Mercury-free floating switches and immersion probes

Controlling devices with ball-operated microswitch, for signalling or regulation of liquid levels

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SI/SSP/NL/1/K/... Variant 0 ⟨Ex⟩ I M2 / II 2 G Ex ia I / IIB T6 floating switches

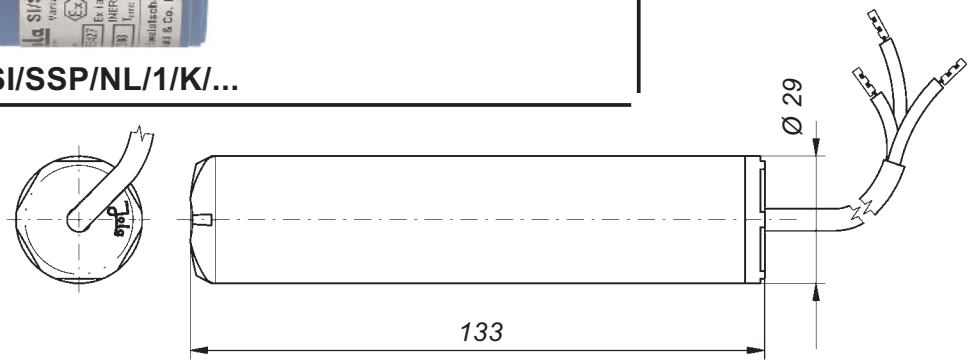
These floating switches are designed for mounting **from the side or from the top.**

To ensure a correct switching the cable must be fixed at the required height using a stuffing gland, for example, in the case of mounting from the side or using a fixing weight, for example, in case of mounting from the top.

These units are not suitable for use in turbulent liquids (e.g. in stirrer tanks).

Technical data	**SI/SSP/NL/1/K/... Variant 0 ⟨Ex⟩ I M2 / II 2 G Ex ia I / IIB T6**
Application	for use in intrinsically safe circuits in mines susceptible to firedamp or in potentially explosive atmospheres in categories zone 1 and 2. EC type examination certificate INERIS 03ATEX0149
Operating principle	ball-operated microswitch, potential-free changeover contact
Options for safety application	diodes (= variant 1) or resistors (= variant 2) (see page 1-2-11)
Recommended application	via Jola protection relay KR 5/Ex ⟨Ex⟩ I (M1) / II (1) GD [EEx ia] I / IIC
Float material	PP
Seal material	FPM; on request: EPDM
Float protection class	IP 68
Max. immersion depth of the float	max. 10 metres head of water at + 20°C
Connecting cable / application range / temperature appl. range	**- black PVC cable, 3 x 0.75 (type: SI/SSP/NL/1/K/PVC ...):** water, used water, slightly aggressive liquids, oils without aromatic additives, fuel oil and diesel fuel with a specific gravity ≥ 0.82 g/cm³, temperature between + 8°C and + 60°C **- grey A05RN-F cable, 3 x 0.75 (type: SI/SSP/NL/1/K/RN ...):** water, used water and slightly aggressive liquids, with a specific gravity ≥ 0.82 g/cm³, temperature between 0°C and + 60°C **- red-brown silicone cable, 3 x 0.75 (type: SI/SSP/NL/1/K/SIL ...):** water and certain other liquids with a specific gravity ≥ 0.82 g/cm³, with low mechanical strength, temperature between 0°C and + 60°C **- black CM cable, 3 x 0.75 (type: SI/SSP/NL/1/K/CM ...):** water and certain acids and lyes with a specific gravity ≥ 1 g/cm³, temperature between 0°C and + 60°C
Connecting cable length	1 metre, other cable lengths on request. **When ordering, please always state the desired cable length and cable type.**
Optional extras	**stuffing glands and fixing weights made of stainless steel 316 Ti or PP**

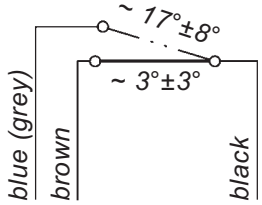
SI/SSP/NL/1/K/...

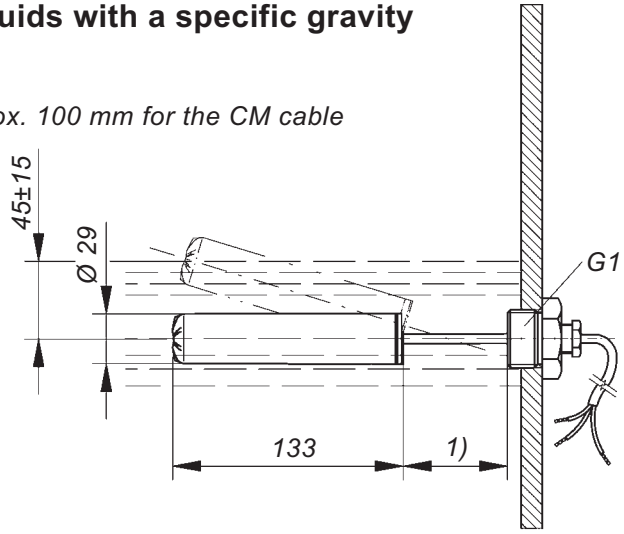


Switching action in liquids with a specific gravity of 1 g/cm³

1) approx. 60 mm, but approx. 100 mm for the CM cable

Contact switches over at





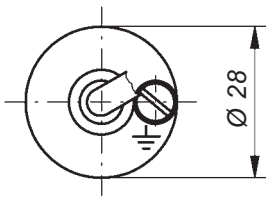
Optional extras:
Stuffing gland made of stainless steel 316 Ti with potential equalisation terminal
or stuffing gland made of PP

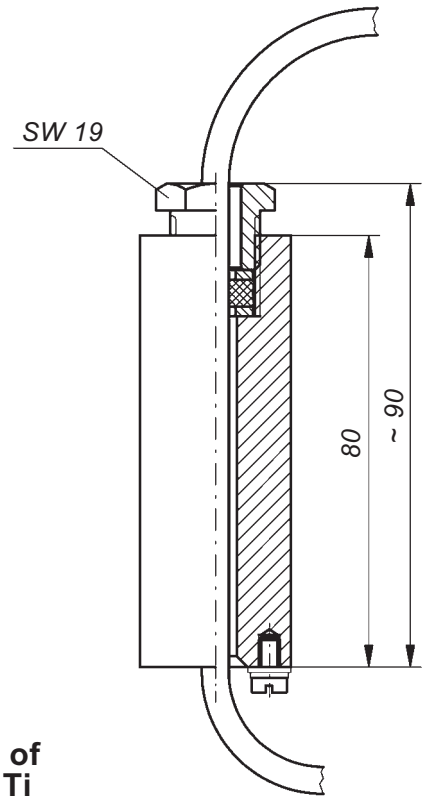
Floating switch mounting possible **from the inside**:
- G1/2 stuffing gland

Floating switch mounting only possible **from the outside**:
- G1 stuffing gland

Stuffing gland G1 made of stainless steel 316 Ti

Optional extras:
fixing weight made of stainless steel 316 Ti with potential equalisation terminal
or fixing weight made of PP





Fixing weight made of stainless steel 316 Ti

SI/SPH/NL/1/K/... Variant 0 ⟨Ex⟩ I M2 / II 2 G Ex ia I / IIB T6 floating switches

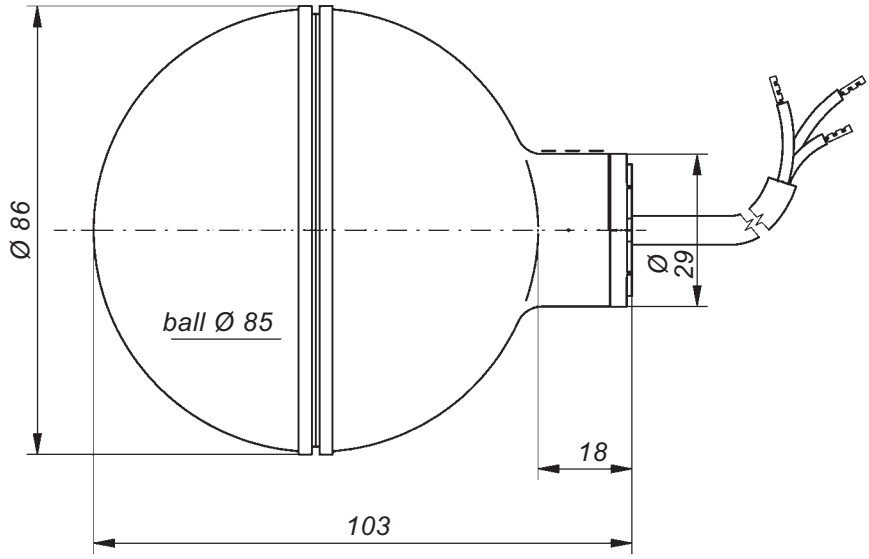
These floating switches are designed for mounting **from the side or from the top.**

To ensure a correct switching the cable must be fixed at the required height using a stuffing gland, for example, in the case of mounting from the side or using a fixing weight, for example, in case of mounting from the top.

These units are not suitable for use in turbulent liquids (e.g. in stirrer tanks).

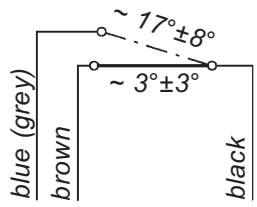
Technical data	**SI/SPH/NL/1/K/... Variant 0 ⟨Ex⟩ I M2 / II 2 G Ex ia I / IIB T6**
Application	for use in intrinsically safe circuits in mines susceptible to firedamp or in potentially explosive atmospheres in categories zone 1 and 2. EC type examination certificate INERIS 03ATEX0149
Operating principle	ball-operated microswitch, potential-free changeover contact
Options for safety application	diodes (= variant 1) or resistors (= variant 2) (see page 1-2-11)
Recommended application	via Jola protection relay KR 5/Ex ⟨Ex⟩ I (M1) / II (1) GD [EEx ia] I / IIC
Float material	PP
Seal material	FPM; on request: EPDM
Float protection class	IP 68
Max. immersion depth of the float	max. 10 metres head of water at + 20°C
Connecting cable / application range / temperature appl. range	**- black PVC cable, 3 x 0.75 (type: SI/SPH/NL/1/K/PVC ...):** water, used water, slightly aggressive liquids, oils without aromatic additives, fuel oil and diesel fuel with a specific gravity ≥ 0.7 g/cm³, temperature between + 8°C und + 60°C **- grey A05RN-F cable, 3 x 0.75 (type: SI/SPH/NL/1/K/RN ...):** water, used water and slightly aggressive liquids, with a specific gravity ≥ 0.7 g/cm³, temperature between 0°C and + 60°C **- red-brown silicone cable, 3 x 0.75 (type: SI/SPH/NL/1/K/SIL ...):** water and certain other liquids, with a specific gravity ≥ 0.7 g/cm³, with low mechanical strength, temperature between 0°C and + 60°C **- black CM cable, 3 x 0.75 (type: SI/SPH/NL/1/K/CM ...):** water and certain acids and lyes with a specific gravity ≥ 0.8 g/cm³, temperature between 0°C und + 60°C
Connecting cable length	1 metre, other cable lengths on request. **When ordering, please always state the desired cable length and cable type.**
Optional extra	**fixing weight made of stainless steel 316 Ti or PP**

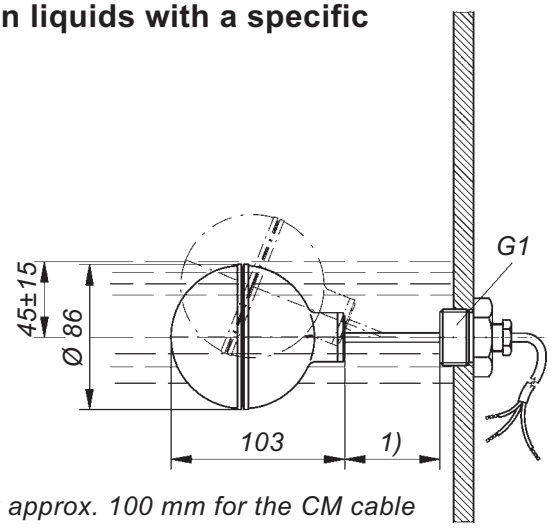
SI/SPH/NL/1/K/...



Switching action in liquids with a specific gravity of 1 g/cm³

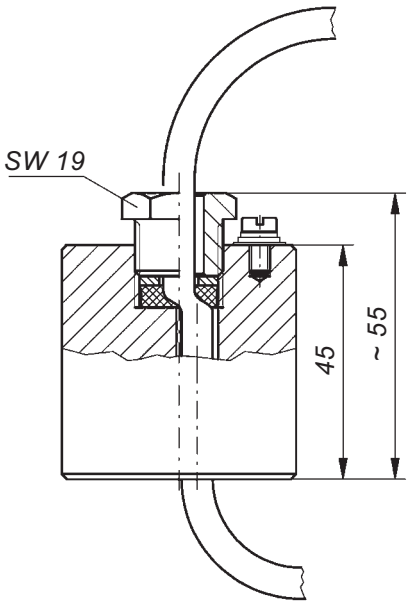
Contact switches over at

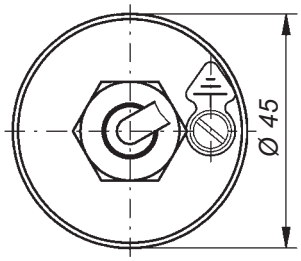




1) approx. 60 mm, but approx. 100 mm for the CM cable

Optional extras: fixing weight made of stainless steel 316 Ti with potential equalisation terminal





or fixing weight made of PP

SI/SSX/LF/4/1/K/TPK Variant 0 ⟨Ex⟩ I M2 / II 1 G Ex ia I / IIC T6 floating switches

These floating switches are designed for mounting **from the side or from the top.**

To ensure a correct switching the cable must be fixed at the required height using a stuffing gland, for example, in the case of mounting from the side or using a fixing weight, for example, in case of mounting from the top.

These units are not suitable for use in turbulent liquids (e.g. in stirrer tanks).

Technical data	**SI/SSX/LF/4/1/K/TPK Variant 0 ⟨Ex⟩ I M2 / II 1 G Ex ia I / IIC T6**
Application	for use in intrinsically safe circuits in mines susceptible to firedamp or in potentially explosive atmospheres in categories zone 0, 1 and 2. EC type examination certificate INERIS 03ATEX0149
Operating principle	ball-operated microswitch, potential-free changeover contact
Options for safety application	diodes (= variant 1) or resistors (= variant 2) (see page 1-2-11)
Recommended application	via Jola protection relay KR 5/Ex ⟨Ex⟩ I (M1) / II (1) GD [EEx ia] I / IIC
Float material	conductive PP
Seal material	FPM; on request: EPDM
Float protection class	IP 68
Max. immersion depth of the float	max. 10 metres head of water at + 20°C
Connecting cable / application range / temperature application range	**black TPK cable, 4 G 0.75:** water, used water and slightly aggressive liquids with a specific gravity ≥ 0.7 g/cm³, temperature between 0°C and + 60°C; other cable types (e.g. made of CM or PTFE) on request
Connecting cable length	2 metres, other cable lengths on request. **When ordering, please always state the desired cable length.**
Optional extras	**- external fixing weight made of stainless steel 316 Ti** for liquids with a specific gravity ≥ 0.7 g/cm³ **- internal fixing weight (integrated in the float)** for liquids with a specific gravity between 0.95 and 1.05 g/cm³

*)

Switching action of the SI/SSX/LF/4/1/K/TPK ... with e x t e r n a l fixing weight (optional)

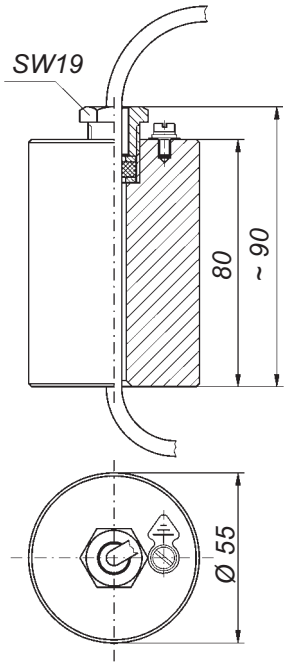
(optimal functioning)

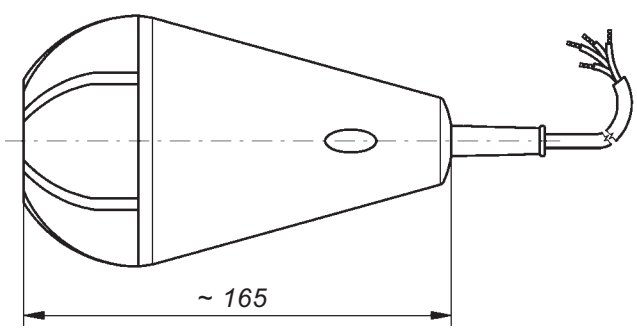
Switching action of the SI/SSX/LF/4/1/K/TPK ... with i n t e r n a l fixing weight (optional)

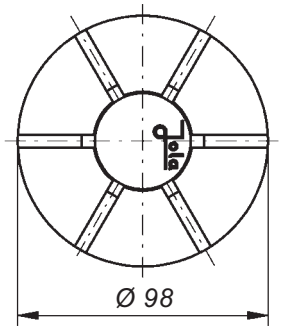
(optimal functioning)

***) potential equalisation cable**

Optional extra: external fixing weight made of stainless steel 316 Ti with potential equalisation terminal

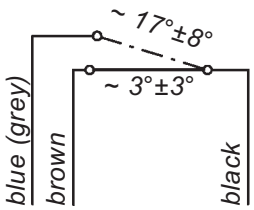


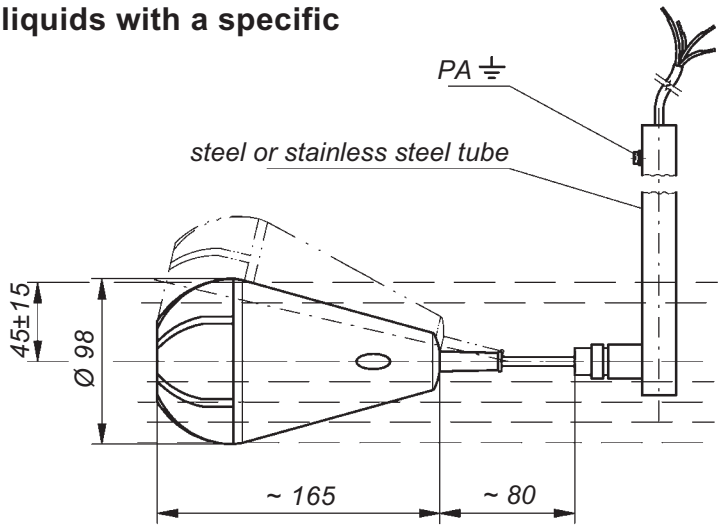




Switching action in liquids with a specific gravity of 1 g/cm³

Contact switches over at





SI/FS/NL/1/K/... Variant 0 ⟨Ex⟩ I M2 / II 2 G Ex ia I / IIB T6 floating switches

with built-in weight for fixing of switching point

These floating switches are designed for mounting **from the top.**

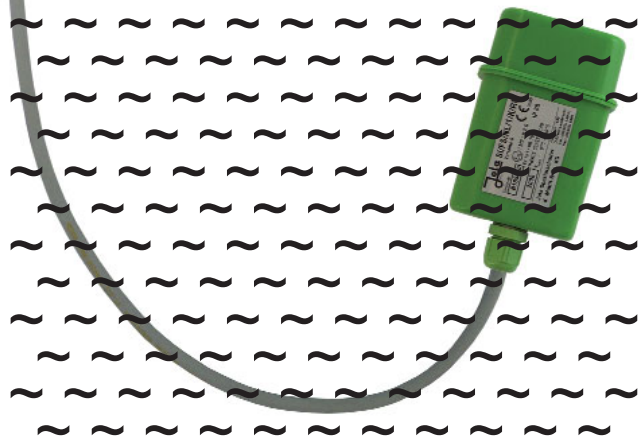
They are fitted with a **built-in weight for fixing the switching point** at the desired height; this renders **additional fastening** of the switch at the height of the switching point **unnecessary**. This weight is dimensioned in such a way that the switch tilts around its own axis when the liquid level rises and then follows the rising liquid level (see function diagram on page 1-2-8). This tilting action of the float activates the switching process.

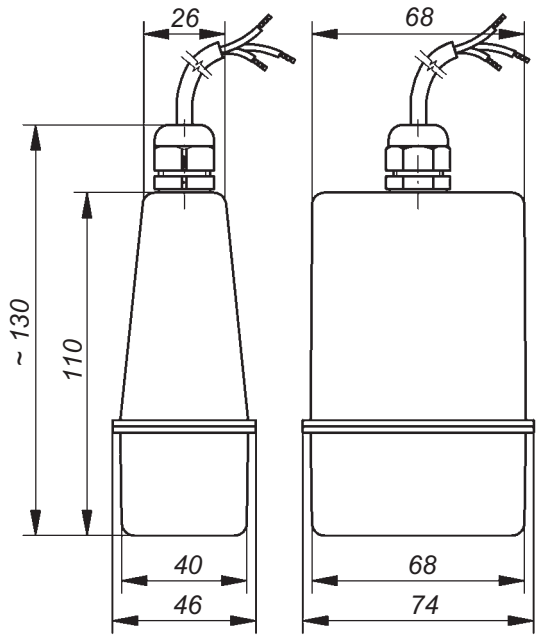
These units are not suitable for use in turbulent liquids (e.g. in stirrer tanks).

Technical data	**SI/FS/NL/1/K/... Variant 0 ⟨Ex⟩ I M2 / II 2 G Ex ia I / IIB T6**
Application	for use in intrinsically safe circuits in mines susceptible to firedamp or in potentially explosive atmospheres in categories zone 1 and 2. EC type examination certificate INERIS 03ATEX0149
Operating principle	ball-operated microswitch, potential-free changeover contact
Options for safety application	diodes (= variant 1) or resistors (= variant 2) (see page 1-2-11)
Recommended application	via Jola protection relay KR 5/Ex ⟨Ex⟩ I (M1) / II (1) GD [EEx ia] I / IIC
Float material	PP
Seal material	FPM; on request: EPDM
Float protection class	IP 68
Max. immersion depth of the float	max. 10 metres head of water at + 20°C
Application range	**in liquids with a specific gravity between 0.95 and 1.05 g/cm³**
Connecting cable / application range / temperature application range	**- black PVC cable, 3 x 0.75 (type: SI/FS/NL/1/K/PVC ...):** water, used water and slightly aggressive liquids, temperature between + 8°C and + 60°C **- grey A05RN-F cable, 3 x 0.75 (type: SI/FS/NL/1/K/RN ...):** water, used water and slightly aggressive liquids, temperature between 0°C and + 60°C **- red-brown silicone cable, 3 x 0.75 (type: SI/FS/NL/1/K/SIL ...):** water and certain other liquids, with low mechanical strength, temperature between 0°C and + 60°C **- black CM cable, 3 x 0.75 (type: SI/FS/NL/1/K/CM ...):** water and certain acids and lyes, temperature between 0°C and + 60°C
Connecting cable length	1 metre, other cable lengths on request. **When ordering, please always state the desired cable length and cable type.**

SI/FS/NL/1/K/...
floating switch

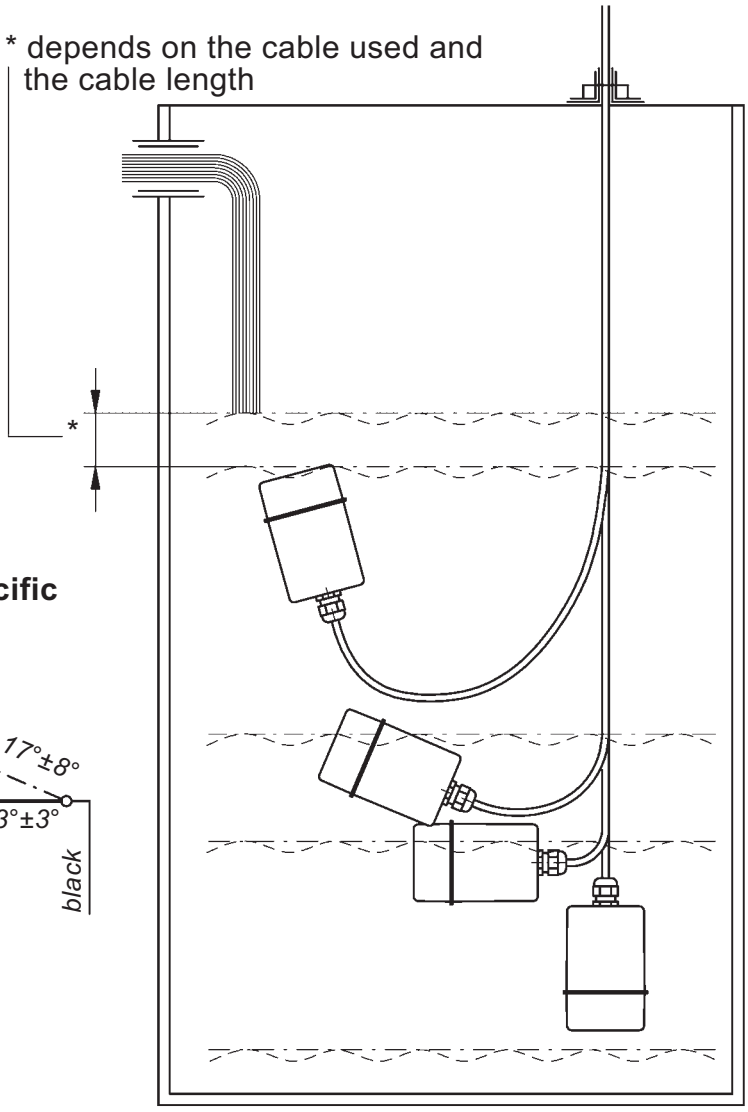
(optimal functioning)





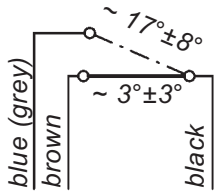
Function diagram of the SI/FS/NL/1/K/... floating switch

(optimal functioning)



Switching action in liquids with a specific gravity of 1 g/cm³

Contact switches over at



SI/SSR/1/K/... Variant 0 ⟨Ex⟩ I M2 / II 1 G Ex ia I / IIC T6 floating switches

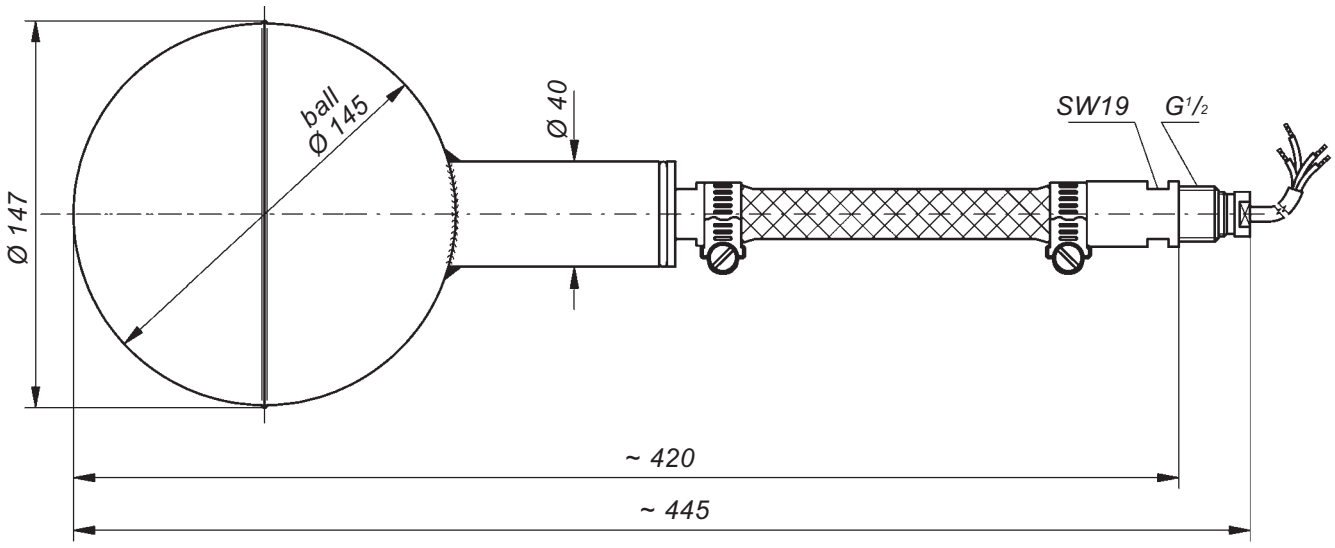
These floating switches are designed for mounting **from the side.**

To ensure a correct switching the G½ screw-in nipple must be screwed in a horizontal G½ sleeve.

These units are not suitable for use in turbulent liquids (e.g. in stirrer tanks).

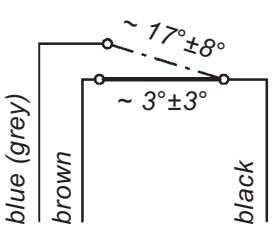
Technical data	**SI/SSR/1/K/... Variant 0 ⟨Ex⟩ I M2 / II 1 G Ex ia I / IIC T6**
Application	for use in intrinsically safe circuits in mines susceptible to firedamp or in potentially explosive atmospheres in categories zone 0, 1 and 2. EC type examination certificate INERIS 03ATEX0149
Operating principle	ball-operated microswitch, potential-free changeover contact
Options for safety application	diodes (= variant 1) or resistors (= variant 2) (see page 1-2-11)
Recommended application	via Jola protection relay KR 5/Ex ⟨Ex⟩ I (M1) / II (1) GD [EEx ia] I / IIC
Float material	stainless steel 316 Ti
Seal material	PTFE
Appliance protection class	in installed condition inside the tank: IP 68, on the stuffing gland screw fitting outside the tank: IP 54
Max. immersion depth of the float	max. 30 metres head of water at + 20°C
Application range	in liquids with a specific gravity ≥ 0.7 g/cm³
Connecting cable / temperature application range	**- black H05RN-F cable, 4 G 0.75 (type: SI/SSR/1/K/RN ...):** temperature between 0°C and + 60°C **- red-brown silicone cable, 4 G 0.75 (type: SI/SSR/1/K/SIL ...):** temperature between 0°C and + 60°C **The connecting cable is routed through a protective bellows made of stainless steel 316 Ti to which a G$^{1}/_{2}$ screw-in nipple is fastened.**
Connecting cable length	2 metres from screw-in nipple, other cable lengths on request. **When ordering, please always state the desired cable length and cable type.**
Optional extra	**stainless steel stirrup to limit the movement of the float**

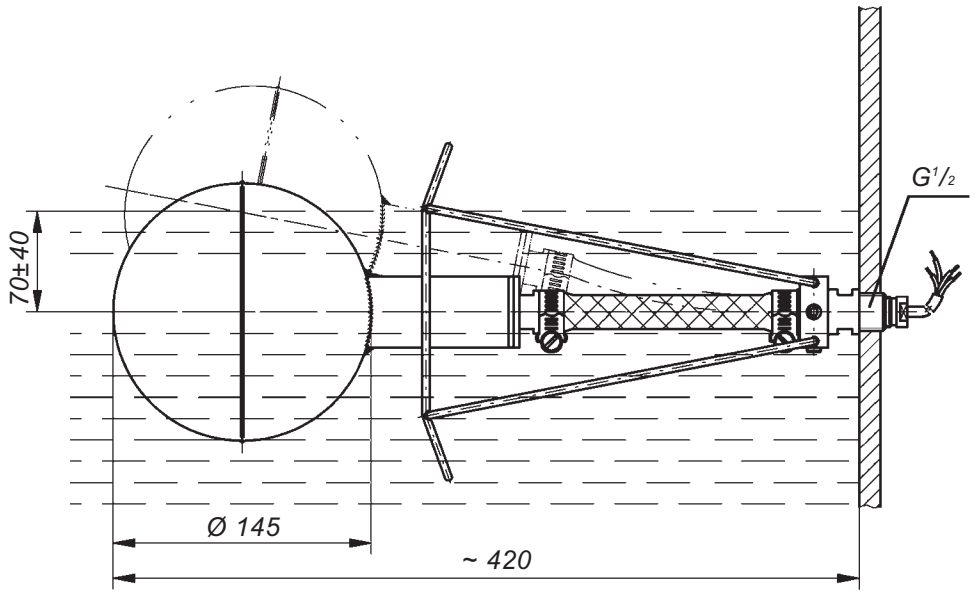
SI/SSR/1/K/...



**Switching action in liquids with a specific gravity of 1 g/cm³ –
Diagram of SI/SSR/1/K/... with stainless steel stirrup (optional)**

Contact switches over at

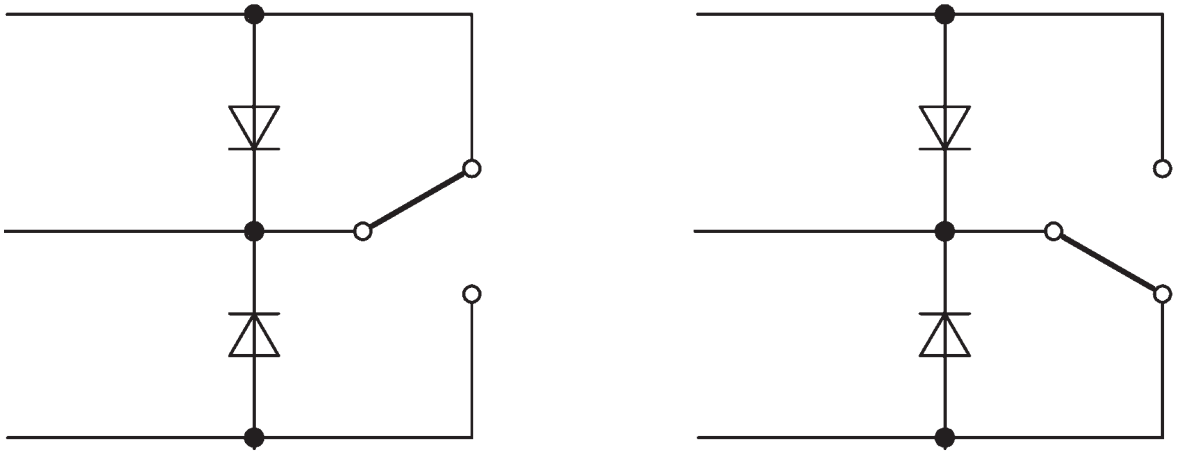




Options for SI/... 1/K/... floating switches types:

Variant 1:

Two (2) diodes of the type 1N4004 or equivalent

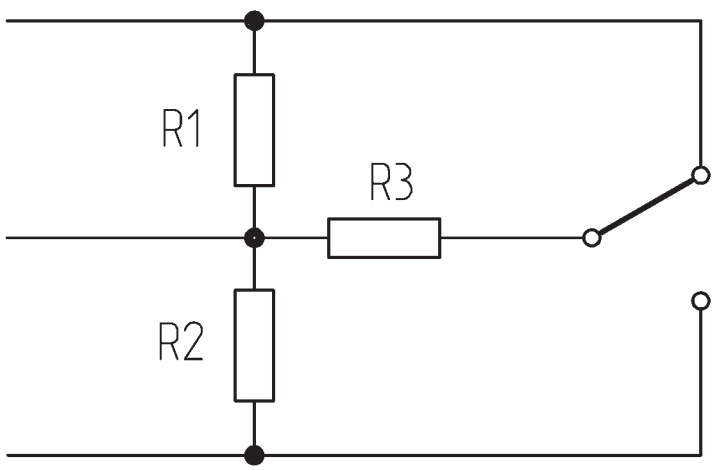


Variant 2:

Two (2) metal film resistors or carbon film resistors R 1, R 2,
each greater than or equal to 2 kOhm,
each P greater than or equal to 1/4 W

and

one (1) metal film resistor or carbon film resistor R 3
greater than or equal to 330 Ohm,
P greater than or equal to 1 W.



TS/E../. x SI/SSP/NL/1/K/...
Variant 0 ⟨Ex⟩ II 2 G Ex ia IIB T6 and
TS/E../. x SI/SSX/LF/4/1/K/TPK
Variant 0 ⟨Ex⟩ II 2 G Ex ia IIC T6 and
TS/E..../. x SI/SSR/1/K/...
Variant 0 ⟨Ex⟩ II 2 G or II 2/1 G Ex ia IIC T6
mercury-free immersion probes

These units are not suitable for use in turbulent liquids (e.g. in stirrer tanks).

Technical data	**TS/E../. x SI/SSP/NL/1/K/... Variant 0 ⟨Ex⟩ II 2 G Ex ia IIB T6 and TS/E../. x SI/SSX/LF/4/1/K/TPK Variant 0 ⟨Ex⟩ II 2 G Ex ia IIC T6**	**TS/E../. x SI/SSR/1/K/... Variant 0 ⟨Ex⟩ II 2 G Ex ia IIC T6**	**TS/EZT../. x SI/SSR/1/K/... Variant 0 ⟨Ex⟩ II 2/1 G Ex ia IIC T6**
Application	for use in intrinsically safe circuits in potentially explosive atmospheres in categories		
	zone 1 and 2	- probe tube: zone 1 and 2;	- probe tube up to the DN 500 PN 16 flange (to separate zone 0 from zones 1 and 2): zone 0, 1 and 2;
		- terminal box: zone 1 and 2	
	EC type examination certificate: INERIS 03ATEX0149		
Probe tube material	stainless steel 316 Ti		
Probe tube diameter	according to chart on pages 1-2-13 and 1-2-14		
Probe tube length	according to customer´s specifications, **but max. 6,000 mm**		
Screw-in nipple	without		
	for the type TS/E20/. x SI/SSP/NL/1/K/...: G2 on request	—	—
Mounting flange	**flange** made of stainless steel 316 Ti **on request**	**flange** made of stainless steel 316 Ti **on request**	**DN 500 PN 16 flange** or larger made of stainless steel 316 Ti (to separate Zone 0 from zones 1 and 2) **necessary**
Terminal box	acc. to chart on pages 1-2-13 and 1-2-14, material: glas fibre and graphite reinforced polyester, protection class IP 65, dimensions: A 301: 110 x 75 x 55 mm, A 120: 160 x 75 x 55 mm, A 113a: 160 x 160 x 90 mm		
Mounting orientation	vertical		
Temperature appl. range	see technical data of the floating switches used		
Pressure resistance	for pressureless applications only		
Mounted float. switches	**SI/SSP/NL/1/K/••• or SI/SSX/LF/4/1/K/TPK**	**SI/SSR/1/K/•••**	
	(••• = to be specified according to the list of types on page 1-2-1 or 1-2-9)		
Technical data of the mounted floating switches	s. p. 1-2-1/1-2-5 and f.	see page 1-2-9 and following	
Options for safety appl.	diodes (= variant 1) or resistors (= variant 2), see page 1-2-11		

For enquiries or orders, please complete the questionnaire on page 1-2-15 or 1-2-16 (as applicable).

Model overview and technical data

Type designation	No of mounted floating switches	Type of mounted floating switches	Probe tube dia-meter	Terminal box used	Design example on page 1-2-14
TS/E20/1 x SI/SSP/NL/1/K/••• Variant 0 ⟨Ex⟩ II 2 G Ex ia IIB T6	1	SI/SSP/NL/1/K/••• Variant 0 ⟨Ex⟩ II 2 G Ex ia IIB T6	20 mm	A 301	(1)
TS/E20/2 x SI/SSP/NL/1/K/••• Variant 0 ⟨Ex⟩ II 2 G Ex ia IIB T6	2		20 mm	A 301	
TS/E20/3 x SI/SSP/NL/1/K/••• Variant 0 ⟨Ex⟩ II 2 G Ex ia IIB T6	3		20 mm	A 120	
TS/E28/1 x SI/SSP/NL/1/K/••• Variant 0 ⟨Ex⟩ II 2 G Ex ia IIB T6	1	SI/SSP/NL/1/K/••• Variant 0 ⟨Ex⟩ II 2 G Ex ia IIB T6	28 mm	A 301	as (1), but probe tube dia. 28 mm Ø instead of 20 mm Ø
TS/E28/2 x SI/SSP/NL/1/K/••• Variant 0 ⟨Ex⟩ II 2 G Ex ia IIB T6	2		28 mm	A 301	
TS/E28/3 x SI/SSP/NL/1/K/••• Variant 0 ⟨Ex⟩ II 2 G Ex ia IIB T6	3		28 mm	A 120	
TS/E28/4 x SI/SSP/NL/1/K/••• Variant 0 ⟨Ex⟩ II 2 G Ex ia IIB T6	4		28 mm	A 120	
TS/E28/5 x SI/SSP/NL/1/K/••• Variant 0 ⟨Ex⟩ II 2 G Ex ia IIB T6	5		28 mm	A 113a	
TS/E28/6 x SI/SSP/NL/1/K/••• Variant 0 ⟨Ex⟩ II 2 G Ex ia IIB T6	6		28 mm	A 113a	
TS/E28/1 x SI/SSX/LF/4/1/K/TPK Variant 0 ⟨Ex⟩ II 2 G Ex ia IIC T6	1	SI/SSX/LF/4/1/K/TPK Variant 0 ⟨Ex⟩ II 1 G Ex ia IIC T6	28 mm	A 301	(2)
TS/E28/2 x SI/SSX/LF/4/1/K/TPK Variant 0 ⟨Ex⟩ II 2 G Ex ia IIC T6	2		28 mm	A 301	
TS/E34/3 x SI/SSX/LF/4/1/K/TPK Variant 0 ⟨Ex⟩ II 2 G Ex ia IIC T6	3		34 mm	A 120	
TS/E34/4 x SI/SSX/LF/4/1/K/TPK Variant 0 ⟨Ex⟩ II 2 G Ex ia IIC T6	4		34 mm	A 120	
TS/E34/5 x SI/SSX/LF/4/1/K/TPK Variant 0 ⟨Ex⟩ II 2 G Ex ia IIC T6	5		34 mm	A 113a	
TS/E34/6 x SI/SSX/LF/4/1/K/TPK Variant 0 ⟨Ex⟩ II 2 G Ex ia IIC T6	6		34 mm	A 113a	
Version <u>without</u> flange (without separation of zone 0 from zones 1 and 2): TS/E28/1 x SI/SSR/1/K/••• Variante 0 ⟨Ex⟩ II 2 G Ex ia IIC T6	1	SI/SSR/1/K/••• Variant 0 ⟨Ex⟩ II 1 G Ex ia IIC T6, each with stirrup	28 mm	A 301	(3)
TS/E28/2 x SI/SSR/1/K/••• Variante 0 ⟨Ex⟩ II 2 G Ex ia IIC T6	2		28 mm	A 301	
TS/E34/3 x SI/SSR/1/K/••• Variante 0 ⟨Ex⟩ II 2 G Ex ia IIC T6	3		34 mm	A 120	
TS/E34/4 x SI/SSR/1/K/••• Variante 0 ⟨Ex⟩ II 2 G Ex ia IIC T6	4		34 mm	A 120	
TS/E34/5 x SI/SSR/1/K/••• Variante 0 ⟨Ex⟩ II 2 G Ex ia IIC T6	5		34 mm	A 113a	
TS/E34/6 x SI/SSR/1/K/••• Variante 0 ⟨Ex⟩ II 2 G Ex ia IIC T6	6		34 mm	A 113a	

••• = to be specified according to the list of types on page 1-2-1 or 1-2-9

Version <u>with</u> flange (with separation of zone 0 from zones 1 and 2):					as ③, but with DN 500 PN 16 flange (to separate zone 0 from zones 1 and 2)
TS/EZT28/1 x SI/SSR/1/K/••• Variant 0 ⟨Ex⟩ II 2/1 G Ex ia IIC T6	1	SI/SSR/1/K/••• Variant 0 ⟨Ex⟩ II 1 G Ex ia IIC T6, each with stirrup	28 mm	A 301	
TS/EZT28/2 x SI/SSR/1/K/••• Variant 0 ⟨Ex⟩ II 2/1 G Ex ia IIC T6	2		28 mm	A 301	
TS/EZT34/3 x SI/SSR/1/K/••• Variant 0 ⟨Ex⟩ II 2/1 G Ex ia IIC T6	3		34 mm	A 120	
TS/EZT34/4 x SI/SSR 1/K/••• Variant 0 ⟨Ex⟩ II 2/1 G Ex ia IIC T6	4		34 mm	A 120	
TS/EZT34/5 x SI/SSR 1/K/••• Variant 0 ⟨Ex⟩ II 2/1 G Ex ia IIC T6	5		34 mm	A 113a	
TS/EZT34/6 x SI/SSR 1/K/••• Variant 0 ⟨Ex⟩ II 2/1 G Ex ia IIC T6	6		34 mm	A 113a	

••• = to be specified according to the list of types on page 1-2-9

Design examples:

① **TS/E20/3 x SI/SSP/NL/1/K/...** with G2 screw-in nipple (optional) and with A 120 terminal box

② **TS/E34/4 x SI/SSX/LF/4/1/K/TPK** with mounting flange (optional) and with A 113 a terminal box instead of A 120 (optional)

③ **TS/E28/2 x SI/SSR/1/K/...** with A 301 terminal box , without flange : only for applications in zone 1 and 2

Questionnaire for enquiries and orders
for immersion probes <u>with</u> screw-in nipple or flange

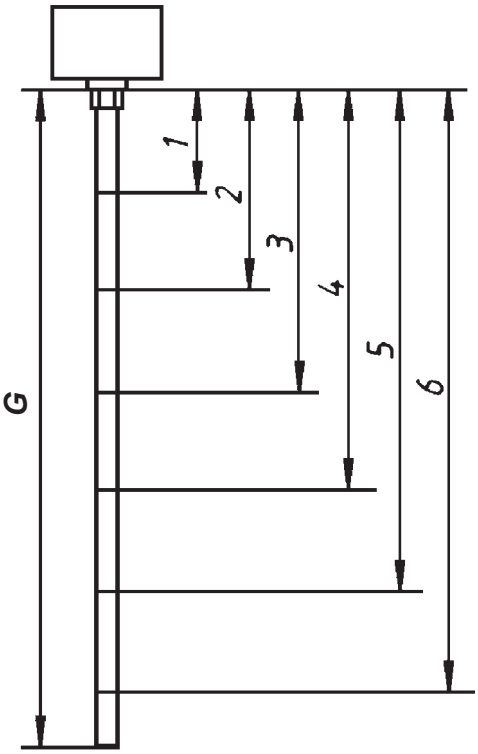
Desired switching functions
(indication max., min., pump or valve
ON – OFF, filling or emptying,
dry-run or overflow protection): _____

Tank dimensions and installation
conditions (sketch if applicable): _____

Type of liquid: _____ Specific gravity: _____

Viscosity: _____ Temperature: _____ Operating pressure: _____

Desired immersion probe type: TS/...



When planning the design of the immersion probes, please consider that **when the liquid level rises,** the contact of the floating switches is not activated when the floating switches reach the horizontal position, but is activated as depicted in the diagrams of the various floating switches on pages 1-2-1 and following.
When the liquid level sinks, the contact of the floating switches is activated **shortly below their horizontal position.**

	Desired floating switch type	*Distance from sealing surface of screw-in nipple or flange in mm*	*Switching function (e.g. high alarm, pump ON, pump OFF etc.)*	*Working direction of the float: rising = ↑ falling = ↓*
1				
2				
3				
4				
5				
6				

Desired options:

Questionnaire for enquiries and orders
for immersion probes <u>without</u> screw-in nipple or flange

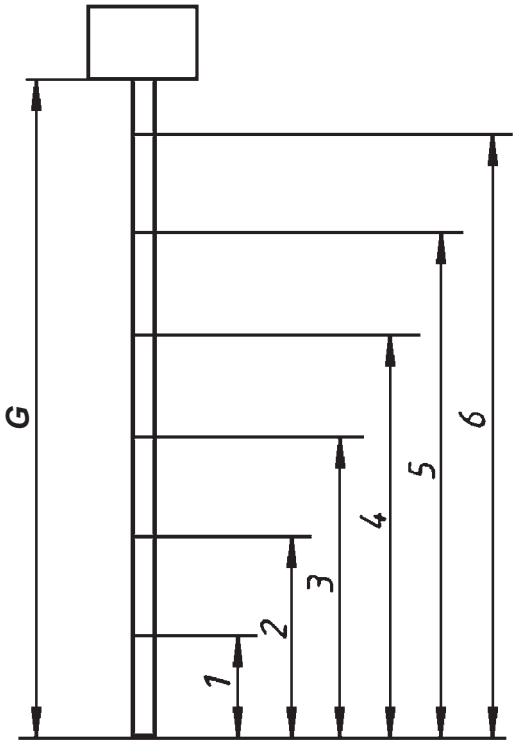
Desired switching functions (indication max., min., pump or valve ON – OFF, filling or emptying, dry-run or overflow protection): _____

Tank dimensions and installation conditions (sketch if applicable): _____

Type of liquid: _____ Specific gravity: _____

Viscosity: _____ Temperature: _____ Operating pressure: _____

Desired immersion probe type: TS/...



When planning the design of the immersion probes, please consider that **when the liquid level rises,** the contact of the floating switches is not activated when the floating switches reach the horizontal position, but is activated as depicted in the diagrams of the various floating switches on pages 1-2-1 and following.
When the liquid level sinks, the contact of the floating switches is activated **shortly below their horizontal position.**

	Desired floating switch type	*Distance from end of probe tube in mm*	*Switching function (e.g. high alarm, pump ON, pump OFF etc.)*	*Working direction of the float: rising = ↑ falling = ↓*
1				
2				
3				
4				
5				
6				

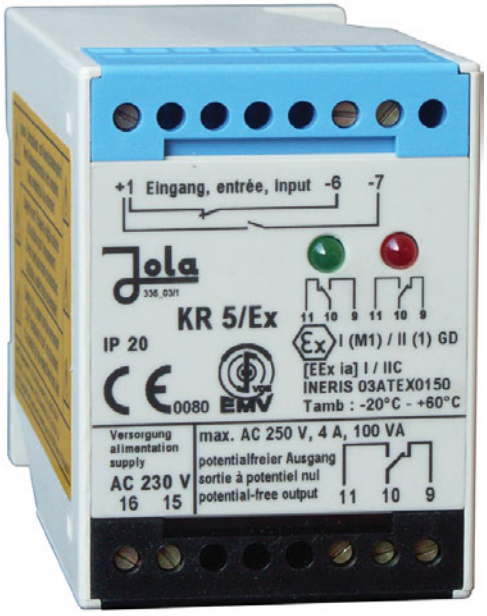
Desired options:

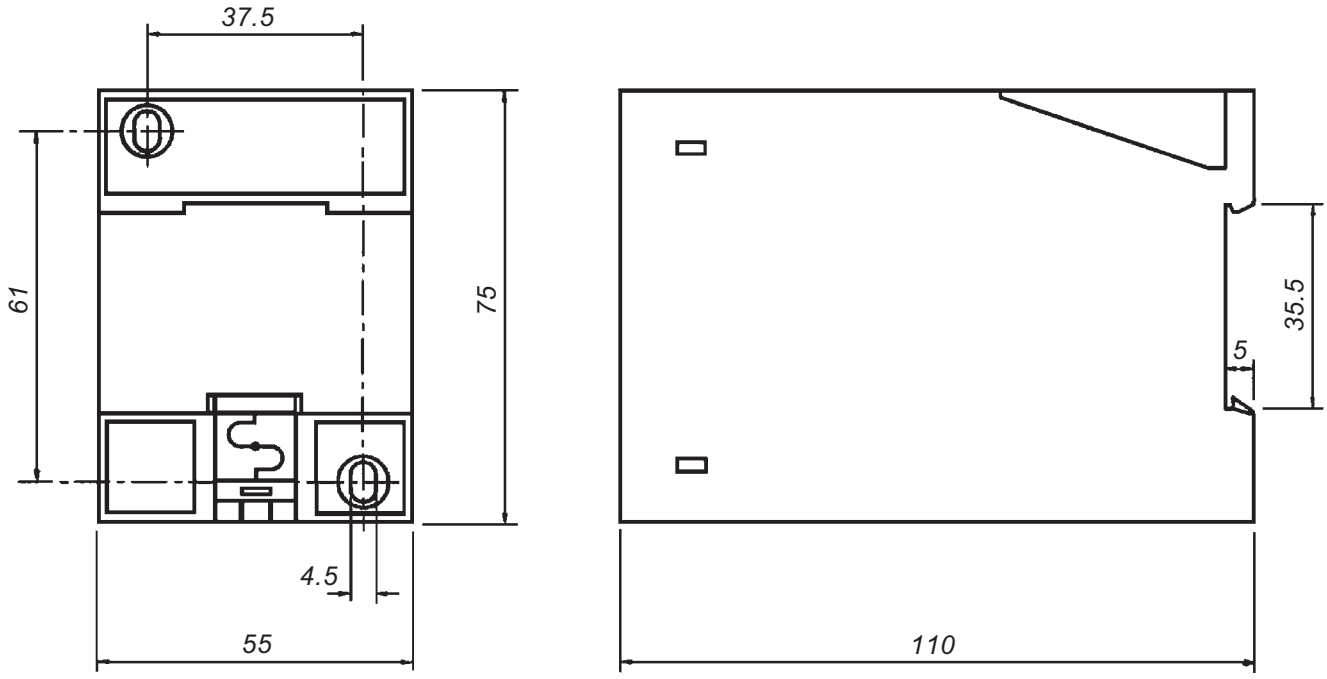
KR 5/Ex
⟨Ex⟩ I (M1) / II (1) GD [EEx ia] I / IIC

for signalling a limit level (1 contact)
or
for two-point control (2 contacts)

The Jola protection relay **KR 5/Ex ⟨Ex⟩ I (M1) / II (1) GD [EEx ia] I / IIC** is designed to transmit control commands from an intrinsically safe control current circuit in line with EN 50 014 and EN 50 020 to a non-intrinsically safe active current circuit. **It must be installed outside potentially explosive areas in compliance with the relevant standards and regulations.**

Ex ia approved command transmitters, such as e.g. the floating switches SI/SSP/NL/1/K/... Variant 0 ⟨Ex⟩ I M2 / II 2 G Ex ia I / IIB T6, may be used in the intrinsically safe control current circuits in compliance with the relevant standards and regulations.





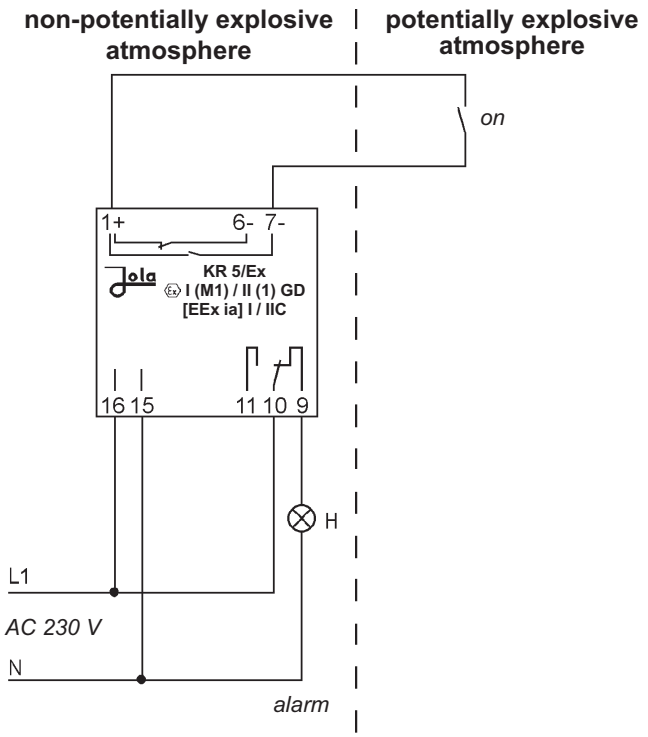
Protection relay for U-bar mounting or surface mounting,
with connection terminals on top of the housing and
with 2 built-in LEDs for signalling the respective switching status.

The appliances are designed for switch cabinet installation or for mounting in an appropriate protective housing outside potentially explosive atmospheres and may therefore not be installed in other locations. They are only suitable for use in clean environments.

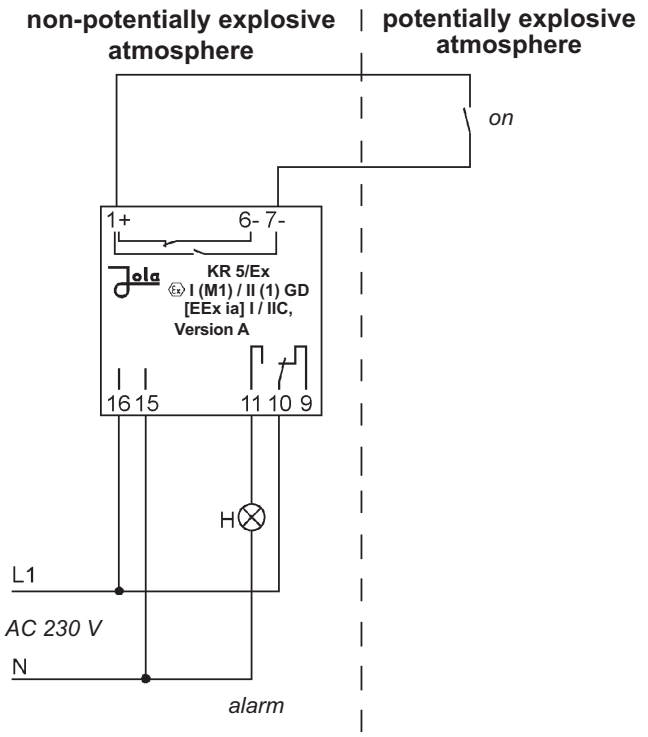
Technical data	**KR 5/Ex ⟨Ex⟩ I (M1) / II (1) GD [EEx ia] I / IIC**	**KR 5/Ex ⟨Ex⟩ I (M1) / II (1) GD [EEx ia] I / IIC, Version A**
Alternative supply voltages (terminals 15 and 16)	- AC 230 V (supplied if no other supply voltage is specified in the order) or - AC 240 V or - AC 24 V	
Power consumption	approx. 3 VA	
Control circuit (terminals 1, 6, 7)	3 terminals (under safety extra low voltage SELV), acting on 1 output relay with self-hold	
Contact connection - no-load voltage - short-circuit current - response hysteresis	according to EN 50 227, NAMUR DC 8.4 V (safety extra low voltage SELV) < 10 mA 1.5 mA ⎍ 1.8 mA	
Controlled circuit (terminals 9, 10, 11)	**1 potential-free changeover contact with self-hold**	
Principle	**quiescent current principle** | **working current principle**	
Switching status indicators	1 green LED lights when the output relay is energised 1 red LED lights when the output relay is not energised	
Switching voltage	max. AC 250 V	
Switching current	max. AC 4 A	
Switching capacity	max. 100 VA	
Housing	insulating material, 75 x 55 x 110 mm	
Connection	terminals on top of housing	
Protection class	IP 20	
Mounting	clip attachment for U-bar to DIN 46277 and EN 50022 or fastening via two boreholes	
Mounting orientation	any	
Temperature appl. range	from - 20°C to + 60°C	
Max. cable length between protection relay and contacts	to be clarified by the customer in consultation with the competent technical monitoring organisation for the application in question	
EC type examination certificate	INERIS 03ATEX0150	
EMC	for interferences emission in accordance with the appliance-specific requirements for households, business and commerce as well as small companies, and for interference immunity in accordance with the appliance-specific requirements for industrial companies	
VDE marks licence certificate	40021164	

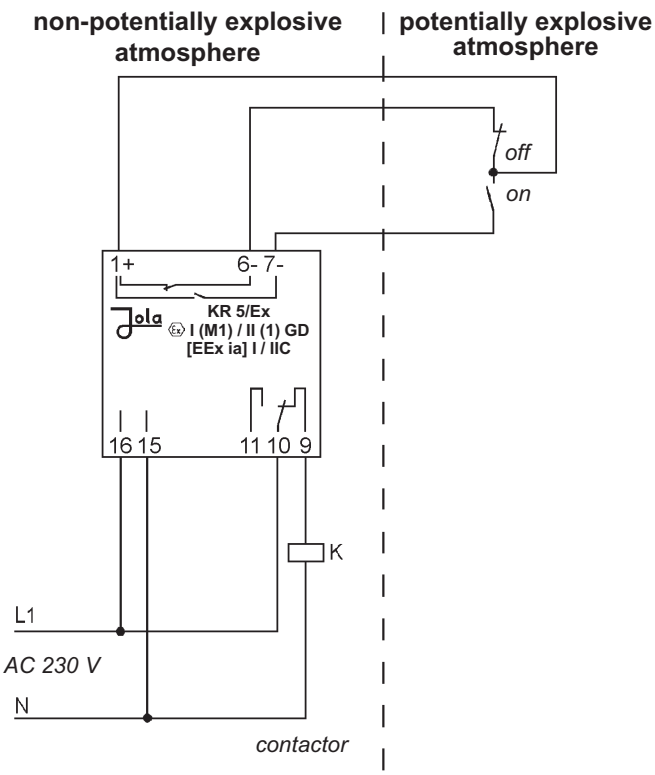
Connection diagrams

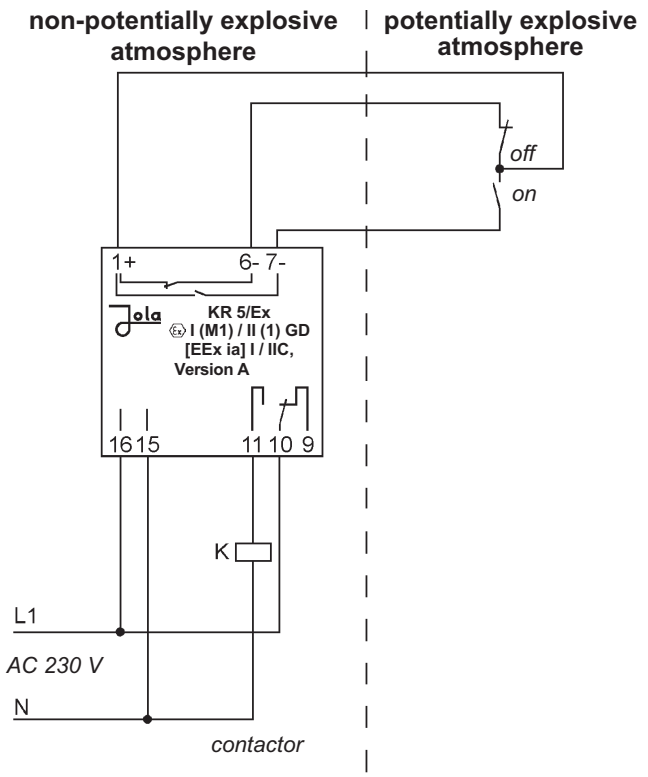
KR 5/Ex ⟨Ex⟩ I (M1) / II (1) GD [EEx ia] I / IIC



KR 5/Ex ⟨Ex⟩ I (M1) / II (1) GD [EEx ia] I / IIC, Version A







output contact shown in no-current condition

The units described in this documentation may only be installed, connected and started up by suitably qualified personnel!

Subject to deviations from the diagrams and technical data.

The details in this brochure are product specification descriptions and do not constitute assured properties in the legal sense.