



SM... float switches

Control units with rod operated microswitch
for liquid level indication or
regulation of liquid levels

for electrical systems
and
for pneumatic systems



Mode of operation for electrical systems:

The rising or falling liquid level causes the float to move marginally up or down. When the float rises, it activates a microswitch in the form of a changeover switch.

Mode of operation for pneumatic systems:

The rising or falling liquid level causes the float to move marginally up or down. When the float rises, it activates a pneumatic $3/2$ -way valve.

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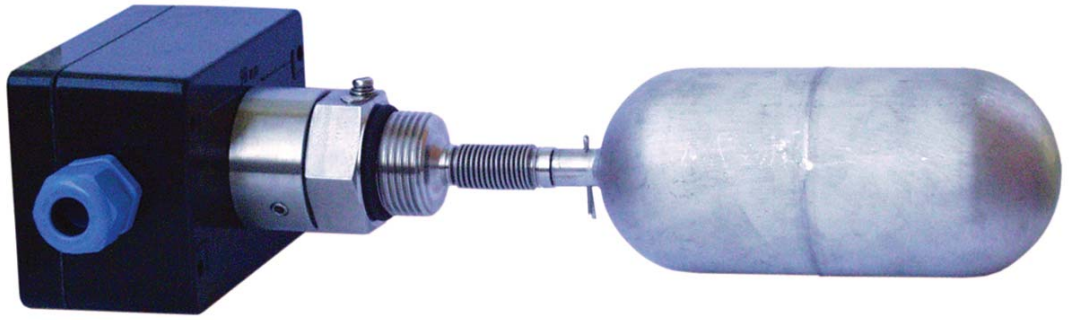


Electrical float switches

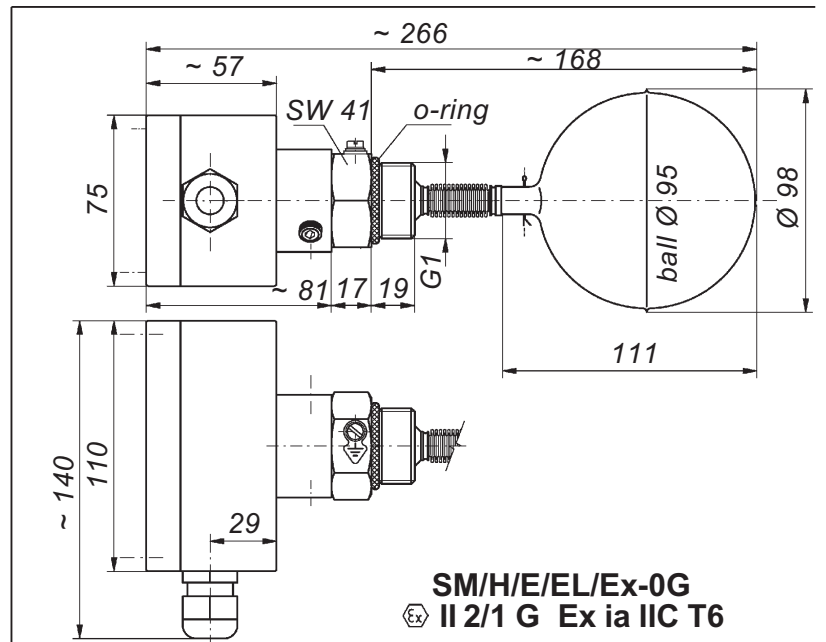
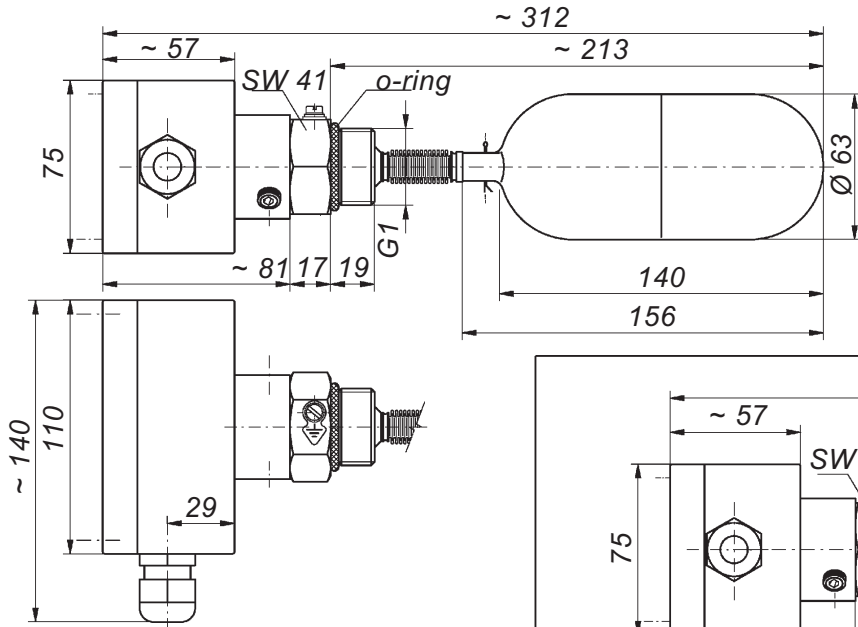
SM./E/EL/Ex-0G Ex II 2/1 G Ex ia IIC T6, with microswitch

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

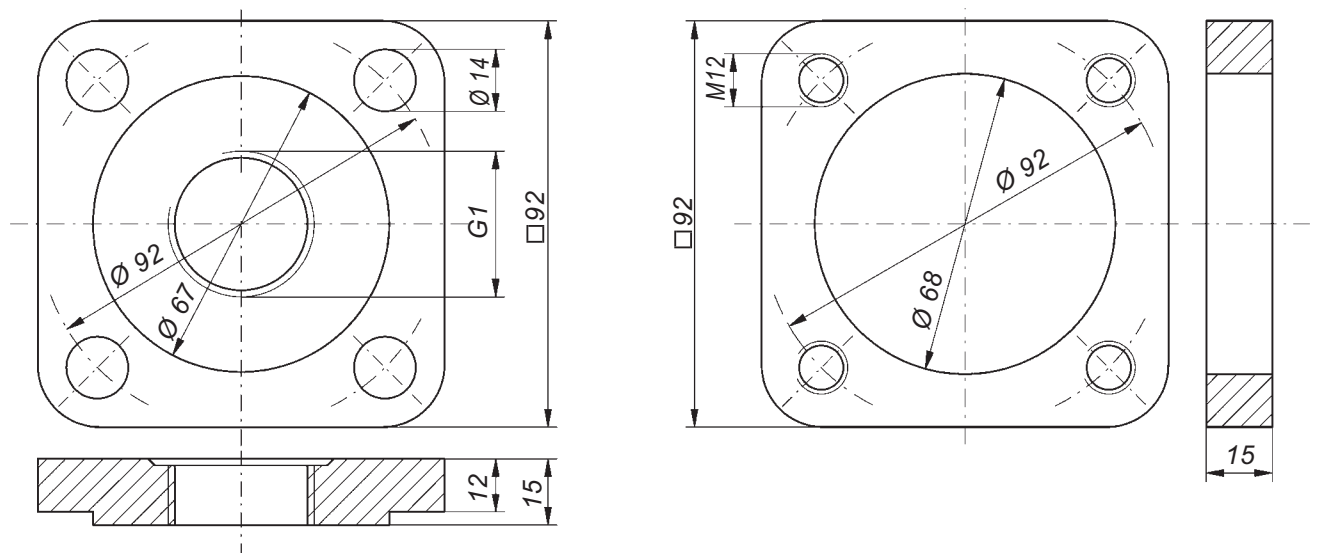
Technical data	SM/G/E/EL/Ex-0G Ex II 2/1 G Ex ia IIC T6	SM/H/E/EL/Ex-0G Ex II 2/1 G Ex ia IIC T6
Application	for use in intrinsically safe circuits in potentially explosive atmospheres in categories - float side: zone 0, 1 or 2; - terminal box: zone 1 or 2; EC type examination certificate: INERIS 03ATEX0224	
Operating principle	microswitch, changeover contact	
Recommended application	via Jola-protection relay KR 5/Ex Ex I (M1) / II (1) GD [EEx ia] I / IIC (see pages 2-2-9 to 2-2-11)	
Belows material	stainless steel 316 Ti	
Float material	stainless steel 316 Ti	
Float dimensions	cylindrical float 63 mm \varnothing x 140 mm long	ball float 95 mm \varnothing
On request: extension piece for float	horizontal or vertical, as desired	
Screw-in nipple	stainless steel 316 Ti, G1	
On request: flange	square blind flange with G1 thread made of steel St 37 or stainless steel 316 Ti (dimensions see page 2-2-2) or other flanges with any desired dimensions	blind flange DN 100 with G1 thread made of steel St 37 or stainless steel 316 Ti
Float protection class	IP 68	
Terminal box	made of glass fibre and graphite reinforced polyester, A 301, 110 x 75 x 55 mm, protection class IP 65	
Mounting	from the side	
Temperature application range	from 0°C to + 60°C	
Pressure resistance	for pressureless applications only, only for application at atmospheric conditions (0.8 bar to 1.1 bar)	
Application	only for use in liquids with a specific gravity $\geq 0.7 \text{ g/cm}^3$ (specification without the optional extension piece for the float)	



SM/G/E/EL/Ex-0G  II 2/1 G Ex ia IIC T6



SM/H/E/EL/Ex-0G  II 2/1 G Ex ia IIC T6



Square blind flange with G1 thread and corresponding counter flange








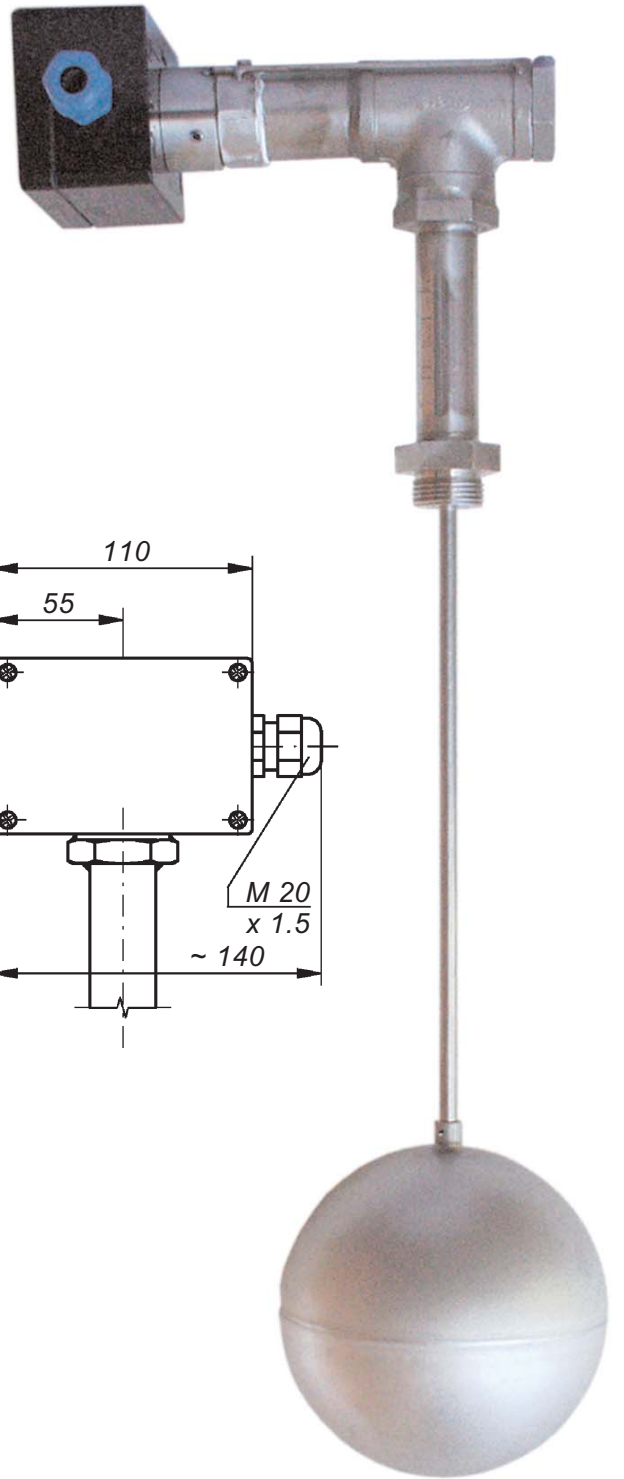
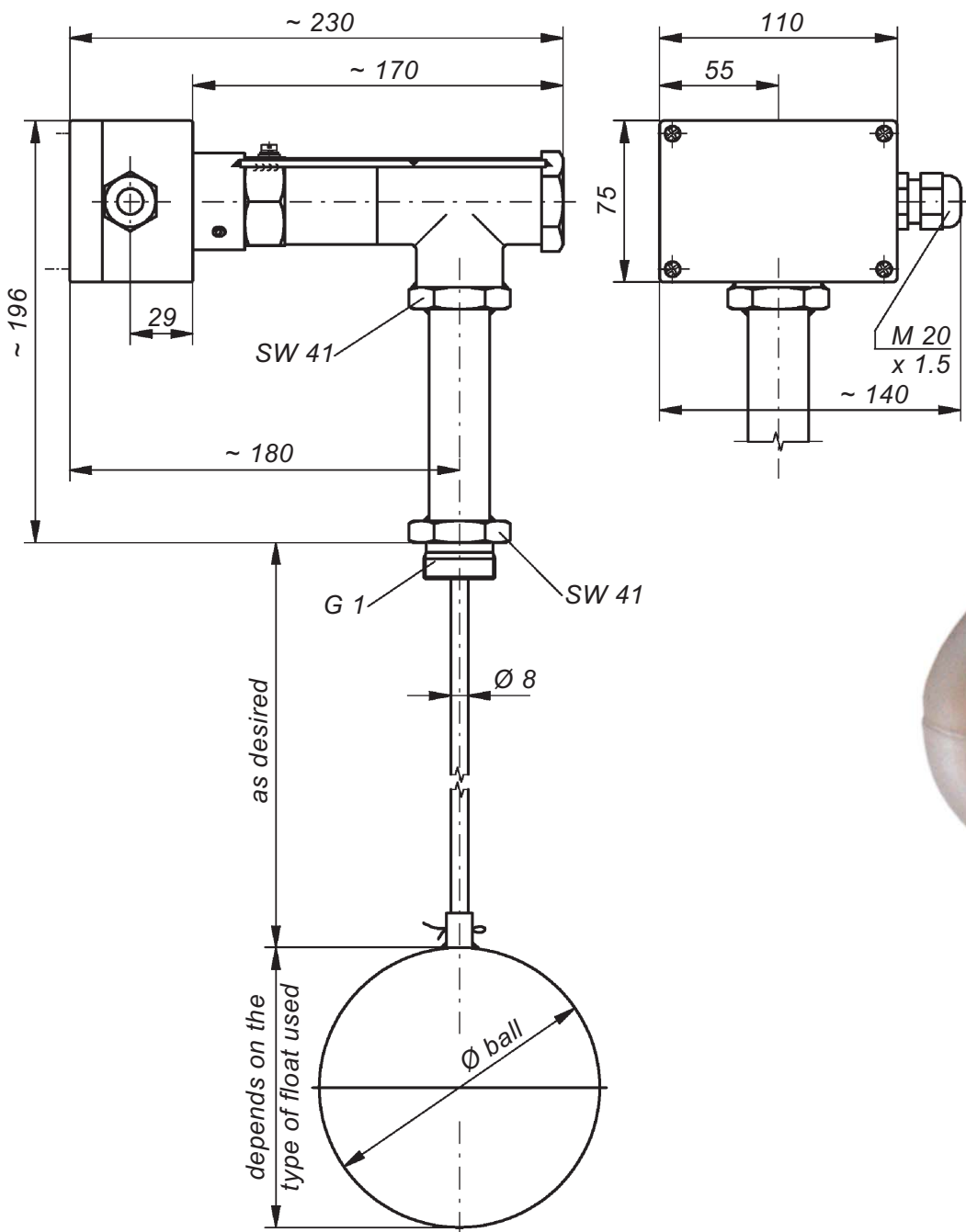
Electrical float switches

SM/V.../E/EL/Ex-0G II 2/1 G

Ex ia IIC T6, with microswitch

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

Technical data	SM/V130/E/ EL/Ex-0G  II 2/1 G Ex ia IIC T6	SM/V148/E/ EL/Ex-0G  II 2/1 G Ex ia IIC T6	SM/V180/E/ EL/Ex-0G  II 2/1 G Ex ia IIC T6	SM/V200/E/ EL/Ex-0G  II 2/1 G Ex ia IIC T6
Application	for use in intrinsically safe circuits in potentially explosive atmospheres in categories - float side: zone 0, 1 or 2; - terminal box: zone 1 or 2; EC type examination certificate: INERIS 03ATEX0224			
Operating principle	microswitch, changeover contact			
Recommended application	via Jola-protection relay KR 5/Ex  I (M1) / II (1) GD [EEx ia] I / IIC (see pages 2-2-9 to 2-2-11)			
All parts in contact with the liquid	stainless steel 316 Ti			
Float dimensions	ball float 130 mm Ø 148 mm Ø 180 mm Ø 200 mm Ø			
Length of the float rod less float (measured from sealing surface of screw-in nipple)	as desired, 200 mm if not otherwise specified; guide tube for the float rod for rod length over 500 mm included (for rod lengths under 500 mm on request)			
Screw-in nipple	stainless steel 316 Ti, G1			
On request: flange	blind flange with any desired dimensions tapped with G1 thread			
Float protection class	IP 68			
Terminal box	made of glass fibre and graphite reinforced polyester, A 301, 110 x 75 x 55 mm, protection class IP 65			
Mounting	from the top			
Temperature application range	from 0°C to + 60°C			
Pressure resistance	for pressureless applications only, only for application at atmospheric conditions (0.8 bar to 1.1 bar)			
Application	for various liquids, depending on the length of the float rod and the type of float used – please contact us for information on different options			





SM/V.../E/EL/Ex-0G  II 2/1 G Ex ia IIC T6

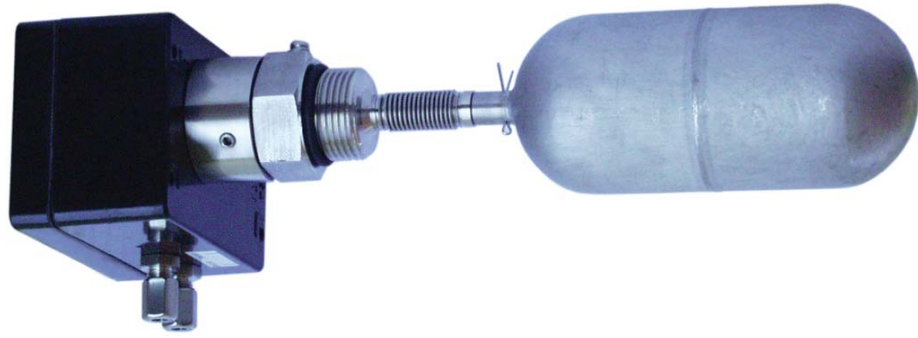


Pneumatic float switches

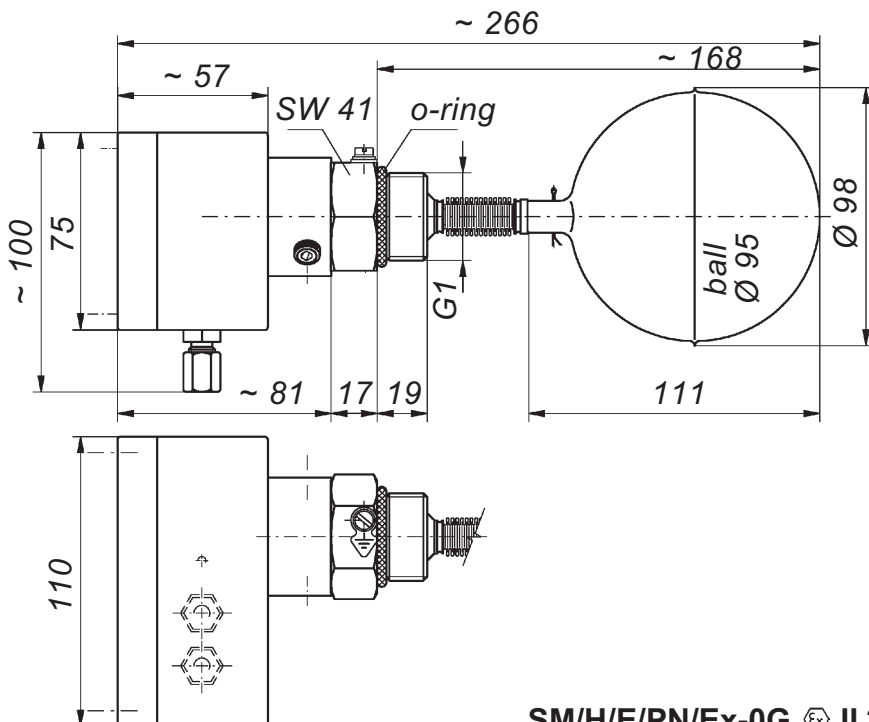
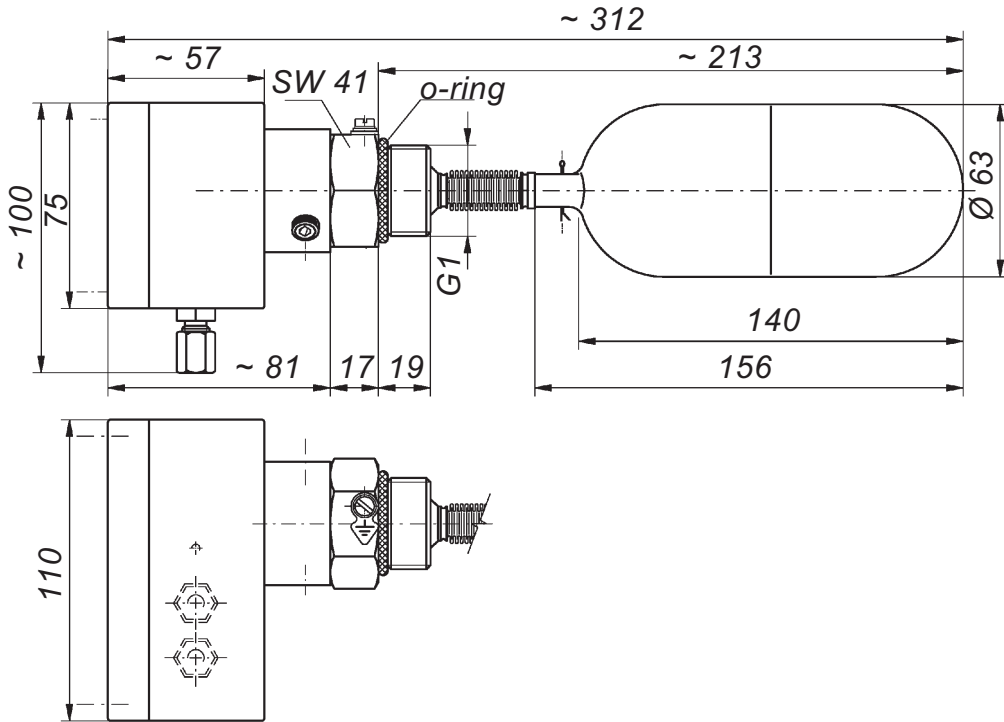
SM./E/PN/Ex-0G II 2/1 G c IIC ΔT=0, with pneumatic ³/₂-way valve

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

Technical data	SM/G/E/PN/Ex-0G  II 2/1 G c IIC ΔT=0	SM/H/E/PN/Ex-0G  II 2/1 G c IIC ΔT=0
Application	for use in pneumatic control circuits in potentially explosive atmospheres in categories - float side: zone 0, 1 or 2, - terminal box: zone 1 or 2; EC type examination certificate: INERIS 03ATEX0224	
Operating principle	pneumatic ³ / ₂ -way valve	
Pressure range	1.5 bar to max. 6 bar	
Operation	"UP" operation: float in "max. position": air is able to flow; float in "min. position": air passage is blocked on request: "DOWN" operation: float in "max. position": air passage is blocked; float in "min. position": air is able to flow	
Bellows material	stainless steel 316 Ti	
Float material	stainless steel 316 Ti	
Float dimensions	cylindrical float 63 mm Ø x 140 mm long	ball float 95 mm Ø
On request: extension piece for float	horizontal or vertical, as desired	
Screw-in nipple	stainless steel 316 Ti, G1	
On request: flange	square blind flange with G1 thread made of steel St 37 or stainless steel 316 Ti (dimensions see page 2-2-2) or other flanges with any desired dimensions	blind flange DN 100 with G1 thread made of steel St 37 or stainless steel 316 Ti
Float protection class	IP 68	
Terminal box	made of glass fibre and graphite reinforced polyester, A 301, 110 x 75 x 55 mm, with 2 connections for air hoses DN 6	
Mounting	from the side	
Temperature application range	from 0°C to + 40°C	
Pressure resistance	for pressureless applications only, only for application at atmospheric conditions (0.8 bar to 1.1 bar)	
Application	for various liquids, depending on the pressure at the valve - please contact us for information on different options	



SM/G/E/PN/Ex-0G Ex II 2/1 G c IIC $\Delta T=0$



SM/H/E/PN/Ex-0G Ex II 2/1 G c IIC $\Delta T=0$

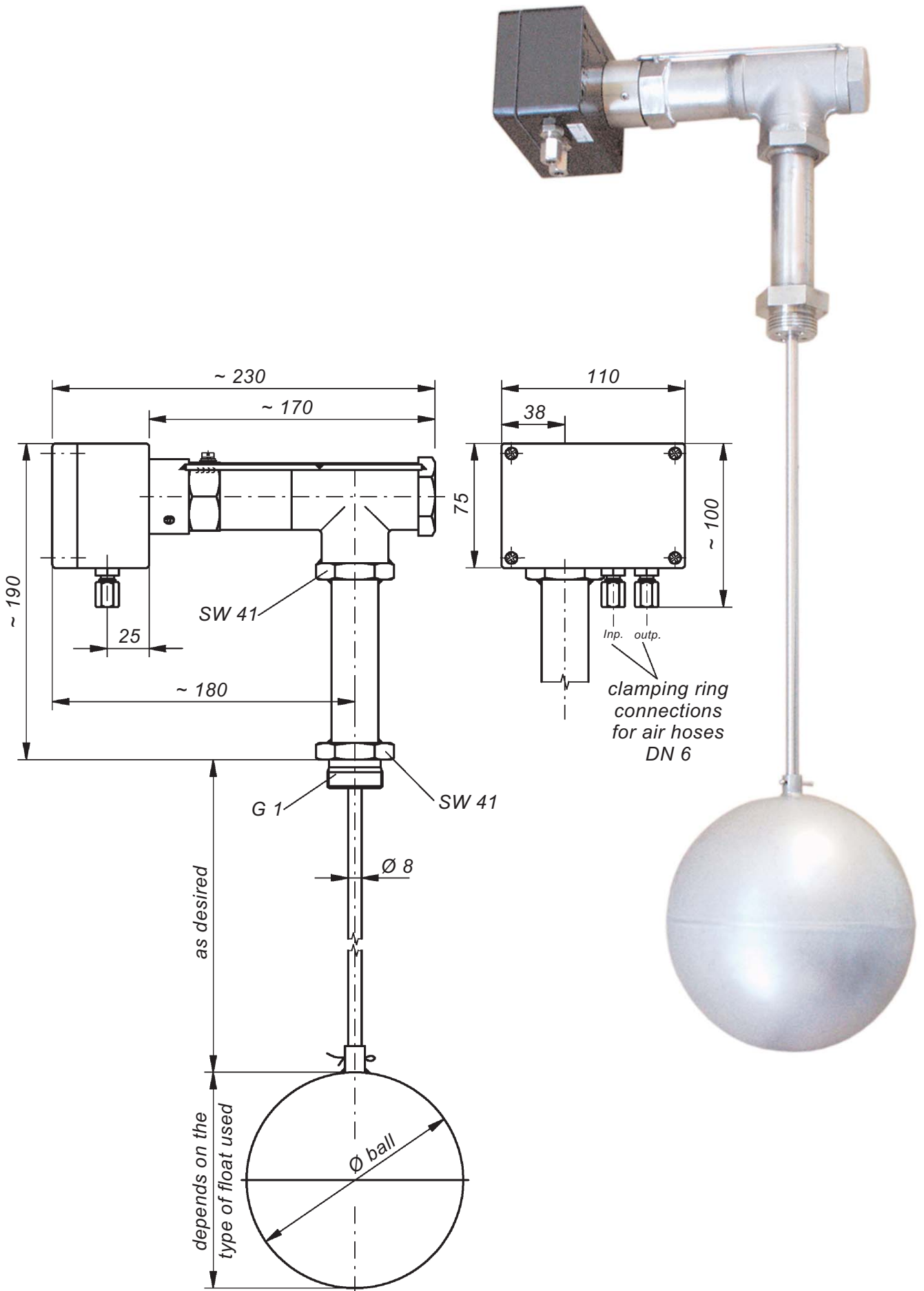


Pneumatic float switches

SM/V.../E/PN/Ex-0G $\text{\textcircled{E}}\text{x}$ II 2/1 G c IIC $\Delta T=0$, with pneumatic $3/2$ -way valve

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

Technical data	SM/V130/E/ SM/V148/E/ SM/V180/E/ SM/V200/E/ PN/Ex-0G $\text{\textcircled{E}}\text{x}$ II 2/1 G c IIC $\Delta T=0$
Application	for use in pneumatic control circuits in potentially explosive atmospheres in categories - float side: zone 0, 1 or 2, - terminal box: zone 1 or 2; EC type examination certificate: INERIS 03ATEX0224
Operating principle	pneumatic $3/2$ -way valve
Pressure range	1.5 bar to max. 6 bar
Operation	"UP" operation: float in "max. position": air is able to flow; float in "min. position": air passage is blocked on request: "DOWN" operation: float in "max. position": air passage is blocked; float in "min. position": air is able to flow
All parts in contact with the liquid	stainless steel 316 Ti
Float dimensions	ball float 130 mm $\text{\textcircled{O}}$ 148 mm $\text{\textcircled{O}}$ 180 mm $\text{\textcircled{O}}$ 200 mm $\text{\textcircled{O}}$
Length of the float rod less float (measured from sealing surface of screw-in nipple)	as desired, 200 mm if not otherwise specified; guide tube for the float rod for rod length over 500 mm included (for rod lengths under 500 mm on request)
Screw-in nipple	stainless steel 316 Ti, G1
On request: flange	blind flange with any desired dimensions tapped with G1 thread
Float protection class	IP 68
Terminal box	made of glass fibre and graphite reinforced polyester, A 301, 110 x 75 x 55 mm, with 2 connections for air hoses DN 6
Mounting	from the top
Temperature application range	from 0°C to + 40°C
Pressure resistance	for pressureless applications only, only for application at atmospheric conditions (0.8 bar to 1.1 bar)
Application	for various liquids, depending on the length of the float rod, the type of float used and the pressure at the valve - please contact us for information on different options



SM/V.../E/PN/Ex-0G  II 2/1 G c IIC ΔT=0

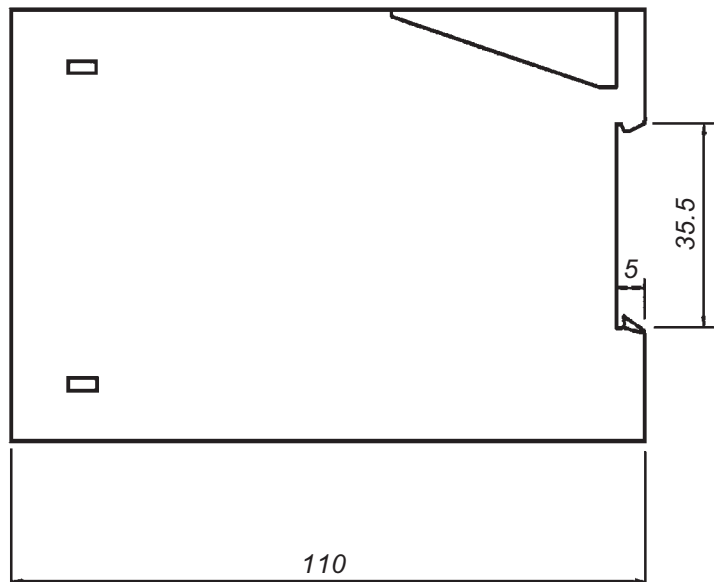
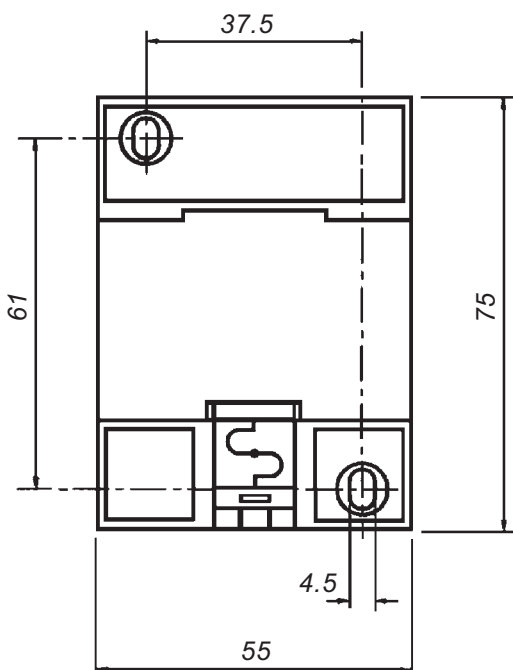
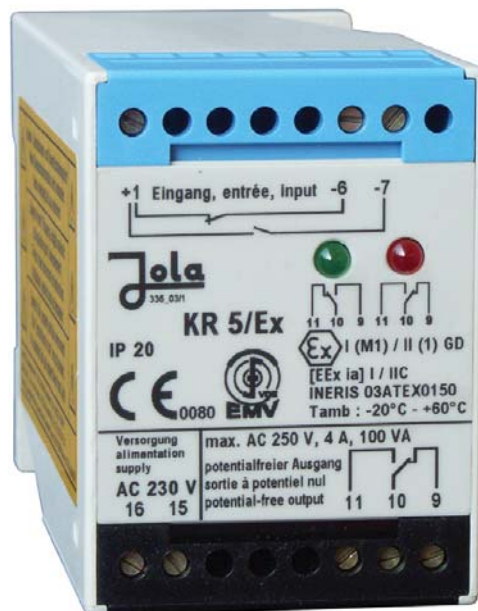


KR 5/Ex Ex I (M1) / II (1) GD [EEx ia] I / IIC protection relay

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 50014 and EN 50020 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 the float switches SM/.../E/EL/Ex-0G Ex II 2/1 G Ex ia IIC T6, may be used in the intrinsically safe control current circuits in compliance with the relevant standards and regulations.



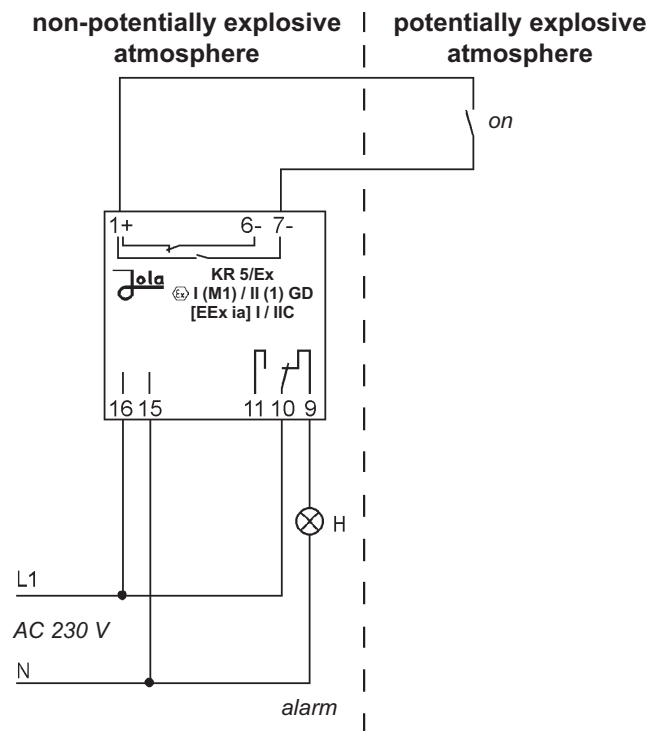
Protection relay for U-bar mounting or surface mounting, with connection terminals on top of the housing and with 2 built-in LEDs for signalling the respective switching status.

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.

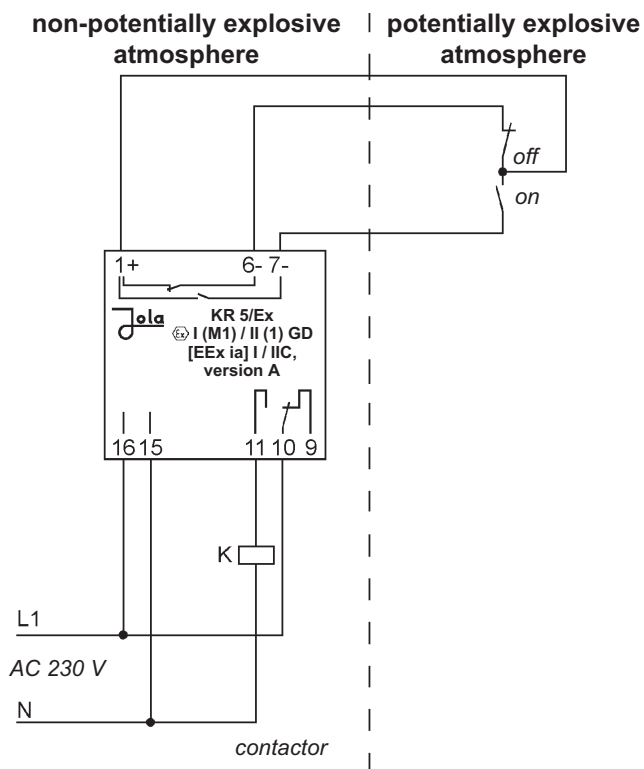
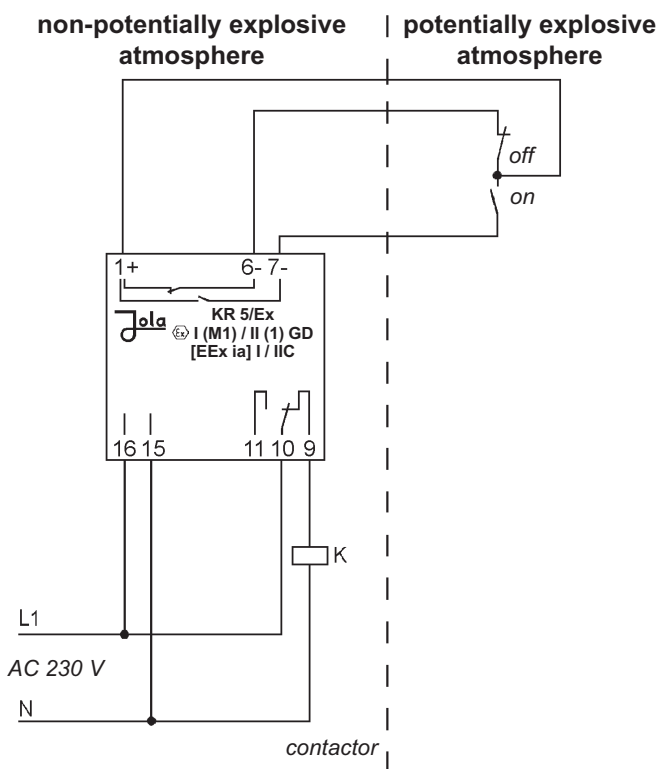
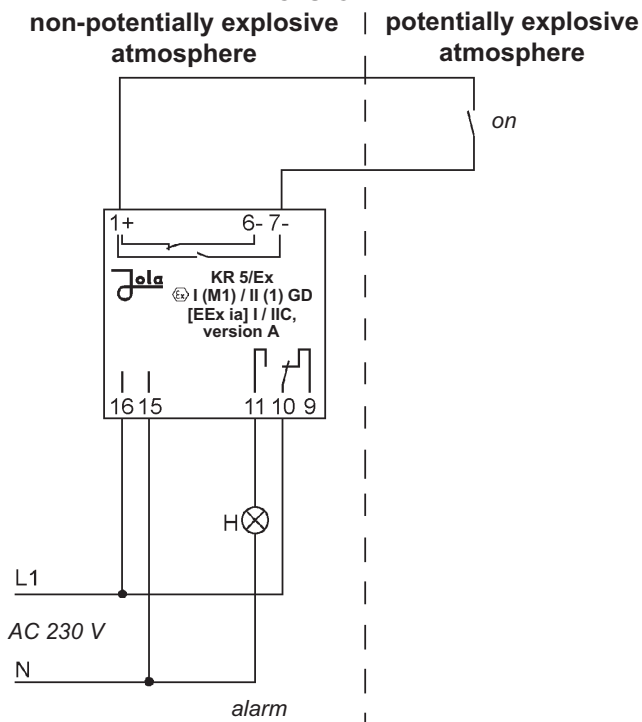
Technical data	KR 5/Ex  I (M1) / II (1) GD [EEx ia] I / IIC	KR 5/Ex  I (M1) / II (1) GD [EEx ia] I / IIC, version A
Alternative supply voltages (terminals 15 and 16)	- AC 230 V (supplied if no other supply voltage is specified in the order) or - AC 240 V or - AC 24 V	
Power input	approx. 3 VA	
Control circuit (terminals 1, 6, 7)	3 terminals (under safety extra low voltage), acting on 1 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) < 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 46 277 and EN 50 022 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.	

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 of the relay

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.