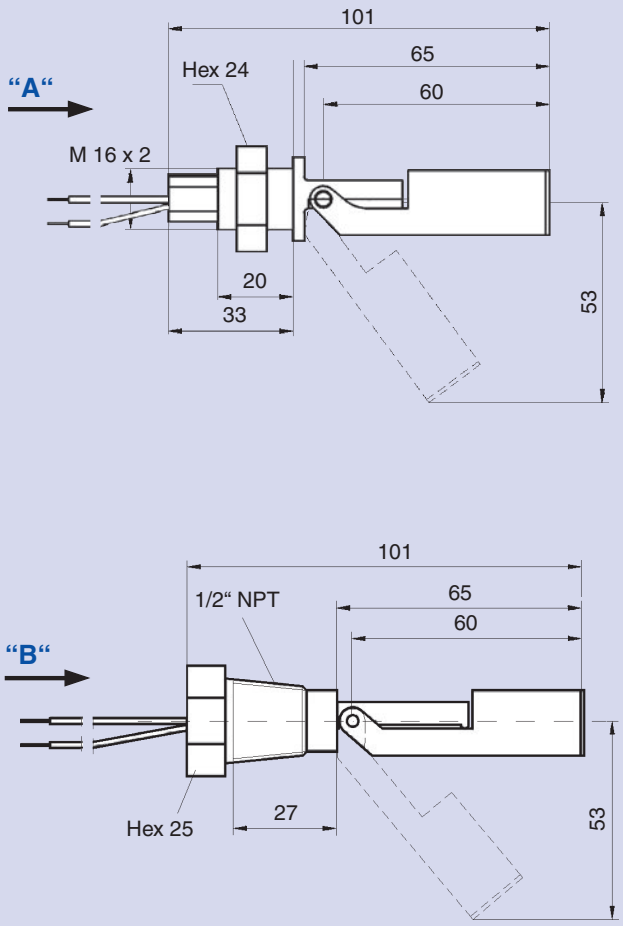
Level Switch made of Polypropylene for Side Mounting

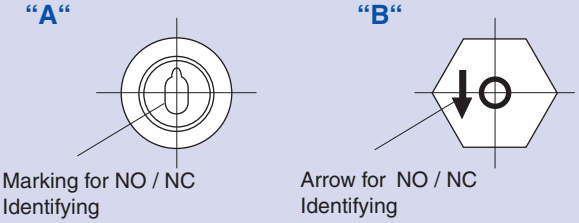
Type UNS-PP16-PP18 Type UNS-PP1/2“NPT-PP18

Technical Data

Float and Fitting	:	Polypropylene (colour: red)
Gasket	:	Silicone (at M 16 x 2.0 AG)
Mounting Element	:	PP16 = Polypropylene, M 16 x 2.0 AG, (Mounting thread) PP1/2“ NPT = Polypropylene, 1/2“ NPT Thread
Float	:	PP18 = Polypropylene, ø = 18 mm
Max. Operating Pressure	:	5 bar (depends on temperature)
Max. Operating Temperature	:	-20 °C...+90 °C (Medium) -20 °C...+60 °C (Ambient)
Min. Fluid Specific Gravity	:	0,65 g/cm³
Mounting Position	:	Horizontal
Protection Class	:	IP54
Electrical Connection	:	PVC-cable, max. 2 x 0,34 mm², 1 m length
Contact Mode	:	1 - SPST-switch (NO) (Marking on top / arrow down) 2 - SPST-switch (NC) (Marking on bottom / arrow up)
Contact Rating	:	230 V AC/DC / 3,0 A / 60 VA/W
Weight	:	appr. 40 g
Max. Starting Torque	:	2,67 Nm Only UNS-PP16-PP18

Dimensions (in mm))





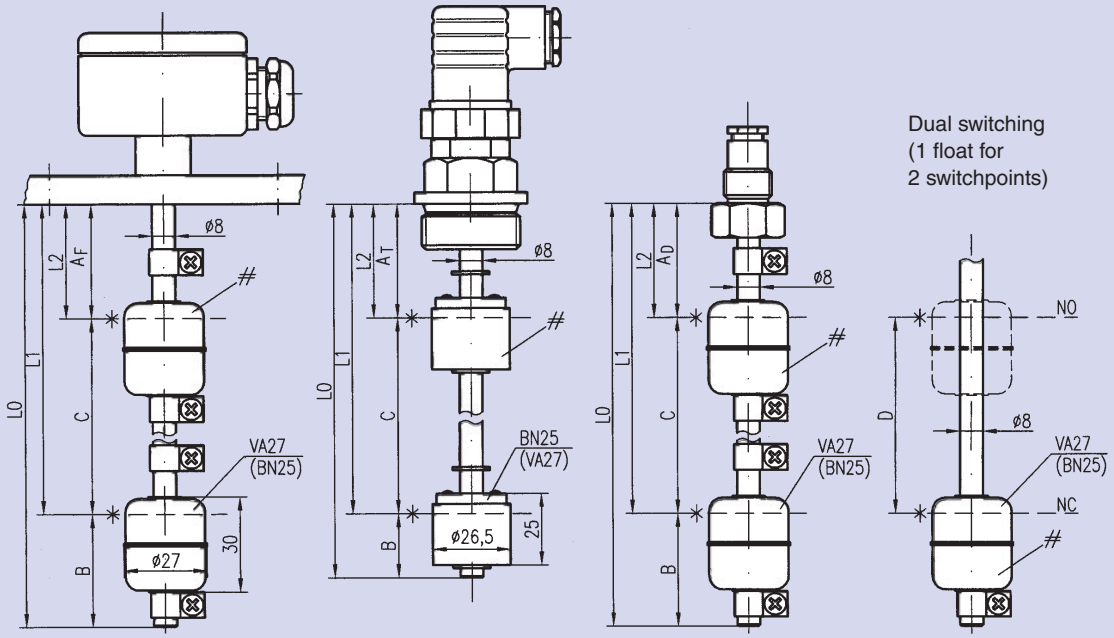
Order Numbers

Type	Contact Mode	Cable Type/Length	Order Number
UNS-PP16/PP18	NO (NC)	PVC / 1 m	0111-210
UNS-PP1/2“NPT-PP18	NO (NC)	PVC / 1 m	0111-327

12 / 04 UNS US 04/1

Multi Level Switches Type UNS-1000

Dimensions
(in mm)



1. Length tolerance ±3 mm
2. L0 = max. 1000 mm

* Immersion depth at density 1:
VA27 = 21 ±2 mm
BN25 = 13 ±2 mm

# Float position:
VA27 = NO/NC ⇒ see float marking
SPDT ⇒ NO-function
BN30 = NO ⇒ compound points at bottom
NC ⇒ compound points at top
SPDT ⇒ compound points at bottom

Function

The multi Level Switch Series UNS-1000 can be supplied with up to 5 switchpoints (see max. switchpoints). Besides the float operated reed contacts to detect liquid levels, the UNS-1000 can be supplied also with a PT100 temperature sensor (PT100 = switchpoint).

A wide selection of mounting elements, electrical connections, various materials and options allow you to “design” your own switch, within the given dimension limits, for your particular application.(see “Variations”)
The min. dimensions are based upon the medium water. Depending on the density of other fluids this dimension can vary several millimetres.
The contact modes (NO or NC) are defined on the basis of an empty tank and for installation through the top or through the bottom (when specified as “-U”). When not specified otherwise we will set the switch position for density 1 (water) and the switch action to be on moving upward.

Temperature sensor PT100 = dimension B + 10 mm

Switchpoint Dimensions

Dimensions / Float type	Min. distances in mm					
	A_F	A_T	A_D	B	C	D
VA27	26	42	38	40	65	32
BN25	--	37	34	25	45	32

When using -DR: Dimension B + 20 mm!

Max. Switchpoints

	KL6	KL12	ST1	ST2	Pg Cable-connect.
Connect. group 1	5	5	2	5	3
Connect. group 2	2	4	1	2	1
Connect. group 3	3	4	1	3	2
Connect. group 4	2	3	1	2	1

Variations

Material	Mounting	Electr. connect.	Float	Switch-points
VA	T1 FL2 FL3	ST1 ST2 KL6 KL12 Pg K	VA27	See max. switch-points
	G3/8	Pg K		
Ms	T1	ST1 ST2 KL6 KL12 Pg K	BN25	See max. switch-points
	G3/8	Pg K		

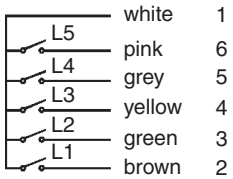
12 / 04 UNS US 04/1

Multi Level Switches Type Typ UNS-1000

Technical Data

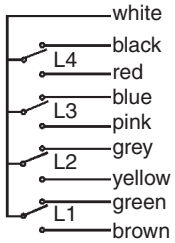
Max. Operating Pressure	: 15 bar, BN- and VA-float
Max. Temperature Range	: -10 °C...+105 °C, PVC-cable -40 °C...+150 °C, Silicone cab. (-HT) and KL6 with 5 terminals max.
Min. Fluid Specific Gravity	: See specifications below
Mounting Position	: Vertical, ±30°, through top or bottom
Protection Class	: IP65 for ST-, KL- and PG-design IP67, IP68 on request IP54 for K-design
Weight	: Depends on length and design
Special Design	:- Damping Tube - DR - High Temperature Application (up to +150 °C) - HT - Mounting through bottom - U - PT100-Element - PT100 - Vertical Adjustment (s. also P20) - ATEX-approval EEX ia

Group 1 SPST



Terminal	
white	1
pink	6
grey	5
yellow	4
green	3
brown	2

Group 2 SPDT

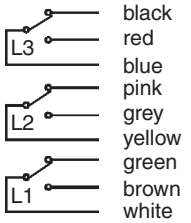


Terminal	
white	1
black	9
red	8
blue	7
pink	6
grey	5
yellow	4
green	3
brown	2

Group 3 SPST

Terminal	
red	8
blue	7
pink	6
grey	5
yellow	4
green	3
brown	2
white	1

Group 4 SPDT



Terminal	
black	9
red	8
blue	7
pink	6
grey	5
yellow	4
green	3
brown	2
white	1

Specifications for Multi Level Switches Type UNS-1000

UNS-1000 - VA/T1 - KL6 - VA27 - L2/2.1 - U - HT - DR - VV - PT100 - Exi

Options, please specify when needed

Contact Mode / **Contact Rating** / **Order: L1, L2, L3, L4, L5**

1 - SPST (NO)	230 V AC / DC, 2 A, 40 VA / W	
2 - SPST (NC)	230 V AC / DC, 2 A, 40 VA / W	
3 - SPDT	150 V AC / 100 V DC, 0,2 A, 3 VA / W	(ATEX see page 4)

Total Length L0 = . . . mm (max. 1000 mm)

Specify with your order: L1 = . . . mm, L2 = . . . mm, etc.

Number of Switchpoints
L1 = 1 Switchpoint
L2 = 2 Switchpoints
L3 = 3 Switchpoints
L4 = 4 Switchpoints
L5 = 5 Switchpoints

See also „Connection Groups“ in table „Max. Switchpoints“ on left page

Float type	min. Density Medium	Material	Form	Dia-meter	max. Temp.	Pressure (+20 °C)
BN25	0,57 g/cm³	Buna N	Cylinder	25 mm	100 °C	15 bar
VA27	0,71 g/cm³	Stainl. St. W.Nr. 1.4571	Cylinder	27 mm	150 °C	15 bar
VA44*	0,67 g/cm³	Stainl. St. W.Nr. 1.4571	Ball	44 mm	150 °C	15 bar

* Option (Others on request)

Electrical Connection

ST1	- Cube Plug DIN 43650, 3-pin + Earth
ST2	- Angle Plug DIN 43651, 6-pin + Earth
STDB	- Angle Plug with LED-Display DIN 43651, 6-pin + Earth
KL6	- Aluminum Terminal Box, 6 Terminals
KL12	- Aluminum Terminal Box, 9 Terminals
PG7	- PG7-Cable Gland with 1 m PVC-cable, -HT with silicone cable
K	- PCV-Cable sealed, specify length at order, -HT with silicone cable
	(Others on request)

Mounting Element

1/8	- G1/8 mounting thread : only with cable
3/8	- G3/8 mounting thread : only with -PG 7
T1	- G1 Tank screw (not with VA44 float)
T1½	- G1½ Tank screw (not with VA44 float)
T2*	- G2 Tank screw
FL2	- Flange DIN 2527, DN 32/PN 16
FL3	- Flange DIN 2527, DN 50/PN 16
* Option	(Others on request)

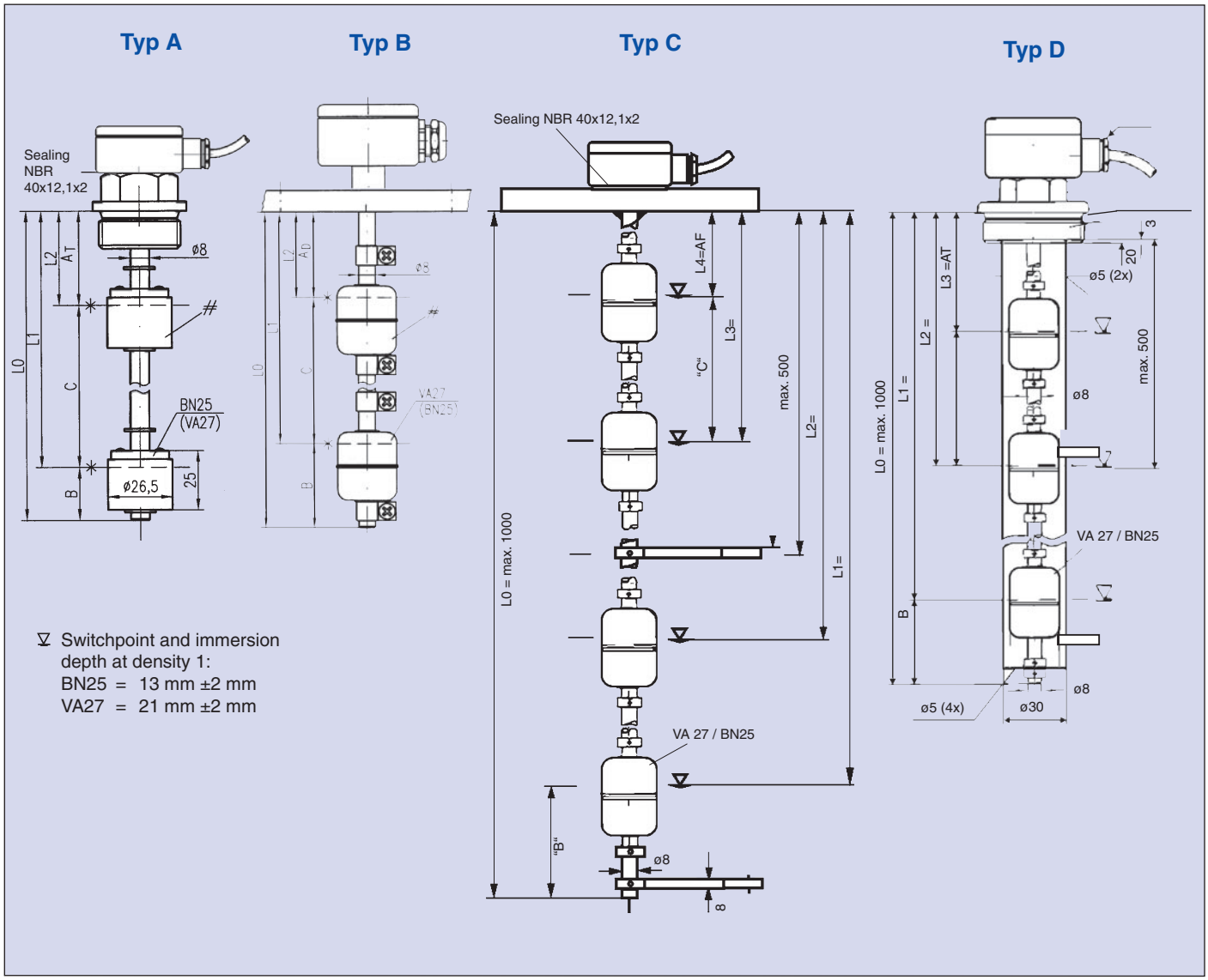
Material of Stem and Mounting Element

VA	- SS316 Ti 1.4571, 1.4408
MS	- Brass, W. Nr. MS58

Level Switches Type UNS-1000

Multi Level Switches Type UNS-1000 S

Abmessungen (in mm)



⧖ Switchpoint and immersion depth at density 1:
BN25 = 13 mm ±2 mm
VA27 = 21 mm ±2 mm

Min. Distances (in mm)

Dimensions / Float type	Type A			Type B			Type C			Type D		
	A	B	C	A	B	C	A	B	C	A	B	C
VA27	42	40	65	26	40	65	26	60	65	42	60	65
BN25	37	25	45	21	25	45	21	45	45	37	45	45

Multi Level Switches Type UNS-1000 S

Technical Data

The multi Level Switch Series UNS-1000-S is available for ship-building with certain limitations in order to comply with shock, vibration and environment requirements.
The approvals have listed four different versions based upon the maximum total length L0 and the different floats, these are:

A) Type A: L0 = max 500 mm
B) Type B: L0 = max 500 mm
C) Type C: L0 = max 1000 mm,
all floats, with bracket(s) at max. 500 mm spacing
D) Type D: L0 = max 1000 mm with slosh tube
and brackets at max. 500 mm spacing

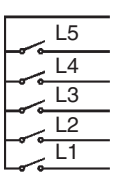
A wide selection of mounting elements, electrical connections and options allow you to “design” your own switch, within the given dimension limits, for your particular application.

Beside the standard SS 316 Ti / 1.4571 we can supply flanges in normal steel. Shipping and installation of switches with large flanges can be difficult and therefore a version with a 1” mounting plug to be installed on site in a flange with a 1” hole might be the answer, consult us for details.

For technical data, switch and operation limits of the UNS 1000-S series are as the standard version.

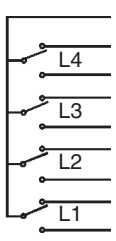
Contact Wiring and Colour Code

Group 1 SPST



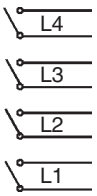
Terminal	
white	1
pink	6
grey	5
yellow	4
green	3
brown	2

Group 2 SPDT



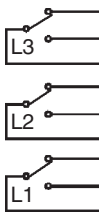
Terminal	
white	1
black	9
red	8
blue	7
pink	6
grey	5
yellow	4
green	3
brown	2

Group 3 SPST



Terminal	
red	8
blue	7
pink	6
grey	5
yellow	4
green	3
brown	2
white	1

Group 4 SPDT



Terminal	
black	9
red	8
blue	7
pink	6
grey	5
yellow	4
green	3
brown	2
white	1

Specifications for Multi Level Switches Type UNS-1000-S

UNS-1000-S - VA/T2/1 - KLS1 - VA27 - L2/2.1

Contact Mode / **Contact Rating** / **Order: L1, L2, L3, L4, L5**

1 - SPST (NO)	230 V AC/DC, 2 A, 40 VAW
2 - SPST (NC)	230 V AC/DC, 2 A, 40 VAW
3 - SPDT	150 V AC / 100 V DC, 0,2 A, 3 VA/W

Total Length L0 = . . . mm (max. 1000 mm)

Specify with your order: L1 = . . . mm, L2 = . . . mm, etc.

Number of Switchpoints
L1 = 1 Switchpoint
L2 = 2 Switchpoints
L3 = 3 Switchpoints
L4 = 4 Switchpoints
L5 = 5 Switchpoints

Float Type	min. Density Medium	Material	Form	Diameter	max. Temp.	Pressure (+20 °C)
BN25	0,57 g/cm³	Buna N	Cylinder	25 mm	100 °C	15 bar
VA27	0,71 g/cm³	Stainl. St. W.Nr. 1.4571	Cylinder	27 mm	150 °C	15 bar
VA44*	0,67 g/cm³	Stainl. St. W.Nr. 1.4571	Ball	44 mm	150 °C	15 bar

* Option

Electrical Connection

KLS1	- Aluminum Terminal Box, 6 Terminals
KLS2	- Aluminum Terminal Box, 9 Terminals
KS	- Cable with Shipbuilding Approvals

Mounting Element

T1	- Tank screw (not with VA44 float)
FL3	- Flange DIN 2527, DN 32/PN 16
FL4	- Flange DIN 2527, DN 50/PN 16

(Other flanges and mounting threads available on request)

Material of Stem and Mounting Element
VA - Stainless Steel, W. Nr. 1.4571, 1.4408

Level Switches Type UNS-1000-S

Float Chamber Design Type UNS-1000-G

Function

The Float chamber UNS-1000-G consists of a float switch type UNS 1000 with one switch point built into a float chamber made entirely of stainless steel which can be side-mounted on all tanks. This kind of installation allows easy operation control service performance without interrupting the operation of the unit if the supply piping is provided with shutoff and drain valves.

Application

This float chamber is mainly used for tanks (DN30) where a subsequent installation through the top is impossible. Also mixing containers with oscillating liquid surfaces can be controlled without problems.

Technical Data

Materials	
Chamber	: Stainless Steel (W. Nr. 1.4408)
Level Switch	: Stainless Steel
Terminal Box	: Aluminum
Max. Pressure	: 15 bar (at -10 °C...+90 °C)
Max. Temperature Range	: -40 °C...+150 °C (on request)
Min. Fluid Specific Gravity	: 0,71 g/cm³
Mounting Position	: Side mounted at tank, vertically, ±30°
Protection Class	: IP65
Electrical Connection	: KL-terminal box
Contact Mode	: 1 - SPST-switch (NO) 2 - SPST-switch (NC) 3 - SPDT-switch
Contact Rating NO / NC	: 230 V AC / DC, 2 A, 40 VA / W
SPDT	: 150 V AC / 100 V DC, 0,2 A, 3 VA / W
Weight	: appr. 800 g
Zulassung	: ATEX on request

By turning the float upside down the function of the switch contact can be changed from NO (standard) in NC or vice versa.

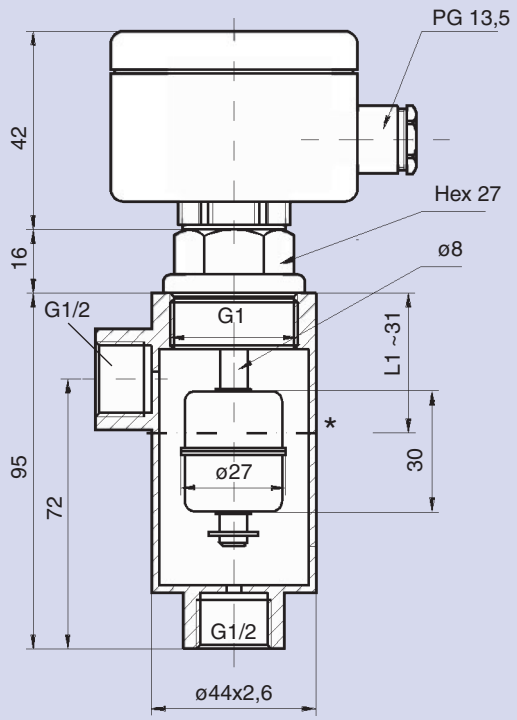
Installation Instructions

For maintenance purpose the installation should be in the way that the terminal box or the PG coupling are always on the top.

Order Numbers

Type	Contact Mode	Order Number
UNS-1000-G-VA27/1	NO	0112-461
UNS-1000-G-VA27/2	NC	0112-462
UNS-1000-G-VA27/3	SPDT	0112-463

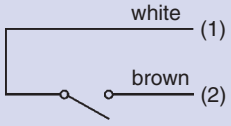
Dimensions (in mm)



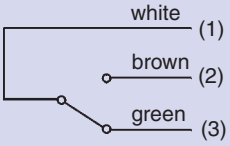
* Switchpoint and immersion depth at density 1 = 21 mm ±2 mm

Colour Code

NO (NC)



SPDT



12 / 04 UNS US 04/1

Multi Level Switches Type UNS-1000

Vertical Adjustments -VV

The UNS 1000 Level Switches can be supplied with a vertical Adjustment.

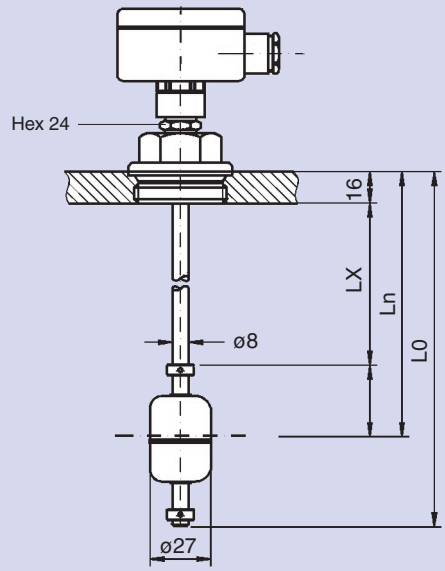
By unscrewing the sleeve (Hex 17) nut, only 1 turn, the whole stem with all floats and contacts can be moved up or down, at any time after installation, within the LX dimension

The maximum pressure for the -VV version is 5 bar regardless if the float would allow a higher pressure.

This -VV option can only be supplied with Flanges (-FL) or Plug (-T).

HT-version:
witht silicone cable only, KL6 or KL12
PT100:
PT100 = Switchpointt (note max. switchpoints)
Dimension B +10 mm when using PT100

Dimensions (in mm)**; VV - Vertical adjustment**



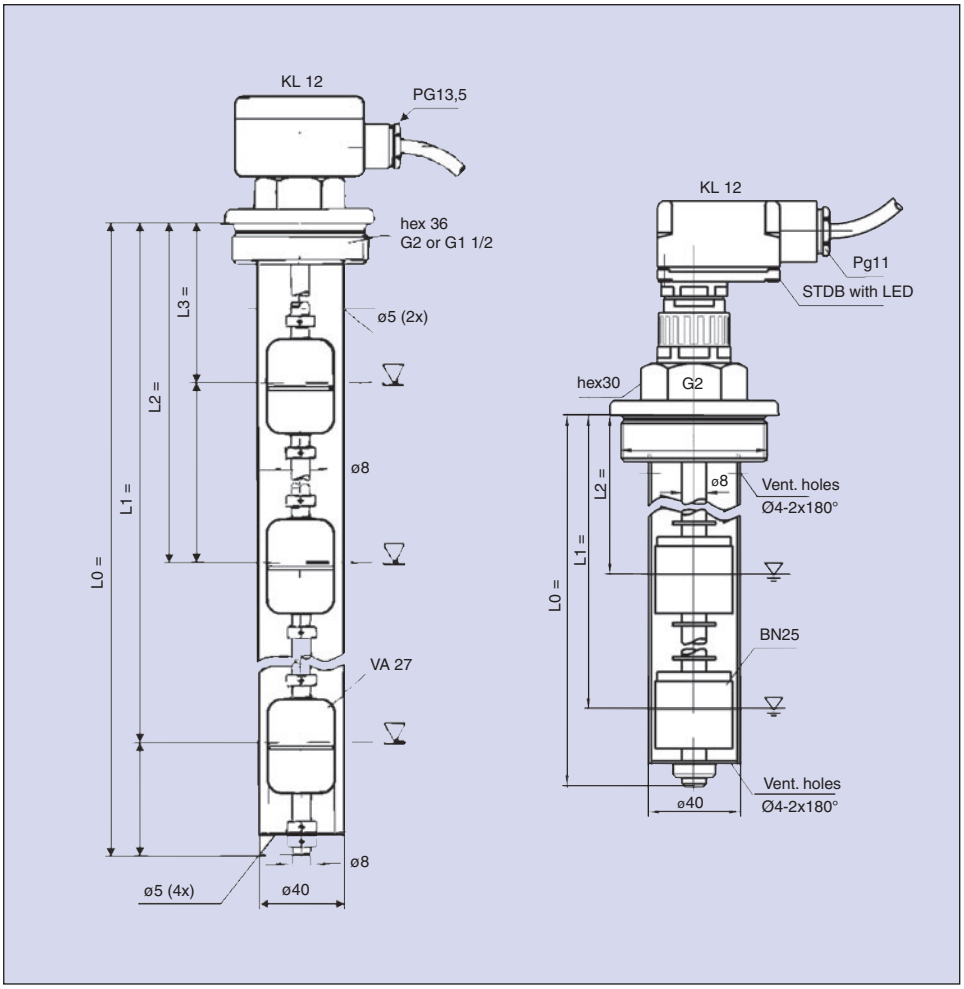
Slosh Tube -DR

Splash or stilling chamber tubes are useful to:
- protect the floats against other floating objects,
- protect the unit against rough handling,
- dampen oscillating fluid and float movements.

A groove in the mounting plug or flange centres the top of the tube, an end cap or disc with internal hexagon screws holds the bottom of the tube.

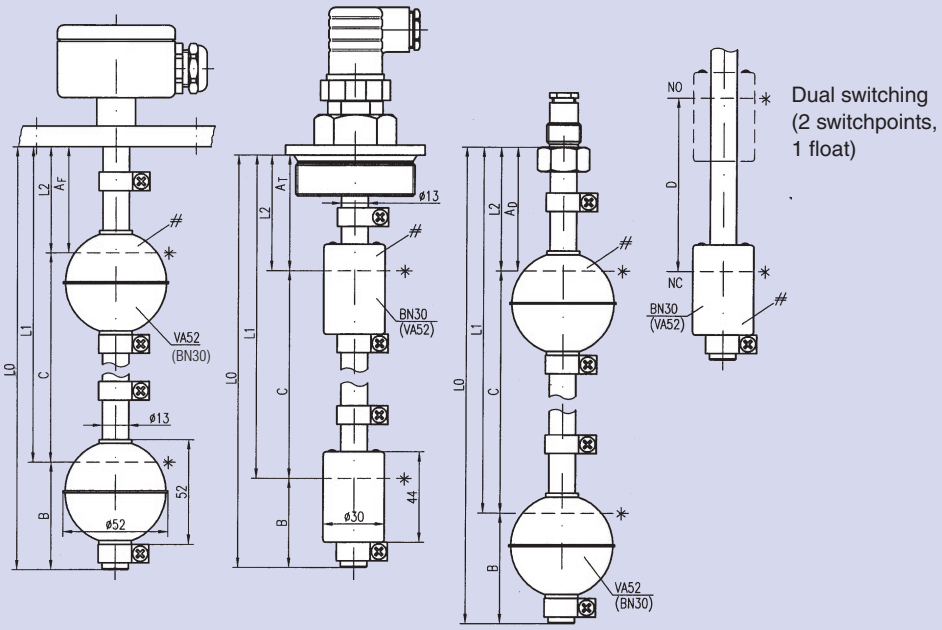
Depending on the length of the tube spacer(s) along the stem centres the stem within the tube to ensure unobstructed float movements.

Holes in the top of the tube are sized according to the application to optimize the dampening effect.



Multi Level Switches Type UNS-2000

Dimensions
(in mm)



1. Length tolerance ±3 mm
2. L0 = max. 3000 mm

* Immersion depth at density 1:
VA52 = 36 ±2 mm
BN30 = 20 ±2 mm

\# Float position:
VA52 = NO/NC ⇒ see float marking
SPDT ⇒ NO-function
BN30 = NO ⇒ compound points at bottom
NC ⇒ compound points at top
SPDT ⇒ compound points at bottom

Function

The multi Level Switch Series UNS 2000 can be supplied with up to 6 switchpoints (see max. switchpoints). Besides the float operated reed contacts to detect liquid levels, the UNS 2000 can be supplied also with a temperature sensor and/ or temperature contact(s), which are to handle as switchpoint(s) - please note max. switchpoints! A wide selection of mounting elements, electrical connections, various materials and options allow you to "design" your own switch, within the given dimension limits, for your particular application. Very long units or large flanges can cause high shipping and installation costs and "split" versions might be the answer. Consult us for the best combination.
The min. dimensions are based upon the medium water. Depending on the density of other fluids this dimension can vary several millimetres. The contact modes (NO or NC) are defined on the basis of an empty tank and for installation through the top or through the bottom (when specified as "-U"). When not specified otherwise we will set the switch position for density 1 (water) and the switch action to be on moving upward. Temperature sensor (PT100) and/ or the temperature switch, a Bi-metall hermetically sealed element, are installed only in the bottom of the stem. That means:
Dimensions B + 10 mm with temperature sensor PT100)
Dimensions B + 40 mm temperature switch (TP)

Switchpoint Dimensions

Dimensions / Float type	Min. distances in mm					
	A_F	A_T	A_D	B	C	D
VA52	32	52	44	55	85	55
BN30	--	60	52	39	77	55

When using -DR: Dimension B + 20 mm!

Max. Switchpoints

	KL6	KL12	ST1	ST2	Pg Cable-connect.
Connect. group 1	5	6	2	5	6
Connect. group 2	2	4	1	2	4
Connect. group 3	3	4	1	3	4
Connect. group 4	2	3	1	2	3

Variations

Material	Mounting	Electr. connect.	Float	Switch-points
VA	T2 FL3 FL4 FL5	ST1 ST2 KL6 KL12 Pg K	VA52	See max. switch-points
	G3/8	Pg K		
Ms	T2	ST1 ST2 KL6 KL12 Pg K	BN30	See max. switch-points
	G3/8	Pg K		

12 / 04 UNS US 04/1

Multi Level Switches Type UNS-2000

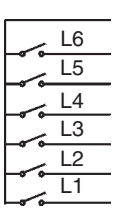
12 / 04 UNS US 04/1

Technical Data

Max. Operating Pressure	: 40 bar, depends on mounting element and float
Max. Temperature Range	: -10 °C...+105 °C, PVC-cable -40 °C...+150 °C, Silicone cab. (-HT) and KL6 / KL12
Min. Fluid Specific Gravity	: See specifications below
Mounting Position	: Vertical, ±30°, through top or bottom
Protection Class	: IP65 for ST-, KL- and PG-design IP67, IP68 on request IP54 for K-design
Weight	: Depends on length and design
Special Design	:- Damping Tube - DR - High Temperature Application (up to +150 °C) - HT - Mounting through bottom - U - PT100-Element - PT100 - Temperature switch - TP - Vertical Adjustment (s. also P25) - ATEX-approval EEx ia

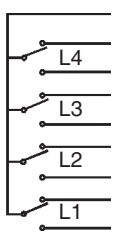
Contact Wiring and Colour Code

Group 1 SPST



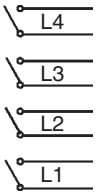
	Terminal
white	1
blue	7
pink	6
grey	5
yellow	4
green	3
brown	2

Group 2 SPDT



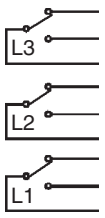
	Terminal
white	1
black	9
red	8
blue	7
pink	6
grey	5
yellow	4
green	3
brown	2

Group 3 SPST



	Terminal
red	8
blue	7
pink	6
grey	5
yellow	4
green	3
brown	2
white	1

Group 4 SPDT



	Terminal
black	9
red	8
blue	7
pink	6
grey	5
yellow	4
green	3
brown	2
white	1

Specifications for Multi Level Switches Type UNS-2000

UNS 2000 - VA/T2 - KL6 - VA52 - L2/2.1 - DR - VV - HT - U - PT100 - TP/XX.X - Exi

Options, please specify when needed

Contact Mode
1 - SPST (NO)
2 - SPST (NC)
3 - SPDT

Contact Rating
250 V AC / DC, 3 A, 100 VA / W
250 V AC / DC, 3 A, 100 VA / W
140 V AC / DC, 1 A, 60 VA / W

Option: Temperature Switch
Contact Rating
TP - 3A, 12 or 24V DC
X - Contact mode 2
XX - Setpoint at rising temperature in °C
Standard +50 °C / +70 °C / +90 °C
Others on request

Total Length L0 = . . . mm (up to 3000 mm Standard)
Specify with your order: L1 = . . . mm, L2 = . . . mm, etc.

Number of Switchpoints (max. 6), L = Level, T = Temperature
L1 = 1 Switchpoint
L2 = 2 Switchpoints
L3 = 3 Switchpoints
L4 = 4 Switchpoints
L5 = 5 Switchpoints
L6 = 6 Switchpoints

See also Connection Groups in table „Max. Switchpoints“ on left pagee

Float Type	min. Density	Material	Form	ø	max. Temp.	max. bar
BN30	0,6 g/cm³	Buna N	Cylinder	30 mm	100 °C (Oil) 80 °C (Water)	15
VA52	0,78 g/cm³	Stainl.St., W.Nr. 1.4571	Ball	52 mm	150 °C	40

(Others on request)

Electrical Connection
ST1 - Cube Plug DIN 43650, 3-pin + Earth
ST2 - Angle Plug DIN 43651, 6-pin + Earth
STDB - Angle Plug with LED-Display DIN 43651, 6-pin + Earth
KL6 - Aluminum Terminal Box, 6 Terminals
KL12 - Aluminum Terminal Box, 9 Terminals
PG7 - PG7-Cable Gland with 1 m PVC-Cable, -HT with silicone cable
K - PCV-Cable sealed, specify length at order. -HT with silicone cable
(Others on request)

Mounting Element
3/8 - G3/8 mounting thread : only with -PG
T1 - G1 Tank screw (not with VA52 float)
T2 - G2 Tank screw
FL4 - Flange DIN 2527 DN 65 PN 16

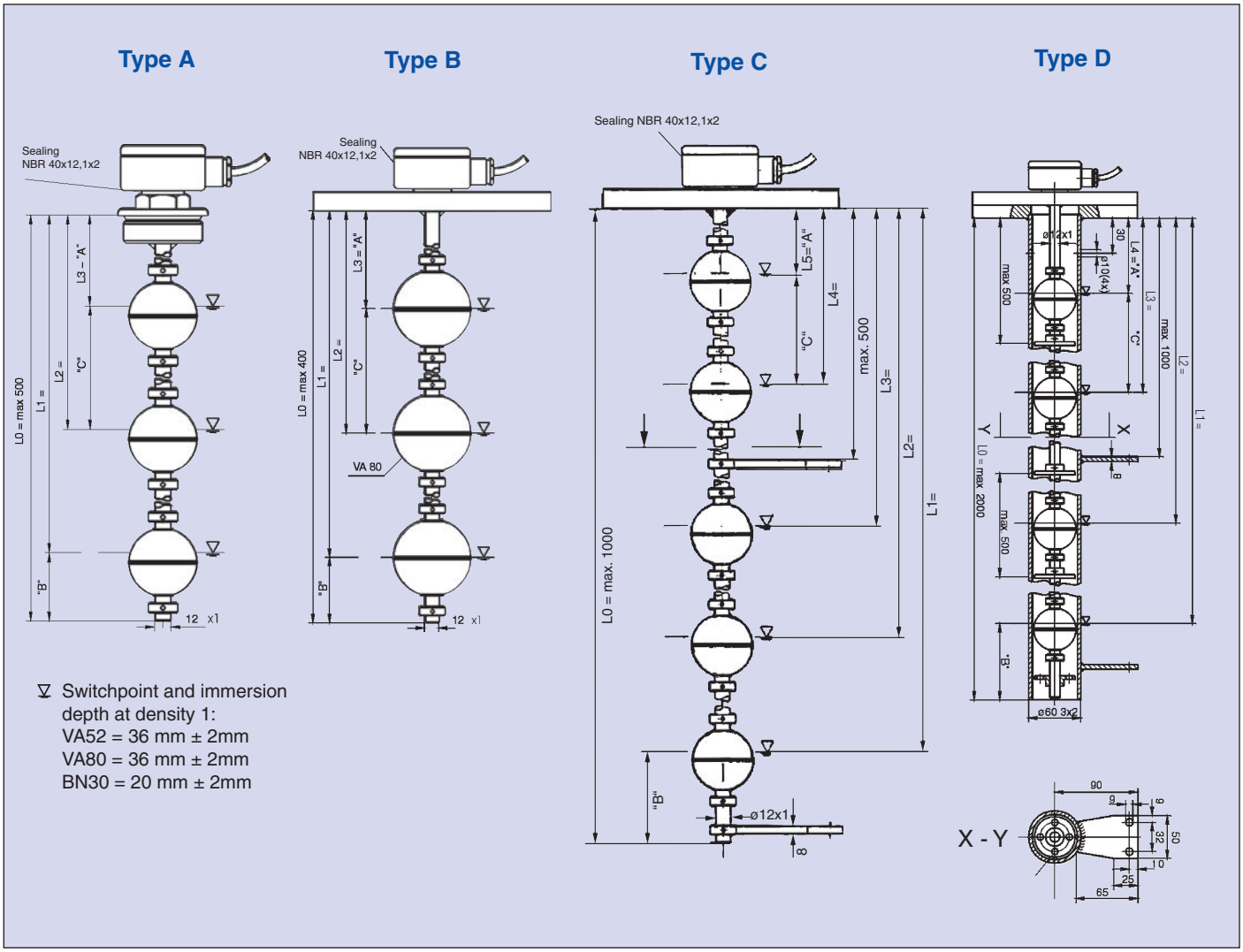
(Other flanges and mounting threads available on request)

Material of Stem and Mounting Element
VA - SS316 Ti 1.4571, 1.4408
MS - Brass, W. Nr. MS58

Level Switches Type UNS-2000

Multi Level Switches Type UNS-2000-S

Dimensions (in mm)



Switchpoint and immersion depth at density 1:
VA52 = 36 mm ± 2mm
VA80 = 36 mm ± 2mm
BN30 = 20 mm ± 2mm

Min. Distances (in mm)

Dimensions / Float type	Type A			Type B			Type C			Type D		
	A	B	C	A	B	C	A	B	C	A	B	C
BN30	60	39	77	40	39	77	40	49	77	24	59	87
VA52	52	55	85	32	55	85	32	75	85	16	75	95
VA80	83	55	115	63	55	115	63	75	115	47	75	125

12 / 04 UNS US 04/1

Multi Level Switches Type UNS-2000-S

Technical Data

The multi Level Switch Series 2000-S is available for shipbuilding with certain limitations in order to comply with shock, vibration and environment requirements.
The approvals have listed four different versions based upon the maximum total length L0 and the different floats, these are:

A) Type A: L0 = max 500 mm, all floats
B) Type B: L0 = max 400 mm, VA-floats only
C) Type C: L0 = max 1000 mm,
all floats, with bracket(s) at max. 500 mm spacing
D) Type D: L0 = max 2000 mm with slosh tube
and brackets at max. 1000 mm spacing

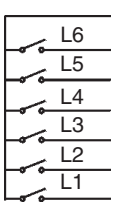
A wide selection of mounting elements, electrical connections and options allow you to “design” your own switch, within the given dimension limits, for your particular application.

Beside the standard SS 316 Ti / 1.4571 we can supply flanges in normal steel. Shipping and installation of switches with large flanges can be difficult and therefore a version with a 2” mounting plug to be installed on site in a flange with a 2” hole might be the answer, consult us for details.

For technical data, switch and operation limits of the UNS-2000-S series are as the standard version.

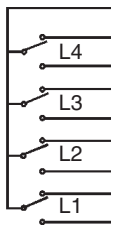
Contact Wiring and Colour Code

Group 1 SPST



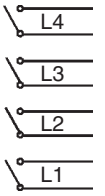
Terminal	
white	1
blue	7
pink	6
grey	5
yellow	4
green	3
brown	2

Group 2 SPDT



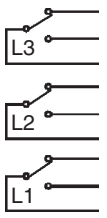
Terminal	
white	1
black	9
red	8
blue	7
pink	6
grey	5
yellow	4
green	3
brown	2

Group 3 SPST



Terminal	
red	8
blue	7
pink	6
grey	5
yellow	4
green	3
brown	2
white	1

Group 4 SPDT



Terminal	
black	9
red	8
blue	7
pink	6
grey	5
yellow	4
green	3
brown	2
white	1

Specifications for Multi Level Switches Type UNS-2000-S

UNS 2000-S - VA/T2 - KLS1 - VA52 - L2/2.1

Contact Mode
1 - SPST (NO)
2 - SPST (NC)
3 - SPDT

Contact Rating
250 V AC / DC, 3 A, 100 VAWA
250 V AC / DC, 3 A, 100 VAW
140 V AC / DC, 1 A, 60 VA/W

Order: L1, L2, L3, L4, L5

Total Length L0 = . . . mm (max. 2000 mm)

Specify with your order: L1 = . . . mm, L2 = . . . mm, etc.

Number of Switchpoints
L1 = 1 Switchpoint
L2 = 2 Switchpoints
L3 = 3 Switchpoints
L4 = 4 Switchpoints
L5 = 5 Switchpoints

Float Type	min. Media	Material Density	Form	Dia-meter	Temp. max.	Pressure (+20 °C)
VA52	0,78 g/cm³ W.Nr. 1.4571	Stainl. Steel	Ball	52 mm	150 °C	40 bar
VA80	0,54 g/cm³ W.Nr. 1.4571	Stainl. Steel	Ball	82 mm	150 °C	17 bar
BN30	0,60 g/cm³	Buna N	Cylinder	30 mm	100 °C (Oil) 80 °C (Water)	15 bar

Electrical Connection
KLS1 - Aluminum Terminal Box, 6 Terminals
KLS2 - Aluminum Terminal Box, 9 Terminals
KS - Cable with Shipbuilding Approvals (1m)

Mounting Element
T2 - G2 Tank screw (not with VA80 float)
FL3 - SS Flange DIN 2527 DN 50 PN 16
FL4 - SS Flange DIN 2527 DN 65 PN 16
(Other flanges and mounting threads available on request)

Material of Stem and Mounting Element
VA - Stainless Steel, W. Nr. 1.4571, 1.4408

Level Switches Type UNS-2000-S

Multi Level Switches Type UNS-2000

Vertical Adjustments -VV

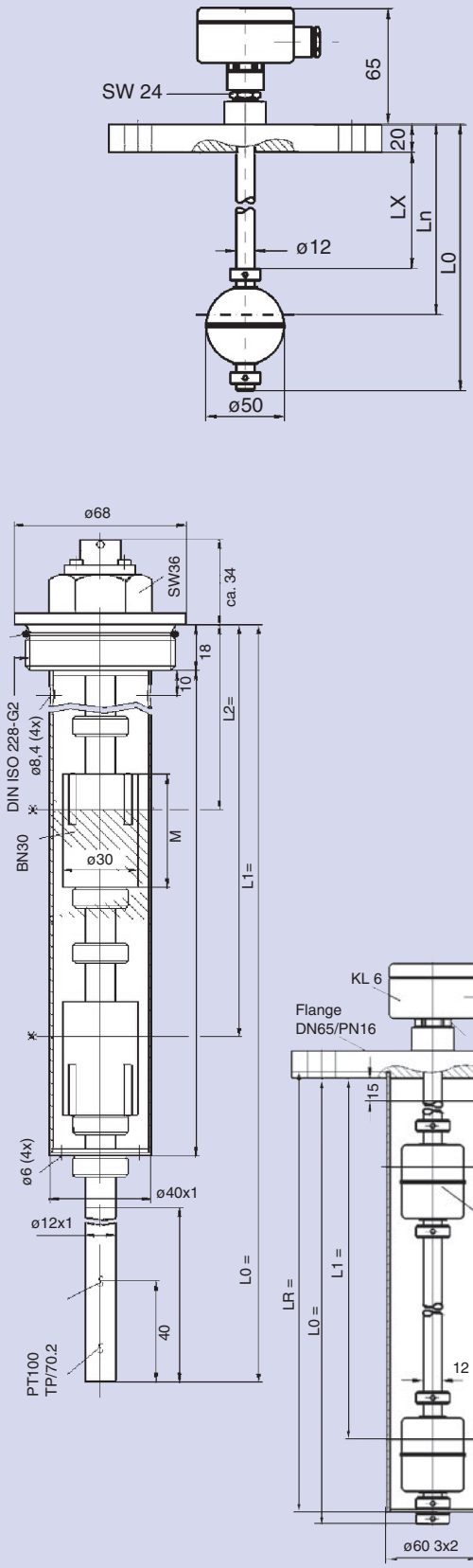
The UNS-2000 Level Switches can be supplied with a vertical adjustment.

By unscrewing the sleeve (Hex 24) nut, only one turn, the whole stem with all floats and contacts can be moved up or down, at any time after installation, within the LX dimension.

The maximum pressure for the -VV version is 5 bar regardless when the float would allow a higher pressure.

This -VV option can only be supplied with Flanges (-FL) or Plug (-T). The LX dimension must be specified with the other dimensions L1 etc. upon ordering.

Abmessungen (in mm), **VV - Vertikalverstellung**



Slosh Tube -DR

Slosh or stilling chamber tubes are useful to:

- protect the floats against other floating objects,
- protect the unit against rough handling,
- dampen oscillating fluid and float movements.

Depending on the float size, various tube sizes between 40 mm and 60 mm in stainless steel and brass are available.
In most cases the Slosh tube covers the whole unit from mounting plug or flange to the end of the stem.

A groove in the mounting plug or flange resp. a guide pulley will centre the top of the tube, an end cap or disc resp. guide pulley with internal hexagon screws will hold the bottom of the tube. Depending on the length of the tube spacer(s) along the stem will centre the stem within the tube to ensure unobstructed float movements.

Holes in the top of the tube are sized according to the application to optimise the dampening effect.Various tube materials can accommodate almost any application.

12 / 04 UNS US 04/1

Multi Level Switches Type UNS-2100-Ex

12 / 04 UNS US 04/1

Function

The UNS-2100-Ex is designed and approved for applications in hazardous fluids in tanks as listed as Category 1, or in environments containing explosive vapours or gases.

The approval is according to directive 94 / 9 / EG, EEx ia IIC T6 intrinsically safe and may only be used with Zener barriers or other approved device limiting the voltage to 28 V DC and the current to 50 mA.

The temperature limit for environments with explosive gases or vapours is: -40 °C...+75 °C, for any flammable liquids in the existence of an explosive gas mixture the temperature limit is for T6: +85 °C.
Low temperatures are no problem. Consult us for details.

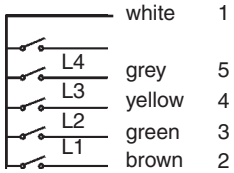
The UNS-2100-Ex can be supplied with level and temperature contacts as the standard 2000 version. Please specify:

- TP for the different versions

- DR Splash tubing to protect the float(s) is available

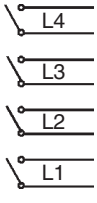
Contact Wiring and Colour Code

Group 1
SPST



	Terminal
white	1
grey	5
yellow	4
green	3
brown	2

Group 3
SPST



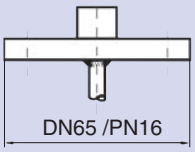
	Terminal
red	8
blue	7
pink	6
grey	5
yellow	4
green	3
brown	2
white	1

Electrical Connection

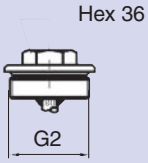
Terminal Box „KX“

Mounting Element

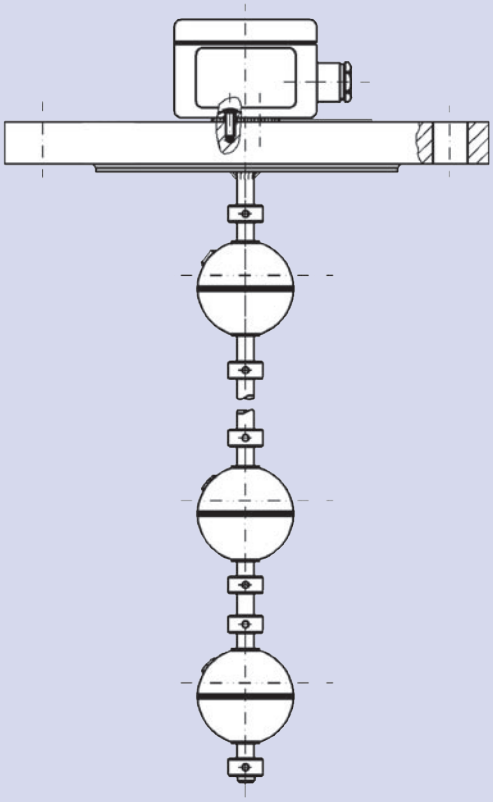
Flange „FL“



Tank „T“



Schematic Drawing



Multi Level Switches Type UNS-2100-Ex

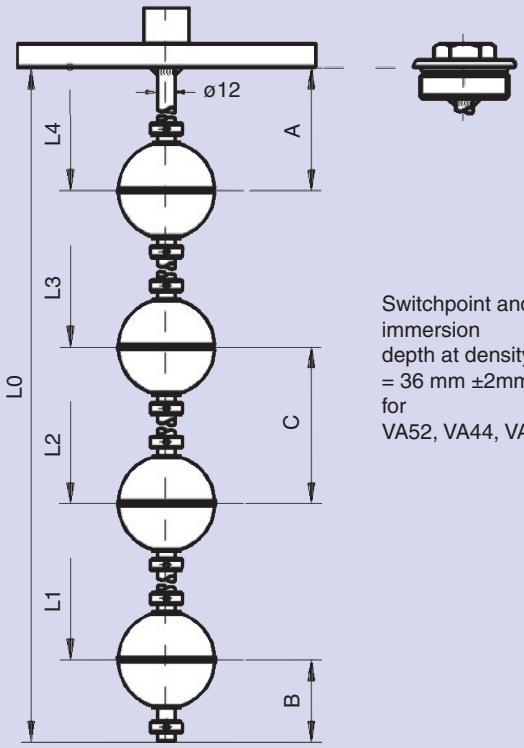
Technical Data

Max. Operating Pressure	: 40 bar, depends on mounting element and float
Max. Temperature Range	: T6 = +85 °C
Min. Fluid Specific Gravity	: See specifications (below)
Mounting Position	: vertical, ±30°
Protection Class	: IP65 for KX-Design
Weight	: Depends on length and design
Special Designs	: - Protection Tube - DR - Mounting from bottom - U - Temperature Switch - TP
Conformity Certificate	: ISSeP03ATEX119X / Ex II1GD EEx ia IIC T6 IP6X T 100 °C

Min. Distances

Dimensions. / Float type	Min. distances in mm					
	Mounting thread			Flange		
	A	B	C	A	B	C
VX44	52	55	85	32	55	85
VX52	52	55	85	32	55	85
VX80	83	55	115	63	55	115

Dimensions (in mm)



Switchpoint and immersion depth at density 1 = 36 mm ±2mm for VA52, VA44, VA80

Specifications for Multi Level Switches Type UNS-2100-Ex

UNS 2100-Ex - VA/T2 - KX4 - VX52 - L2/2.1

Contact Mode
1 - SPST (NO)
2 - SPDT (NC)

Contact Rating
Ui = 28 V, Ii = 50 mA
Ci = 40 pF, Li = 4 µH

Order: L1, L2, L3, L4

Total Length L0 = . . . mm (max. 3000 mm)

Number of Switchpoints (max. 4)
L1 = 1 Switchpoint
L2 = 2 Switchpoints
L3 = 3 Switchpoints
L4 = 4 Switchpoints

Float Type	min. Media Densitiy	Material	Form	Dia-meter	Pressure (+20 °C)
VX44	0,84 g/cm³	Stainl. St., W.Nr. 1.4571	Cylinder	44 mm	15 bar
VX52	0,78 g/cm³	Stainl. St., W.Nr. 1.4571	Ball	52 mm	40 bar
VX80	0,54 g/cm³	Stainl. St., W.Nr. 1.4571	Ball	80 mm	17 bar

Electrical Connection
KX4 - Aluminum Terminal Box, 4 Terminals
KX8 - Aluminum Terminal Box, 8 Terminals

Mounting Element
T2 - G2-Mounting Thread (not with VA80 float)
FL3 - Flange DIN 2527, DN 50/PN 16 (not with VA80 float)
FL4 - Flange DIN 2527, DN 65/PN 16
FLA3 - Flange ANSI 2“, 150 lbs (not with VA80 float)
(Other flanges and mounting threads are also available)

Material of Stem and Mounting Element
VA - Stainless Steel, W. Nr. 1.4571, 1.4408

Level Switches Type UNS-2100-Ex

12 / 04 UNS US 04/1

In addition to the Level Switches listed in this catalog our product range includes various other instrumentation and control equipment to monitor, measure and control

Pressure

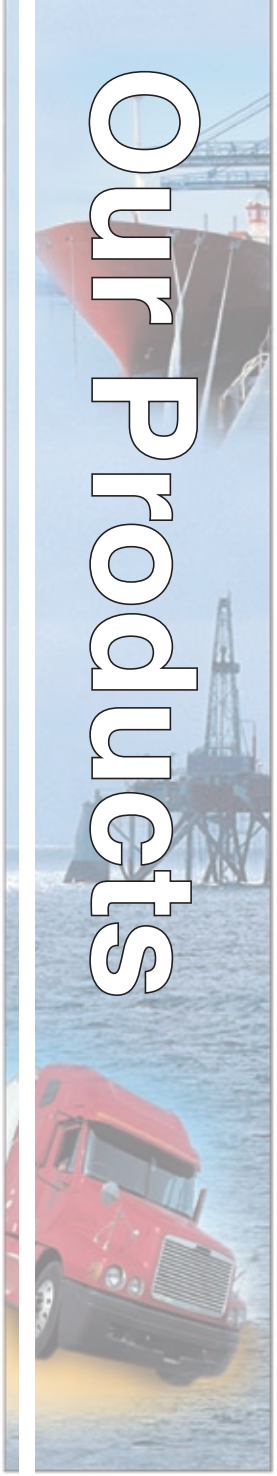
Temperature

Level

Flow

We have the right solution for your measuring tasks.

Just contact us.



12 / 04 UNS US 04/1

Barksdale Level Switches

Represented by

Barksdale
CONTROL PRODUCTS
CRANE Barksdale, Inc./Barksdale GmbH
A Subsidiary of Crane Co.

Barksdale GmbH

Art.-Nr. 923-0308