

Float Switches with Permanent Magnet For Lateral Mounting Model RSB

WIKA Data Sheet LM 30.03

Applications

- Mounting on engines, tanks, vessels or enclosures, where, due to a lack of space, installation within them is not possible
- Use for turbulent fluid levels such as in oil sumps in large engines, gearboxes, etc.
- Pump/level control and monitoring for defined filling levels
- Chemical industry, petrochemical industry, natural gas, offshore, shipbuilding, machine building, power generating equipment, power stations
- Process water and drinking water treatment, food and beverage industry

Special Features

- Freely selectable switch position through fixing the float switch at the required level
- Large scope of application due to the simple, proven functional principle
- For harsh operating conditions, long service life
- Operating limits:
 - Operating temperature: $T = -30 \dots +300 \text{ }^\circ\text{C}$
 - Working pressure: $P = \text{vacuum to } 6 \text{ bar}$
 - Limit S. G.: $\rho \geq 700 \text{ kg/m}^3$

Description

In a reference vessel (bypass chamber), a float with a permanent magnet moves on a guide tube in relation to the liquid level, following the principle of communicating tubes. Within the guide tube is fitted a reed contact (inert gas contact), which is energised, through the non-magnetic walls of the float and guide tube, by the approach of the float magnet. By using a magnet and reed contact the switching operation is non-contact, free from wear and needs no power supply. The contacts are potential-free.

Float Switches with Permanent Magnet, for lateral mounting, Model RSB



The switch functions always refer to a rising liquid level: normally open / normally closed / change-over contacts.

The float switch is simple to mount and maintenance-free, so the costs of mounting, commissioning and operation are low.

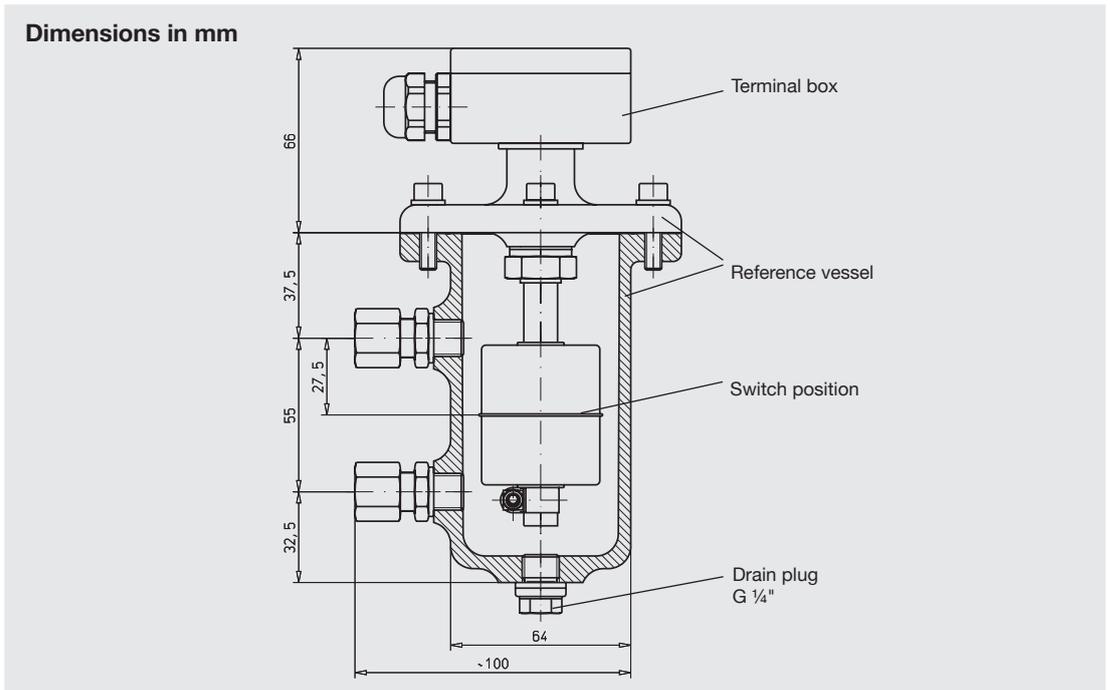
Further special features

- Guide tube and float made of stainless steel 1.4571
- Reference vessel made of aluminium AlMg5 or red bronze Rg5
- Universal signal processing:
connection direct to a PLC is possible, NAMUR connection,
signal amplification / contact protection relays
- Works independently of foaming, conductivity, dielectricity, pressure, vacuum, temperature, steam, condensation, blistering, boiling effects and vibrations
- Maximum 2 change-over contacts
- Exact repeatability of the switch points
- Float switches with permanent magnets qualify as passive electrical equipment in accordance with DIN IEC 60 079-11 and can be installed in 'Zone 1' hazardous areas without certification, so long as the equipment is operated in a certified intrinsically safe circuit with a minimum explosion protection of EEx ib

Options

- Customer-specific solutions
- Reference vessel in another design made of stainless steel 1.4571, with other process connections and with up to 6 switch points

Standard version



Specifications

Reference vessel	<ul style="list-style-type: none"> ■ Aluminium AlMg5 ■ Red bronze Rg5
Electrical connection	Terminal box ■ Aluminium 64 x 58 x 34 mm
Process connection	Compression fitting GE10-LR, Carbon steel, Zinc coated
Max. operating pressure	<ul style="list-style-type: none"> ■ 1 bar (chamber aluminium) ■ 6 bar (chamber bronze)
Float	Material: Stainless steel 1.4571 Outer diameter: 44 mm, inner diameter: 15 mm Limit specific gravity 85 %: 818 kg/m ³ Nominal specific gravity 50 %: 1390 kg/m ³
Guide tube	Material: Stainless steel 1.4571 Diameter: 12 mm
Temperature range	-30 ... +150 °C
Switch function	Change-over U switch position fixed (centred see drawing)
Max. number of contacts	2 x U
Contact rating	230 V AC; 40 VA; 1 A 230 V DC; 20 W; 0.5 A Please observe contact protection measures (see page 4)!
	Attention: Versions without protective earth conductor - operation only at safety extra-low voltage e.g. WIKA contact protection relay or external earthing
Mounting position	Vertical ± 30°
Ingress protection	IP 65 per EN 60 529 / IEC 529

Connection diagrams

1 switch point



1 switch point

Wiring for operation with a PLC



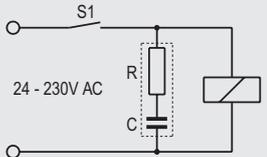
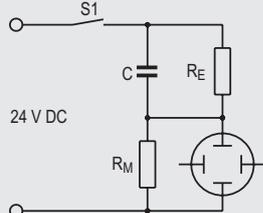
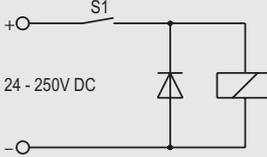
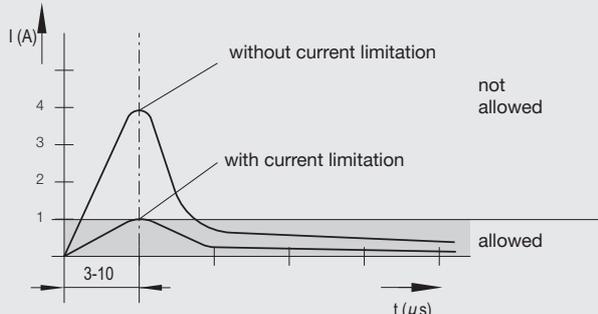
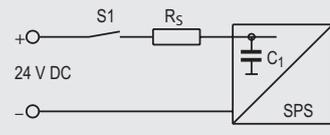
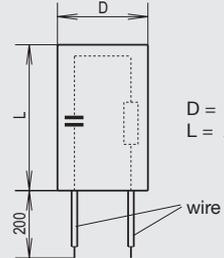
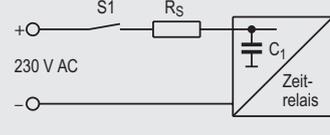
1 switch point

Initiator equivalent circuit per EN 60 947-5-6



Contact protection measures

To ensure reliable operation of sensors with reed switches and highest possible service life, we recommend using one of the following circuits.

<p>Inductive load AC</p>  <p>24 - 230V AC</p> <p>RC modules depending on operating voltage see table</p>	<p>Surge current measurement with oscilloscope</p>  <p>24 V DC</p> <p>Example: C = 0.33 µF/24 V DC</p>																														
<p>Inductive load DC</p>  <p>24 - 250V DC</p> <p>Shunt diode e.g. 1N4007</p>	 <p>without current limitation not allowed</p> <p>with current limitation allowed</p> <p>3-10</p> <p>t (µs)</p>																														
<p>Current limitation with capacitive load e.g. PLC, DCS and cables > 50 m</p>  <p>24 V DC</p> <p>RS = 22 Ohm (47 Ohm with 10 VA contacts) C1 = internal capacitance</p>	<p>Protective RC modules</p> <p>RC modules are, depending on the operating voltage, to be used exclusively according to the table below.</p>  <p>D = Ø 16 mm - Ø 25 mm L = 26 mm - 58 mm</p>																														
<p>Current limitation with electronic timers</p>  <p>230 V AC</p> <p>RS = 220 Ohm (230 V AC) C1 = internal capacitance</p>	<p>For inert gas contacts from 10 ... 40 VA</p> <table border="1"> <thead> <tr> <th>Capacitance</th> <th>Resistance</th> <th>Voltage</th> </tr> </thead> <tbody> <tr> <td>0.33 µF</td> <td>100 Ohm</td> <td>24 V AC</td> </tr> <tr> <td>0.33 µF</td> <td>220 Ohm</td> <td>48 V AC</td> </tr> <tr> <td>0.33 µF</td> <td>470 Ohm</td> <td>115 V AC</td> </tr> <tr> <td>0.33 µF</td> <td>1500 Ohm</td> <td>230 V AC</td> </tr> </tbody> </table> <p>For inert gas contacts from 40 ... 100 VA</p> <table border="1"> <thead> <tr> <th>Capacitance</th> <th>Resistance</th> <th>Voltage</th> </tr> </thead> <tbody> <tr> <td>0.33 µF</td> <td>47 Ohm</td> <td>24 V AC</td> </tr> <tr> <td>0.33 µF</td> <td>100 Ohm</td> <td>48 V AC</td> </tr> <tr> <td>0.33 µF</td> <td>470 Ohm</td> <td>115 V AC</td> </tr> <tr> <td>0.33 µF</td> <td>1000 Ohm</td> <td>230 V AC</td> </tr> </tbody> </table> <p>Other types than the RC modules specified here might lead to destruction of the reed contact.</p>	Capacitance	Resistance	Voltage	0.33 µF	100 Ohm	24 V AC	0.33 µF	220 Ohm	48 V AC	0.33 µF	470 Ohm	115 V AC	0.33 µF	1500 Ohm	230 V AC	Capacitance	Resistance	Voltage	0.33 µF	47 Ohm	24 V AC	0.33 µF	100 Ohm	48 V AC	0.33 µF	470 Ohm	115 V AC	0.33 µF	1000 Ohm	230 V AC
Capacitance	Resistance	Voltage																													
0.33 µF	100 Ohm	24 V AC																													
0.33 µF	220 Ohm	48 V AC																													
0.33 µF	470 Ohm	115 V AC																													
0.33 µF	1500 Ohm	230 V AC																													
Capacitance	Resistance	Voltage																													
0.33 µF	47 Ohm	24 V AC																													
0.33 µF	100 Ohm	48 V AC																													
0.33 µF	470 Ohm	115 V AC																													
0.33 µF	1000 Ohm	230 V AC																													

Ordering information

Model / Chamber material / Number of change-over contacts / Options

Modifications may take place and materials specified may be replaced by others without prior notice. Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing.

