Zertifiziertes QM-System
DIN EN ISO 9001
Zertifikat-Nr. 01017

Magnetic Level Switches

for liquids

measuring • monitoring • analysing

MS

- Switch points: max. 3
- p_{max}: 100 bar; t_{max}: 150 °C
- Connection: G ⅜, G 1½, G 2, 1½" NPT, 2" NPT male, DIN and ANSI flanges, special connections
- Material: stainless steel, brass, PVC-U, PP
- ATEX Certification
- Connection heads: aluminium, ABS

N1

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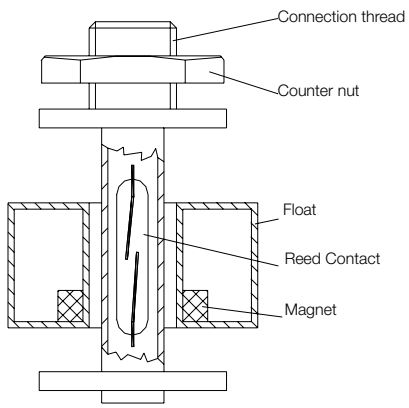
1/06 - 2024

Design



Description

Magnetic level switches are used for the monitoring and control of liquid levels in vessels. Magnetic level switches are manufactured to customer specification.

An overview of types available with minimum lengths of measuring tube is set out on the following pages. Please refer to this overview when placing your order. Furthermore any limits can be specified within the limits found in the brochure.

For example:

- Longer measuring tube
- Longer connection cable
- Different cable materials
- Several contacts and different contact operations
- Different materials
- Wide range connections and electrical terminal boxes

Method of Operation

Kobold magnetic float switches are fitted with a hermetically sealed contact which is situated in the tube.

The float sliding on the tube contains a ring magnet whose magnetic field switches the sealed contact in a noncontacting fashion. The sealed contacts are available as N/O, N/C or changeover contacts.

The float sliding up and down on the liquid is the only moving part in the Kobold magnetic float switches.

Advantages

- Simple installation
- Long electrical service life due to sealed contacts
- High-degree of operational reliability with air gap between measuring tube and floats
- Several levels can be monitored with one float
- Open/close function or changeover contact available

Model Codes

MS05 E R10 SCX P

0

Model

Measuring tube material
E = stainless steel 1.4404
M = brass
P = PVC

Process connection
R10 = G ⅜
2R8 ... 9AC = connection box with thread or flange connection

No. of contacts and function*
S = N/O contact
C = N/C contact
W = changeover contact
X = no contact

Electr. connection
0 = with housing
P = 1 m PVC cable
S = 1 m silicone cable
Y = special length and type

ATEX
0 = without
E = ATEX

Non-standard versions on request

***Please note:**

Contact state referred to empty tank.

Simply link letters for several contacts.

The first letter represents the topmost contact, the second letter the second contact from the top, and so on. The position of the contacts, measured from the sealing edge of the connection screwing, must also be specified.

L1 = highest contact (mm) from the top (sealing edge)
L2 = second contact (mm) from the top (sealing edge) and so forth

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Float Design

Model	Form	Materials	Float outside-Ø [mm]	Height [mm]	Bore hole Ø [mm]	Min. liquid density [kg/dm³]	Max. temperature	Nominal pressure at 20 °C
MS05-	Cylinder hollow	PP	42	40	14	>0.5	80 °C	3 bar
MS06-[1)]	Cylinder solid material	PP	40	20	14	>0.9	90 °C	100 bar
MS07-	Cylinder hollow	PVC-U	42	40	14	>0.65	55 °C	3 bar
MS10-	Ball hollow	Stainless steel 1.4404	52	52	15	>0.6	150 °C	30 bar

[1)] For MS06- model, one float is required for each switch point
For all other floats two contacts can be operated with one float

ATEX Certificate

Ⓔx II 1 GD Ex ia IIC T6 Ga / Ex ia IIIC T85°C Da
-20≤Ta≤+60°C

Connection cable

PVC: max. 70 °C (standard)
Silicone: max. 150 °C

Please note max.-values of every single model

Technical Details

Hysteresis: 5 mm difference in level

Non-standard versions available

Damping tube for agitated liquids

Float switches with damping tube for agitated or dirty liquids can be supplied upon request.

Temperature monitoring

Float switches with integrated temperature switch, fixed switch point between 60 °C and 150 °C upon request.
Option: Pt 100 available

Supplementary devices:

1. Contact protection relays

We recommend the use of contact protection relays in conjunction with sealed contacts.

Contact protection relays have the following advantages:

- No contact overloads arising from sparking and high currents, which can, for example, be caused by self-induced e.m.f.'s when switching solenoid valves.
- Float switches are electrically isolated from the high voltage power supply system.
- Protection for persons who come into contact with liquids according to VDE 0100.
- Standard models:
  Model MSR-10, 1 channel
  Model MSR-20, 2 channels
  Model MSR-11, 1 changeover bistable
- ATEX-models:
  Model KFD2-SR2-Ex1.W 1 channel, 1 relay output, supply 24 V_{DC}
  Model KFA6-SR2-Ex1.W 1 channel, 1 relay output, supply 230 V_{AC}
  Model KFD2-SR2-Ex2.W 2 channels, 2 relays output, supply 24 V_{DC}
  Model KFA6-SR2-Ex2.W 2 channels, 2 relays output, supply 230 V_{AC}

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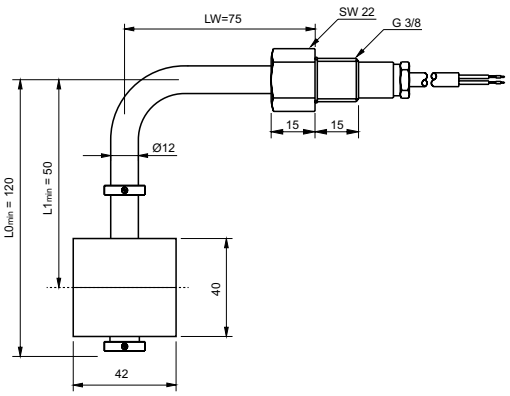
Cylindrical float made of polypropylene



Technical Details

N/O contact*:	230 $V_{AC/DC}$ / 1 A / 60 VA ATEX-version: U_i: 40 V
N/C contact*:	230 $V_{AC/DC}$ / 1 A / 60 VA ATEX-version: U_i: 40 V
Changeover contact:	230 $V_{AC/DC}$ / 1 A / 60 VA ATEX-version: U_i: 40 V

* Note: contact state referred to empty tank and switch point distance refer to a density 1.0 kg/dm³

Cable length:	1 m
Installation position:	lateral ±30 °
Protection type:	IP 65
Min. liquid density:	>0.5 kg/dm³
Max. pressure (at 20 °C):	3 bar
Max. temp. PVC cable:	70 °C
Max. temp. silicone cable:	80 °C
Max. length of guide tube:	4 m
Connection heads:	see »Connecting Flanges«
Switch point min. distance from end of guide tube:	45 mm (for special length)
Switch point min. distance between contacts:	between L1 and L2: 45 ± 3 mm between L2 and L3: 54 ± 3 mm
Hysteresis:	5 mm

Model	Guide tube[1)]	Process connection	Contact L1	Contact L2	Contact L3	Electr. connection	ATEX
MS05- (PP float)	**M** = brass **E** = 1.4404	**R10** = G⅜ **XXX** = see »Connecting Flanges«	**S** = N/O **C** = N/C **W** = SPDT	**X** = w/o **S** = N/O **C** = N/C **W** = SPDT	**X** = w/o **S** = N/O **C** = N/C **W** = SPDT	**0** =with housing **P** =1 m PVC-cable **S** =1 m silicone cable **Y**[2)] =special length and type	**0** = without **E** = ATEX

[1)] Please specify in writing total and switching lengths
[2)] Please specify in writing length and type of cable.

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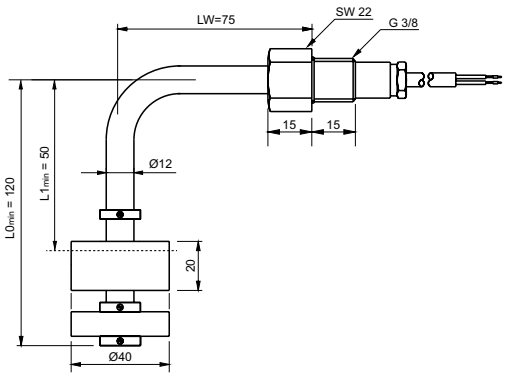
High-pressure applications



Technical Details

N/O contact*:	230 $V_{AC/DC}$ / 1 A / 60 VA ATEX-version: U_i: 40 V
N/C contact*:	230 $V_{AC/DC}$ / 1 A / 60 VA ATEX-version: U_i: 40 V
Changeover contact:	230 $V_{AC/DC}$ / 1 A / 60 VA ATEX-version: U_i: 40 V

* Note: contact state referred to empty tank and switch point distance refer to a density 1.0 kg/dm³

Cable length:	1 m
Installation position:	lateral ±30°
Protection type:	IP65
Min. liquid density	>0.9 kg/dm³
Max. pressure (at 20°C):	100 bar
Max. temp. PVC cable:	70°C
Max. temp. silicone cable:	90°C
Max. length of guide tube:	4 m
Connection heads:	see »Connecting Flanges«
Switch point min. distance from end of guide tube:	50 mm (for special length)
Switch point min. distance between contacts:	between L1 and L2: 70 ± 7 mm between L2 and L3: 70 ± 7 mm
Hysteresis:	5 mm

Model	Guide tube[1)]	Process connection	Contact L1	Contact L2	Contact L3	Electr. connection	ATEX
MS06- (PP float)	**M** = brass **E** = 1.4404	**R10** = G⅜ **XXX** = see »Connecting Flanges«	**S** = N/O **C** = N/C **W** = SPDT	**X** = w/o **S** = N/O **C** = N/C **W** = SPDT	**X** = w/o **S** = N/O **C** = N/C **W** = SPDT	**0** = with housing **P** = 1 m PVC-cable **S** = 1 m silicone cable **Y**[2)] = special length and type	**0** = without **E** = ATEX

[1)] Please specify in writing total and switching lengths
[2)] Please specify in writing length and type of cable

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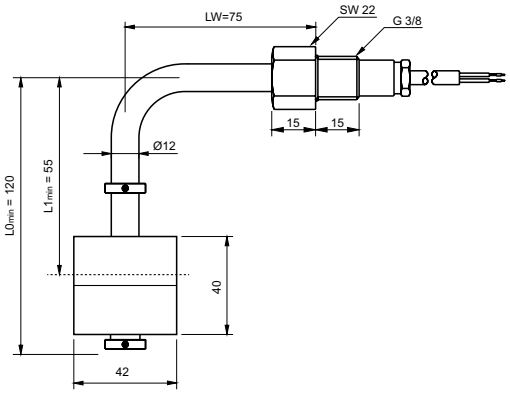
Cylindrical float and tube made of PVC



Technical Details

N/O contact*:	230 $V_{AC/DC}$ / 1 A / 60 VA ATEX-version: U_i: 40 V
N/C contact*:	230 $V_{AC/DC}$ / 1 A / 60 VA ATEX-version: U_i: 40 V
Changeover contact:	230 $V_{AC/DC}$ / 1 A / 60 VA ATEX-version: U_i: 40 V

* Note: contact state referred to empty tank and switch point distance refer to a density 1.0 kg/dm³

Cable length:	1 m
Installation position:	lateral ±30°
Protection type:	IP65
Min. liquid density:	>0.65 kg/dm³
Max. pressure (at 20°C):	3 bar
Max. temp. PVC cable:	55°C
Max. temp. silicone cable:	55°C
Max. length of guide tube:	2 m
Connection heads:	see »Connecting Flanges«
Switch point min. distance from end of guide tube:	57 mm (for special length)
Switch point min. distance between contacts:	between L1 and L2: 45 ± 3 mm between L2 and L3: 54 ± 3 mm
Hysteresis:	5 mm

Model	Guide tube[1)]	Process connection	Contact L1	Contact L2	Contact L3	Electr. connection	ATEX
MS07- (PVC float)	**P** = PVC	**R10** = G⅜ **XXX** = see »Connecting Flanges	**S** = N/O **C** = N/C **W** = SPDT	**X** = w/o **S** = N/O **C** = N/C **W** = SPDT	**X** = w/o **S** = N/O **C** = N/C **W** = SPDT	**0** = with housing **P** = 1 m PVC-cable **S** = 1 m silicone cable **Y2)** = special length and type	**0** = without **E** = ATEX

[1)] Please specify in writing total and switching lengths
[2)] Please specify in writing length and type of cable.

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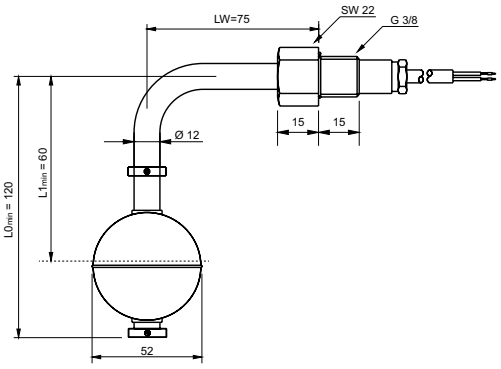
Ball float made of stainless steel 1.4404



Technical Details

N/O contact*:	230 $V_{AC/DC}$ / 1 A / 60 VA ATEX-version: U_i: 40 V
N/C contact*:	230 $V_{AC/DC}$ / 1 A / 60 VA ATEX-version: U_i: 40 V
Changeover contact:	230 $V_{AC/DC}$ / 1 A / 60 VA ATEX-version: U_i: 40 V

* Note: contact state referred to empty tank and switch point distance refer to a density 1.0 kg/dm³

Cable length:	1 m
Installation position:	lateral ±30°
Protection type:	IP65
Min. liquid density:	>0.6 kg/dm³
Max. pressure (at 20°C):	30 bar
Max. temp. PVC cable:	70°C
Max. temp. silicone cable:	150°C
Max. length of guide tube:	4 m
Connection heads:	see »Connecting Flanges«
Switch point min. distance from end of guide tube:	55 mm (for special length)
Switch point min. distance between contacts:	between L1 and L2: 45 ± 3 mm between L2 and L3: 66 ± 3 mm
Hysteresis:	5 mm

Model	Guide tube[1)]	Process connection	Contact L1	Contact L2	Contact L3	Electr. connection	ATEX
MS10- (1.4404 float)	**M** = brass **E** = 1.4404	**R10** = G⅜ **XXX** = see »Connecting Flanges«	**S** = N/O **C** = N/C **W** = SPDT	**X** = w/o **S** = N/O **C** = N/C **W** = SPDT	**X** = w/o **S** = N/O **C** = N/C **W** = SPDT	**0** = with housing **P** = 1 m PVC-cable **S** = 1 m silicone cable **Y2)** = special length and type	**0** = without **E** = ATEX

[1)] Please specify in writing total and switching lengths
[2)] Please specify in writing length and type of cable.

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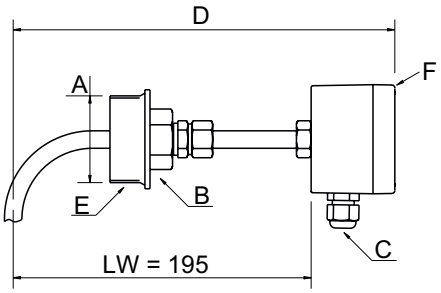
Model 2/4

Aluminium housing



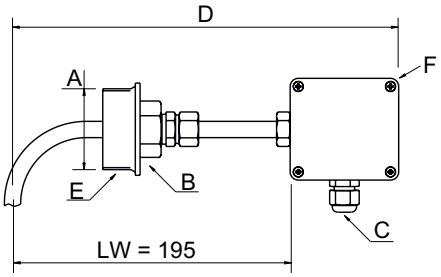
Dimensions and materials

Model	Process connection (A)*	Width across flats (B)	Electrical connection (C)	Overall width D)	Sliding screwed fitting (E)	Housing (F)	t_{max}
2...	**...R8** = G 1½ **...R9** = G 2 **...N8** = 1½" NPT **...N9** = 2" NPT	30AF 36AF 30AF 36AF	M16 x 1.5	253 mm	brass	Al	90 °C
4...	**...R8** = G 1½ **...R9** = G 2 **...N8** = 1½" NPT **...N9** = 2" NPT	30AF 36AF 30AF 36AF	M16 x 1.5	253 mm	1.4404	Al	90 °C

* Size of process connection must be according with float size

Model 5

ABS Housing



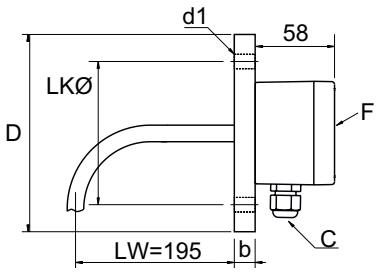
Dimensions and materials

Model	Process connection (A)*	Width across flats (B)	Electrical connection (C)	Overall width (D)	Sliding screwed fitting (E)	Housing (F)	t_{max}
5...	**...R8** = G 1½ **...R9** = G 2 **...N8** = 1½" NPT **...N9** = 2" NPT	30AF 36AF 30AF 36AF	M16 x 1.5	278 mm	PVC	ABS	55 °C

* Size of process connection must be according with float size

Model 9

Flange according to DIN EN 1092-1 PN16 / ANSI B 16.5 150 lbs RF



Dimensions and materials

Model	Flange size 1.4404	D	b	LK Ø	d1	Electrical connection (C)	Housing (F)	t_{max}
9...	**...F8** = DN 40	150	16	110	4 x Ø18	M16 x 1,5	Al	90 °C
	...F9 = DN 50	165	18	125				
	...F0 = DN 65	185	18	145	4 x Ø18			
	...FB = DN 80	200	20	160	4 x Ø18			
	...FC = DN 100	220	20	180	4 x Ø18			
	...FD = DN 125	250	22	210	4 x Ø18			
	...A8 = 1½"	127	17.5	98.6	4 x Ø15.7			
	...A9 = 2"	152.4	19.1	120.7	4 x Ø19.1			
	...A0 = 2½"	177.8	22.4	139.7	4 x Ø19.1			
	...AB = 3"	190.5	23.9	152.4	4 x Ø19.1			
	...AV = 3½"	215.0	23.9	177.8	8 x Ø19.1			
	...AC = 4"	228.6	23.9	190.5	8 x Ø19.1			

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Technical Details

Model MSR

Power supply:	230 V_{AC} -10/+6% 50-60 Hz
Power consumption:	max. 6 VA
Relay output:	MSR-010 (1 floating changeover contact) MSR-020 (2 floating changeover contact) MSR-011 (1 floating changeover contact bistable) max. 250 V_{AC} 8 A
Details:	see datasheet

Model KFA6-SR2-Ex2.W (Double channel)

ATEX-approval:	Ⓔx II (1) G [Ex ia] IIC, II (1)D [Ex ia] IIIC
Ex / I.S. data, ATEX:	
U_o:	10.6 V
I_o:	19.1 mA
P_o:	51 mW
U_m:	253 V_{AC}
Power supply:	207...253 V_{AC}, 45...65 Hz
Power consumption:	max. 1 W
Relay Output:	max. 253 V_{AC} 2 A
Details:	see datasheet

Model KFD2-SR2-Ex2.W (Double channel)

ATEX-approval:	Ⓔx II(1) G [Ex ia] IIC , II (1) D [Ex ia] IIIC
Ex / I.S. data, ATEX:	
U_o:	10.5 V
I_o:	13 mA
P_o:	34 mW
U_m:	253 V_{AC}
Power supply:	20...30 V_{DC}, 45...65 Hz
Power consumption:	max. 0.9 W
Relay Output:	max. 253 V_{AC} 2 A
Details:	see datasheet

Model KFA6-SR2-Ex1.W (Single channel)

ATEX-approval:	Ⓔx II(1) G [Ex ia] IIC , II (1) D [Ex ia] IIIC
Ex / I.S. data, ATEX:	
U_o:	10.6 V
I_o:	19.1 mA
P_o:	51 mW
U_m:	253 V_{AC}
Power supply:	207...253 V_{AC}, 45...65 Hz
Power consumption:	max. 1 W
Relay Output:	max. 253 V_{AC} 2A
Details:	see datasheet

Model KFD2-SR2-Ex1.W (Single channel)

ATEX-approval:	Ⓔx II(1) G [Ex ia] IIC , II (1) D [Ex ia] IIIC
Ex / I.S. data, ATEX:	
U_o:	10.5 V
I_o:	13 mA
P_o:	34 mW
U_m:	253 V_{AC}
Power supply:	20...30 V_{DC}, 45...65 Hz
Power consumption:	max. 0.9 W
Relay Output:	max. 253 V_{AC} 2A
Details:	see datasheet

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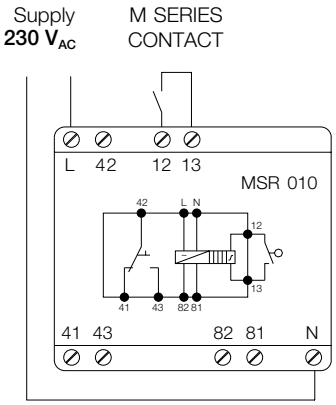
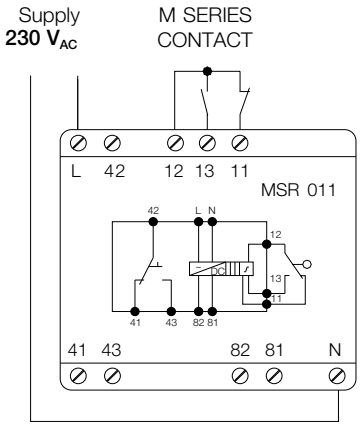
Standard models

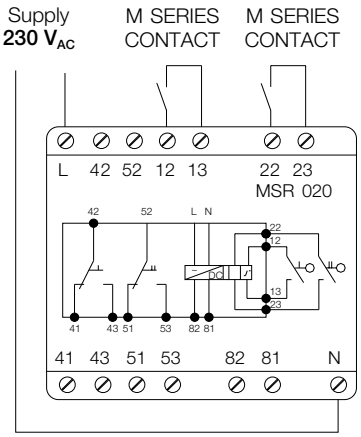
MSR010



MSR011

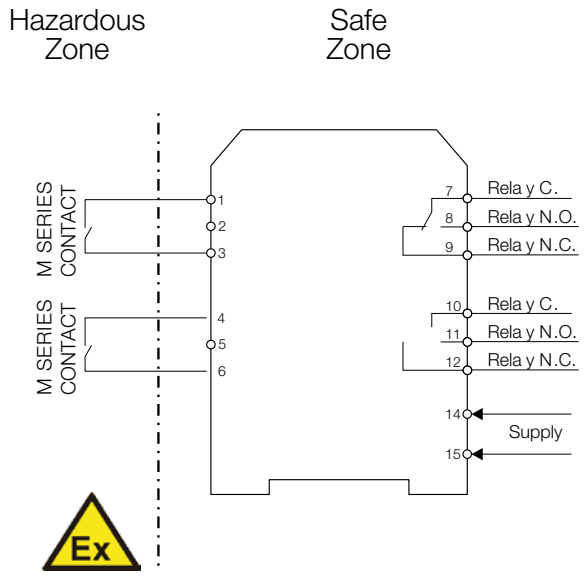


MSR020



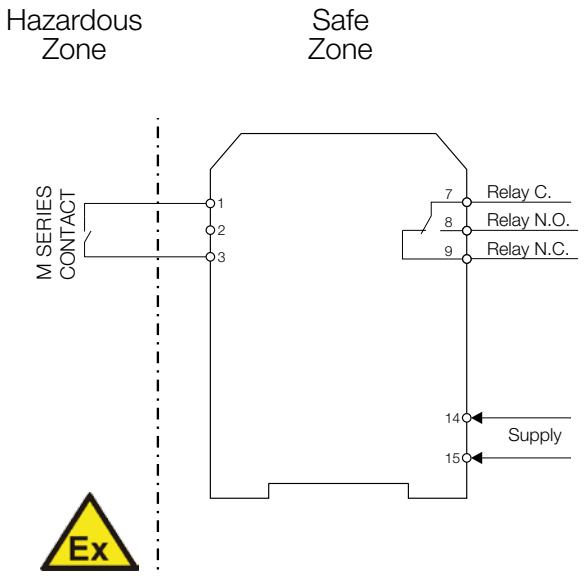
ATEX-models

KFD2-SR2-Ex2.W (Double channel)
KFA6-SR2-Ex2.W (Double channel)



KFA6-SR2-Ex2.W supply: 207 ... 253 V_{AC}
KFD2-SR2-Ex2.W supply: 24 V_{DC}

KFD2-SR2-Ex1.W (Single channel)
KFA6-SR2-Ex1.W (Single channel)



KFA6-SR2-Ex1.W supply: 207 ... 253 V_{AC}
KFD2-SR2-Ex1.W supply: 24 V_{DC}