



Magnetic Level Switches for Liquids



measuring
•
monitoring
•
analysing

M01-M20



- Switch points: max. 4
- p_{\max} : 100 bar; t_{\max} : 150 °C
- Connection:
G 1/8, G 3/8, G 1/2, G 1, G 1 1/2
G 2, 1" NPT, 1 1/2" NPT,
2" NPT, PG 7 male,
DIN and ANSI flanges,
special connections
- Material:
Stainless steel, brass,
PVC-U, PP, NBR, PVDF
- ATEX-Certification
- Connection heads:
Aluminium, PA, PP, ABS

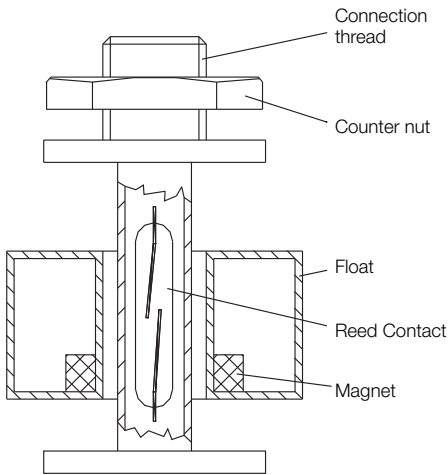


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Design



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

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 non contacting 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 guide tube and floats
- Installation in top or bottom of vessel
- Several levels can be monitored with one float
- Open/close function or changeover contact available

Model Codes

	M07	P	R10	SCXX	P	E
Model	_____					
Guide tube material	_____					
E = stainless steel 1.4404						
M = brass						
P = PVC						
S = PVDF						
Process connection	_____					
R05 = G 1/8						
R10 = G 3/8						
R15 = G 1/2						
PG7 = Pg7,						
1R6...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						
L = 1 m PVC cable (stock model)						
Y = special length and type						
ATEX	_____					
0 = without						
E = ATEX						

***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



Float designs

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
M01	Cylinder solid material	NBR	18	25	10	> 0.6	80 °C	10 bar
M02	Cylinder hollow	PP	26	16	10	> 0.65	80 °C	3 bar
M03	Cylinder hollow	PVC-U	26	26	10	> 0.9	55 °C	3 bar
M04	Ball hollow	Stainless steel 1.4404	30	28	9	> 0.8	150 °C	15 bar
M05	Cylinder hollow	PP	42	40	14	> 0.6	80 °C	3 bar
M06 ¹⁾	Cylinder solid material	PP	40	20	14	> 0.9	90 °C	100 bar
M07	Cylinder hollow	PVC-U	42	40	14	> 0.9	55 °C	3 bar
M08	Cylinder hollow	Stainless steel 1.4404	44	52	15	> 0.65	150 °C	20 bar
M10	Ball hollow	Stainless steel 1.4404	52	52	15	> 0.6	150 °C	30 bar
M11	Ball hollow	Stainless steel 1.4404	52	52	15	> 0.6	150 °C	30 bar
M13	Cylinder hollow	PVDF	38	60	18	> 0.6	125 °C	2 bar
M16	Cylinder hollow	PVC-U	60	60	18	> 0.8	55 °C	3 bar
M20	Ball hollow	Stainless steel 1.4404	95	95	20.8	> 0.5	150 °C	15 bar

¹⁾ For model M06, one float is required for each switch point.
For all other floats two contacts can be operated with one float.

ATEX-Certificate:

Ⓔ 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: 3-5 mm
difference in level

Switch point distance:

- between contact 1 and 2 and contact 3 and 4: > 40 mm
depending on height of float
- between contact 2 and 3: height of float +15 mm

Non-standard versions available

Mounting instructions

Float switches can also be fitted in the bottom of vessels.
Important: The contact operation is then reversed.

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.

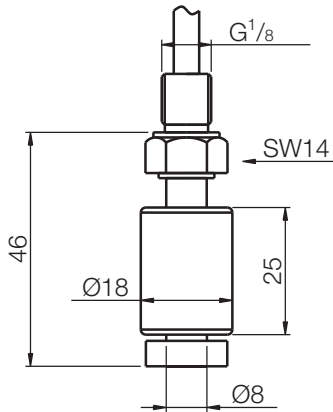
Option: Pt100 available

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 emf 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}

Mini Switches

Technical Data

N/O contact*: 230 V_{AC/DC} / 0.5 A / 10 VA
ATEX-version: U_i: 40 V

N/C contact*: 230 V_{AC/DC} / 0.5 A / 10 VA
ATEX-version: U_i: 40 V

Changeover contact: 100 V_{AC/DC} / 0.5 A / 3 VA
ATEX-version: U_i: 40 V

* Note: contact state referred to empty tank

Cable length: 1 m

Installation position: vertical ±30°

Protection type: IP 64

Min. liquid density > 0.6 kg/dm³

Max. pressure (at 20°C): 3 bar (PVC tube),
10 bar (brass, 1.4404 tube)

Max. temp. PVC cable: 55°C (PVC tube), 70°C (brass,
1,4404 tube)

Max. temp. silicone cable: 55°C (PVC tube), 80°C (brass,
1,4404 tube)

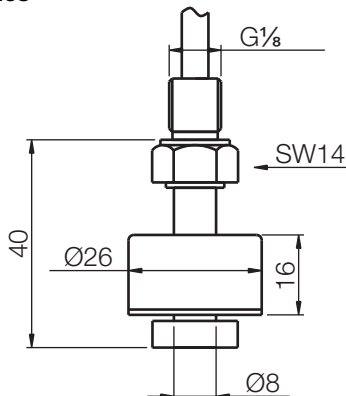
Max. length of guide tube: 1 m (PVC tube), 2 m (brass,
1.4404 tube)

Connection heads: see page 11, 12, 13

Switch point min. distance
from end of guide tube: 33 mm ±3

Model	Guide tube ¹⁾	Process connection	Contact L1	Contact L2	Contact L3 ²⁾	Electr. connection	ATEX
M01- (NBR float)	M = brass E = 1.4404 P = PVC	R05 = G½ XXX = see page 11, 12, 13	S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C W = SPDT	XX = without SX = N/O CX = N/C	0 = with housing P = 1 m PVC-cable S = 1 m silicone cable L³⁾ = 1 m PVC-cable (stock model) Y⁴⁾ = special length and type	0 = without E = ATEX

¹⁾ Please specify in writing total and switching lengths
²⁾ max. number of contacts 3 pieces N/O, N/C, or 2 SPDT contacts.
³⁾ Stock model always with one contact and minimum guide tube length, without ATEX
⁴⁾ Please specify in writing length and type of cable

Mini switches

Technical Data

N/O contact*: 230 V_{AC/DC} / 0.5 A / 10 VA
ATEX-version: U_i: 40 V

N/C contact*: 230 V_{AC/DC} / 0.5 A / 10 VA
ATEX-version: U_i: 40 V

Changeover contact: 100 V_{AC/DC} / 0.5 A / 3 VA
ATEX-version: U_i: 40 V

* Note: contact state referred to empty tank

Cable length: 1 m

Installation position: vertical ±30°

Protection type: IP 64

Min. liquid density > 0.65 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: 2 m

Connection heads: see page 11, 12, 13

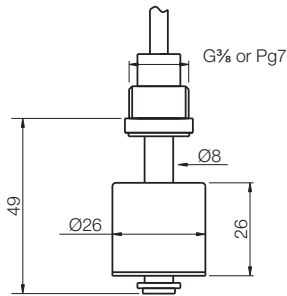
Switch point min. distance
from end of guide tube: 30 mm ±3

Model	Guide tube ¹⁾	Process connection	Contact L1	Contact L2	Contact L3 ²⁾	Electr. connection	ATEX
M02- (PP float)	M = brass E = 1.4404	R05 = G½ XXX = see page 11, 12, 13	S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C W = SPDT	XX = without SX = N/O CX = N/C	0 = with housing P = 1 m PVC-cable S = 1 m silicone cable L³⁾ = 1 m PVC-cable (stock model) Y⁴⁾ = special length and type	0 = without E = ATEX

¹⁾ Please specify in writing total and switching lengths
²⁾ max. number of contacts 3 pieces N/O, N/C, or 2 SPDT contacts.
³⁾ Stock model always with one contact and minimum guide tube length, without ATEX
⁴⁾ Please specify in writing length and type of cable



Mini switches



Technical Data

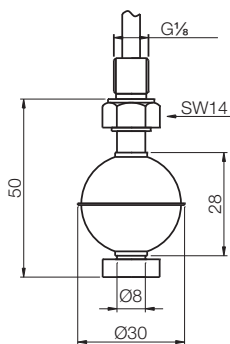
N/O contact*: 230 V_{AC/DC} / 0.5 A / 10 VA
ATEX-version: U; 40 V
N/C contact*: 230 V_{AC/DC} / 0.5 A / 10 VA
ATEX-version: U; 40 V
Changeover contact: 100 V_{AC/DC} / 0.5 A / 3 VA
ATEX-version: U; 40 V

* Note: contact state referred to empty tank
Cable length: 1 m
Installation position: vertical ±30°
Protection type: IP 64
Min. liquid density > 0.9 kg/dm³
Max. pressure (at 20°C): 3 bar
Max. temp.: 55°C
Max. length of guide tube: 1 m
Connection heads: see page 11, 12, 13
Switch point min. distance from end of guide tube: 32 mm ±3

Model	Guide tube ¹⁾	Process connection	Contact L1	Contact L2	Contact L3 ²⁾	Electr. connection	ATEX
M03- (PVC float)	P = PVC	R10 = G ³ / ₈ PG7 = Pg7 XXX = see page 11, 12, 13	S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C W = SPDT	XX = without SX = N/O CX = N/C	0 = with housing P = 1 m PVC-cable S = 1 m silicone cable L³⁾ = 1 m PVC-cable (stock model) Y⁴⁾ = special length and type	0 = without E = ATEX

¹⁾ Please specify in writing total and switching lengths
²⁾ max. number of contacts 3 pieces N/O, N/C, or 2 SPDT contacts.
³⁾ Stock model always with one contact and minimum guide tube length, without ATEX
⁴⁾ Please specify in writing length and type of cable

Mini switches



Technical Data

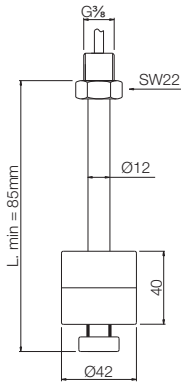
N/O contact*: 230 V_{AC/DC} / 0.5 A / 10 VA
ATEX-version: U; 40 V
N/C contact*: 230 V_{AC/DC} / 0.5 A / 10 VA
ATEX-version: U; 40 V
Changeover contact: 100 V_{AC/DC} / 0.5 A / 3 VA
ATEX-version: U; 40 V

* Note: contact state referred to empty tank
Cable length: 1 m
Installation position: vertical ±30°
Protection type: IP 64
Min. liquid density > 0.8 kg/dm³
Max. pressure (at 20°C): 15 bar
Max. temp. PVC cable: 70°C
Max. temp. silicone cable: 150°C
Max. length of guide tube: 2 m
Connection heads: see page 11, 12, 13
Switch point min. distance from end of guide tube: 30 mm ±3

Model	Guide tube ¹⁾	Process connection	Contact L1	Contact L2	Contact L3 ²⁾	Electr. connection	ATEX
M04- (1.4404 float)	M = brass E = 1.4404	R05 = G ¹ / ₂ XXX = see page 11, 12, 13	S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C W = SPDT	XX = without SX = N/O CX = N/C	0 = with housing P = 1 m PVC-cable S = 1 m silicone cable L³⁾ = 1 m PVC-cable (stock model) Y⁴⁾ = special length and type	0 = without E = ATEX

¹⁾ Please specify in writing total and switching lengths
²⁾ max. number of contacts 3 pieces N/O, N/C, or 2 SPDT contacts.
³⁾ Stock model always with one contact and minimum guide tube length, without ATEX
⁴⁾ Please specify in writing length and type of cable

Cylindrical float made of polypropylene



Technical Data

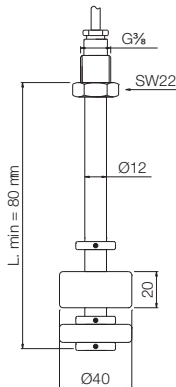
N/O contact*: 230 V_{AC/DC} / 1 A / 60 VA
ATEX-version: U_i: 40 V
N/C contact*: 230 V_{AC/DC} / 1 A / 60 VA
ATEX-version: U_i: 40 V
Changeover contact: 230 V_{AC/DC} / 1 A / 60 VA
ATEX-version: U_i: 40 V

* Note: contact state referred to empty tank
Cable length: 1 m
Installation position: vertical ±30°
Protection type: IP 65
Min. liquid density > 0.6 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 page 11, 12, 13
Switch point min. distance from end of guide tube: 45 mm ± 3

Model	Guide tube ¹⁾	Process connection	Contact L1	Contact L2	Contact L3	Contact L4 ²⁾	Electr. connection	ATEX
M05- (PP float)	M = brass E = 1.4404	R10 = G $\frac{3}{8}$ XXX = see page 11, 12, 13	S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C	O = with housing P = 1 m PVC-cable S = 1 m silicone cable Y ³⁾ = special length and type	O = without E = ATEX

¹⁾ Please specify in writing total and switching lengths
²⁾ max. number of contacts 4 pieces N/O, N/C, or 3 SPDT contacts
³⁾ Please specify in writing length and type of cable

High-pressure applications



Technical Data

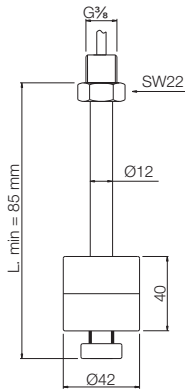
N/O contact*: 230 V_{AC/DC} / 1 A / 60 VA
ATEX-version: U_i: 40 V
N/C contact*: 230 V_{AC/DC} / 1 A / 60 VA
ATEX-version: U_i: 40 V
Changeover contact: 230 V_{AC/DC} / 1 A / 60 VA
ATEX-version: U_i: 40 V

* Note: contact state referred to empty tank
Cable length: 1 m
Installation position: vertical ±30°
Protection type: IP 65
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 page 11, 12, 13
Switch point min. distance from end of guide tube: 50 mm ± 7

Model	Guide tube ¹⁾	Process connection	Contact L1	Contact L2	Contact L3	Contact L4 ²⁾	Electr. connection	ATEX
M06- (PP float)	M = brass E = 1.4404	R10 = G $\frac{3}{8}$ XXX = see page 11, 12, 13	S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C	O = with housing P = 1 m PVC-cable S = 1 m silicone cable Y ³⁾ = special length and type	O = without E = ATEX

¹⁾ Please specify in writing total and switching lengths
²⁾ max. number of contacts 4 pieces N/O, N/C, or 3 SPDT contacts
³⁾ Please specify in writing length and type of cable

Cylindrical float and tube made of PVC



Technical Data

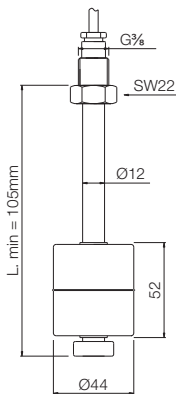
N/O contact*: 230 V_{AC/DC} / 1 A / 60 VA
ATEX-version: U; 40 V
N/C contact*: 230 V_{AC/DC} / 1 A / 60 VA
ATEX-version: U; 40 V
Changeover contact: 230 V_{AC/DC} / 1 A / 60 VA
ATEX-version: U; 40 V

* Note: contact state referred to empty tank
Cable length: 1 m
Installation position: vertical ±30°
Protection type: IP 65
Min. liquid density > 0.9 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 page 11, 12, 13
Switch point min. distance from end of guide tube: 57 mm ±3

Model	Guide tube ¹⁾	Process connection	Contact L1	Contact L2	Contact L3	Contact L4 ²⁾	Electr. connection	ATEX
M07- (PVC float)	P = PVC	R10 = G 3/8 XXX = see page 11, 12, 13	S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C	O = with housing P = 1 m PVC-cable S = 1 m silicone cable Y ³⁾ = special length and type	O = without E = ATEX

¹⁾ Please specify in writing total and switching lengths
²⁾ max. number of contacts 4 pieces N/O, N/C, or 3 SPDT contacts
³⁾ Please specify in writing length and type of cable

Cylindrical float made of stainless steel 1.4404



Technical Data

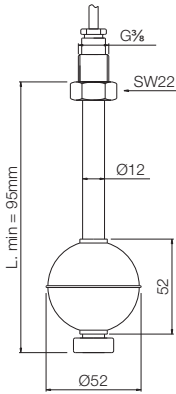
N/O contact*: 230 V_{AC/DC} / 1 A / 60 VA
ATEX-version: U; 40 V
N/C contact*: 230 V_{AC/DC} / 1 A / 60 VA
ATEX-version: U; 40 V
Changeover contact: 230 V_{AC/DC} / 1 A / 60 VA
ATEX-version: U; 40 V

* Note: contact state referred to empty tank
Cable length: 1 m
Installation position: vertical ±30°
Protection type: IP 65
Min. liquid density > 0.65 kg/dm³
Max. pressure (at 20°C): 20 bar
Max. temp. PVC cable: 70°C
Max. temp. silicone cable: 150°C
Max. length of guide tube: 4 m
Connection heads: see page 11, 12, 13
Switch point min. distance from end of guide tube: 55 mm ±3

Model	Guide tube ¹⁾	Process connection	Contact L1	Contact L2	Contact L3	Contact L4 ²⁾	Electr. connection	ATEX
M08- (1.4404 float)	M = brass E = 1.4404	R10 = G 3/8 XXX = see page 11, 12, 13	S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C	O = with housing P = 1 m PVC-cable S = 1 m silicone cable Y ³⁾ = special length and type	O = without E = ATEX

¹⁾ Please specify in writing total and switching lengths
²⁾ max. number of contacts 4 pieces N/O, N/C, or 3 SPDT contacts
³⁾ Please specify in writing length and type of cable

Ball float made of stainless steel 1.4404



Technical Data

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

Cable length: 1 m

Installation position: vertical ±30°

Protection type: IP 65

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

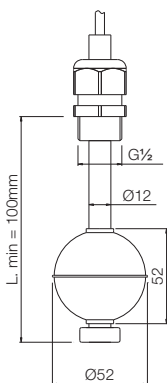
Connection heads: see page 11, 12, 13

Switch point min. distance from end of guide tube: 55 mm ±3

Model	Guide tube ¹⁾	Process connection	Contact L1	Contact L2	Contact L3	Contact L4 ²⁾	Electr. connection	ATEX
M10- (1.4404 float)	M = brass E = 1.4404	R10 = G¾ XXX = see page 11, 12, 13	S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C	O = with housing P = 1 m PVC-cable S = 1 m silicone cable Y³⁾ = special length and type	O = without E = ATEX

¹⁾ Please specify in writing total and switching lengths
²⁾ max. number of contacts 4 pieces N/O, N/C, or 3 SPDT contacts.
³⁾ Please specify in writing length and type of cable

Adjustable for height



Technical Data

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

Cable length: 1 m

Installation position: vertical ±30°

Protection type: IP 65

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

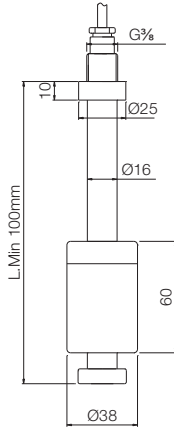
Switch point min. distance from end of guide tube: 55 mm ±3

Model	Guide tube ¹⁾	Process connection	Contact L1	Contact L2	Contact L3	Contact L4 ²⁾	Electr. connection	ATEX
M11- (1.4404 float)	M = brass E = 1.4404	R15 = G ½	S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C	P = 1 m PVC-cable S = 1 m silicone cable Y³⁾ = special length and type	O = without E = ATEX

¹⁾ Please specify in writing total and switching lengths
²⁾ Max. number of contacts 4 pieces N/O, N/C, or 3 SPDT contacts.
³⁾ Please specify in writing length and type of cable



PVDF design



Technical Data

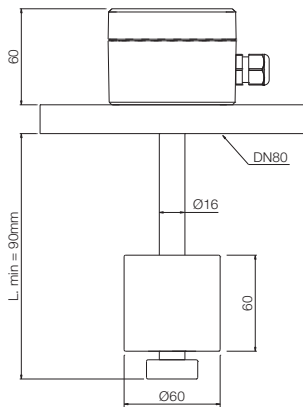
N/O contact*: 230 V_{AC/DC} / 1 A / 60 VA
ATEX-version: U; 40 V
N/C contact*: 230 V_{AC/DC} / 1 A / 60 VA
ATEX-version: U; 40 V
Changeover contact: 230 V_{AC/DC} / 1 A / 60 VA
ATEX-version: U; 40 V

* Note: contact state referred to empty tank
Cable length: 1 m
Installation position: vertical ±30°
Protection type: IP65
Min. liquid density > 0.6 kg/dm³
Max. pressure (at 20°C): 2 bar
Max. temp. PVC cable: 70°C
Max. temp. silicone cable: 125°C
Max. length of guide tube: 3 m
Connection heads: see page 11, 12, 13
Switch point min. distance from end of guide tube: 60 mm ±3

Model	Guide tube ¹⁾	Process connection	Contact L1	Contact L2	Contact L3	Contact L4 ²⁾	Electr. connection	ATEX
M13- (PVDF float)	S = PVDF	R10 = G ³ / ₈ XXX = see page 11, 12, 13	S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C	0 = with housing P = 1 m PVC-cable S = 1 m silicone cable Y³⁾ = special length and type	0 = without E = ATEX

¹⁾ Please specify in writing total and switching lengths
²⁾ max. number of contacts 4 pieces N/O, N/C, or 3 SPDT contacts
³⁾ Please specify in writing length and type of cable

PVC flange design



Technical Data

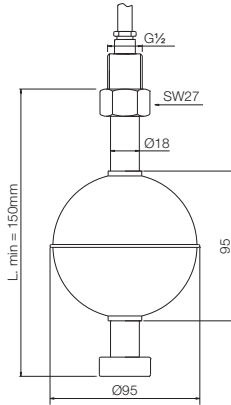
N/O contact*: 230 V_{AC/DC} / 1 A / 60 VA
ATEX-version: U; 40 V
N/C contact*: 230 V_{AC/DC} / 1 A / 60 VA
ATEX-version: U; 40 V
Changeover contact: 230 V_{AC/DC} / 1 A / 60 VA
ATEX-version: U; 40 V

* Note: contact state referred to empty tank
Installation position: vertical ±30°
Protection type: IP65
Min. liquid density > 0.8 kg/dm³
Max. pressure (at 20°C): 3 bar
Max. temp.: 55°C
Max. length of guide tube: 3 m
Switch point min. distance from end of guide tube: 65 mm ±3

Model	Guide tube ¹⁾	Process connection	Contact L1	Contact L2	Contact L3	Contact L4 ²⁾	Electr. connection	ATEX
M16- (PVC float)	P = PVC	F80 = DN80	S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C	0 = with housing	0 = without E = ATEX

¹⁾ Please specify in writing total and switching lengths
²⁾ max. number of contacts 4 pieces N/O, N/C, or 3 SPDT contacts

Heavy-duty design



Technical Data

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

Cable length: 1 m

Installation position: vertical ±30°

Protection type: IP 65

Min. liquid density > 0.5 kg/dm³

Max. pressure (at 20°C): 15 bar

Max. temp. PVC cable: 70°C

Max. temp. silicone cable: 150°C

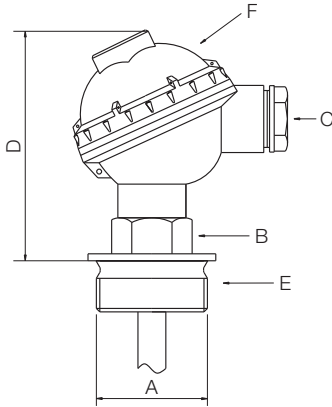
Max. length of guide tube: 6 m

Switch point min. distance from end of guide tube: 90 mm ±3

Model	Guide tube ¹⁾	Process connection	Contact L1	Contact L2	Contact L3	Contact L4 ²⁾	Electr. connection	ATEX
M20- (1.4404 float)	E = 1.4404	R15 = G ½	S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C W = SPDT	X = without S = N/O C = N/C	P = 1 m PVC-cable Y ³⁾ = special length and type	O = without E = ATEX

¹⁾ Please specify in writing total and switching lengths
²⁾ max. number of contacts 4 pieces N/O, N/C, or 3 SPDT contacts.
³⁾ Please specify in writing length and type of cable

Model 1



PP screwed cover housing

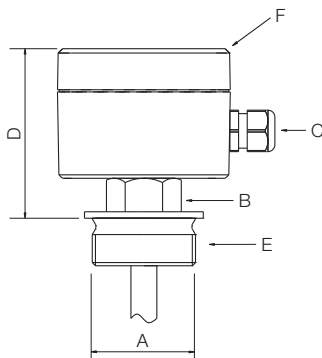
Dimensions and materials

Model ¹⁾	Process connection (A) ²⁾	Width across flats (B)	Electrical connection (C)	Overall height (D)	Screwed fitting (E)	Housing (F)	t _{max}
1	R6 = G 1 R8 = G 1½ R9 = G 2 N6 = 1" NPT N8 = 1½" NPT N9 = 2" NPT	27 AF 30 AF 36 AF 27 AF 30 AF 36 AF	PG16	100 mm	PP	PP	90°C

¹⁾ Attention maximum 6 poles

²⁾ Size of process connection must be according with float size

Model 2/4



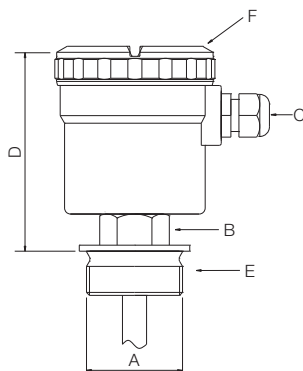
Aluminium housing

Dimensions and materials

Model	Process connection (A)*	Width across flats (B)	Electrical connection (C)	Overall height (D)	Screwed fitting (E)	Housing (F)	t _{max}
2	R6 = G 1 R8 = G 1½ R9 = G 2 N6 = 1" NPT N8 = 1½" NPT N9 = 2" NPT	27 AF 30 AF 36 AF 27 AF 30 AF 36 AF	M16 x 1.5	73 mm	Brass	Al	90°C
4	R6 = G 1 R8 = G 1½ R9 = G 2 N6 = 1" NPT N8 = 1½" NPT N9 = 2" NPT	27 AF 30 AF 36 AF 27 AF 30 AF 36 AF	M16 x 1.5	73 mm	1.4404	Al	90°C

* Size of process connection must be according with float size

Model 3



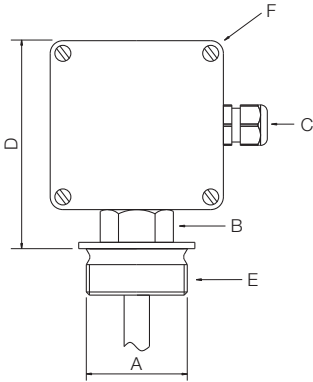
PA screwed cover housing

Dimensions and materials

Model	Process connection (A)*	Width across flats (B)	Electrical connection (C)	Overall height (D)	Screwed fitting (E)	Housing (F)	t _{max}
3	R6 = G 1 R8 = G 1½ R9 = G 2 N6 = 1" NPT N8 = 1½" NPT N9 = 2" NPT	27 AF 30 AF 36 AF 27 AF 30 AF 36 AF	M16 x 1.5	104 mm	1.4404	PA	90°C

* Size of process connection must be according with float size

Model 5



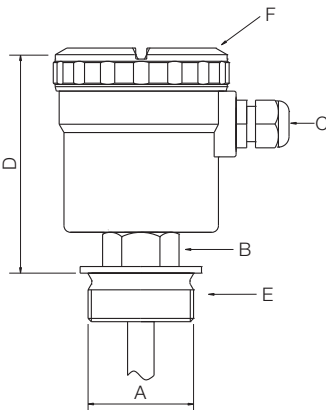
ABS Housing

Dimensions and materials

Model	Process connection (A)*	Width across flats (B)	Electrical connection (C)	Overall height (D)	Screwed fitting (E)	Housing (F)	t _{max}
5	R6 = G 1 R8 = G 1½ R9 = G 2 N6 = 1" NPT N8 = 1½" NPT N9 = 2" NPT	27 AF 30 AF 36 AF 27 AF 30 AF 36 AF	M16 x 1.5	100 mm	PVC	ABS	55°C

* Size of process connection must be according with float size

Model 6



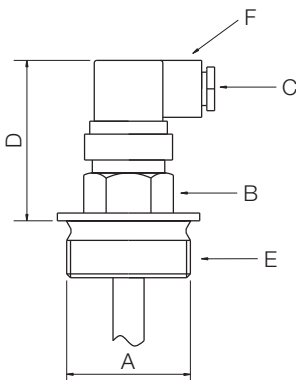
PA Screwed cover housing

Dimensions and materials

Model	Process connection (A)*	Width across flats (B)	Electrical connection (C)	Overall height (D)	Screwed fitting (E)	Housing (F)	t _{max}
6	R8 = G 1½ N8 = 1½" NPT	30 AF	M16 x 1.5	104 mm	PVDF	PA	90°C

* Size of process connection must be according with float size

Model 7/8



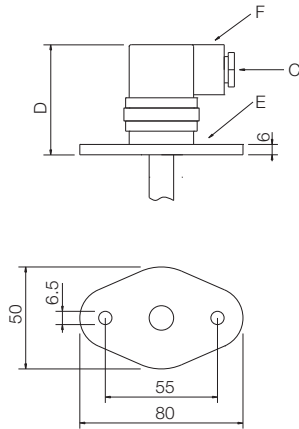
Connector with connecting box

Dimensions and materials

Model	Process connection (A)*	Width across flats (B)	Electrical connection (C)	Overall height (D)	Screwed fitting (E)	Housing (F)	t _{max}
7 (3-pin)	R6 = G 1 R8 = G 1½ R9 = G 2 N6 = 1" NPT N8 = 1½" NPT N9 = 2" NPT	27 AF 30 AF 36 AF 27 AF 30 AF 36 AF	M16 x 1.5	65 mm	PP	PA	90°C
8 (6-pin)	R6 = G 1 R8 = G 1½ R9 = G 2 N6 = 1" NPT N8 = 1½" NPT N9 = 2" NPT	27 AF 30 AF 36 AF 27 AF 30 AF 36 AF	PG7	50 mm	PP	PA	90°C

* Size of process connection must be according with float size

Model 7PP, 8PP

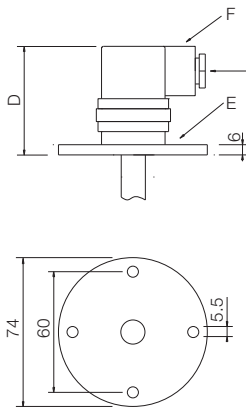


Oval flange polypropylene

Dimensions and materials

Model	Electrical connection (C)	Overall height (D)	Oval flange (E)	Housing (F)	t _{max}
7PP (3-pin)	M16 x 1.5	65 mm	PP	PA	90°C
8PP (6-pin)	PG7	45 mm	PP	PA	90°C

Model 7MS...8PV

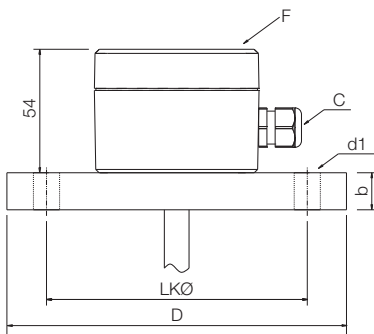


Round flange

Dimensions and materials

Model	Flange (E)	Overall height (D)	Electrical connection (C)	Housing (F)	t _{max}
7	MS = Brass	65 mm	3-pole M16 x 1.5	PA	90°C
	VA = 1.4404				
	PV = PVC				
8	MS = Brass	45 mm	6-pole PG7	PA	90°C
	VA = 1.4404				
	PV = PVC				

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 = DN40	150	16	110	4 x Ø 18	M16 x 1.5	Al	90°C
	F9 = DN50	165	18	125	4 x Ø 18			
	F0 = DN65	185	18	145	4 x Ø 18			
	FB = DN80	200	20	160	4 x Ø 18			
	FC = DN100	220	20	180	8 x Ø 18			
	FD = DN125	250	22	210	8 x Ø 18			
	A8 = 1½"	127	17.5	98.6	4 x Ø 15.7			
	A9 = 2"	152.4	19.1	120.7	4 x Ø 19.1			
	A0 = 2½"	177.8	22.4	139.7	4 x Ø 19.1			
	AB = 3"	190.5	23.9	152.4	4 x Ø 19.1			
	AV = 3½"	215.0	23.9	177.8	8 x Ø 19.1			
	AC = 4"	228.6	23.9	190.5	8 x Ø 19.1			


Technical Data**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:	 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:	 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:	 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)

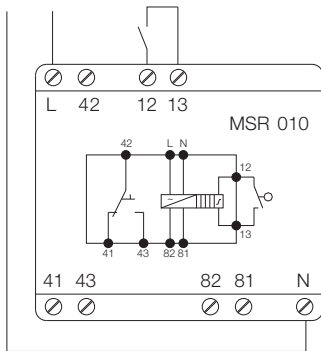
ATEX-approval:	 II (1) G [Ex ia] IIC, II (1) D [Ex ia] IIIC
Ex / I.S. data, ATEX-:	
U _o :	10.5 V
I _o :	13 mA
P _o :	34 mW
U _m :	253 V _{AC}
Power supply:	20 ... 30 V _{DC} , 45 ... 65 Hz
Power consumption:	max. 0.9 W
Relay Output:	max. 253 V _{AC} , 2A
Details:	see datasheet



Standard models

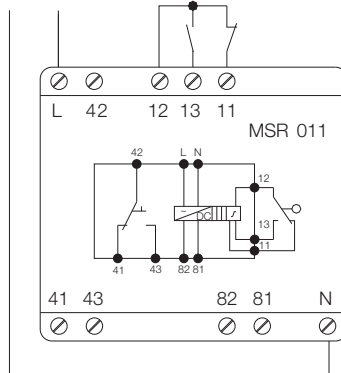
MSR010

Supply 230 V_{AC} M SERIES CONTACT



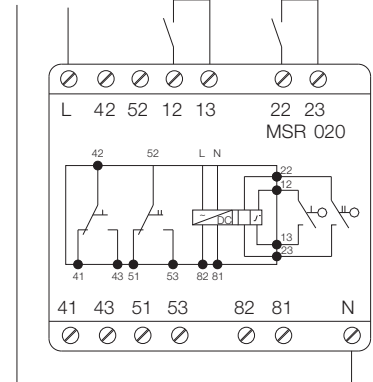
MSR011

Supply 230 V_{AC} M SERIES CONTACT



MSR020

Supply 230 V_{AC} M SERIES CONTACT M SERIES CONTACT



ATEX-models

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

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

