

# Float switch

## For the process industry, lateral installation with external chamber

### Model ELS

WIKA data sheet LM 30.03



for further approvals  
see page 2

### Applications

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

### Special features

- Freely selectable switch position through fixing the float switch at the required level
- Large range of application due to the simple, proven functional principle
- For harsh operating conditions, long service life
- Operating limits:
  - Operating temperature:  $T = -30 \dots +150 \text{ }^\circ\text{C}$
  - Operating pressure:  $P = \text{Vacuum up to 6 bar}$
  - Limit density:  $\rho \geq 700 \text{ kg/m}^3$

### Description

In an external chamber (bypass chamber), a float with a permanent magnet moves on a guide tube in relation to the liquid level, following the principle of communicating vessels. 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 switch with external chamber, model ELS-S

The switching functions always refer to a rising liquid level.

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 from stainless steel 1.4571
- External chamber from aluminium AlMg5, red bronze Rg5 or stainless steel
- 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, vapours, condensation, bubble formation, boiling effects and vibrations
- Maximally one change-over contact
- Float switches qualify as simple apparatus in accordance with EN 60079-11 section 5.7 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 Ex ib.

## Model overview

- Model ELS-A (ABAU): Version with external chamber from aluminium
- Model ELS-B (ABRU): Version with external chamber from red bronze
- Model ELS-S (ABVU): Version with external chamber from stainless steel

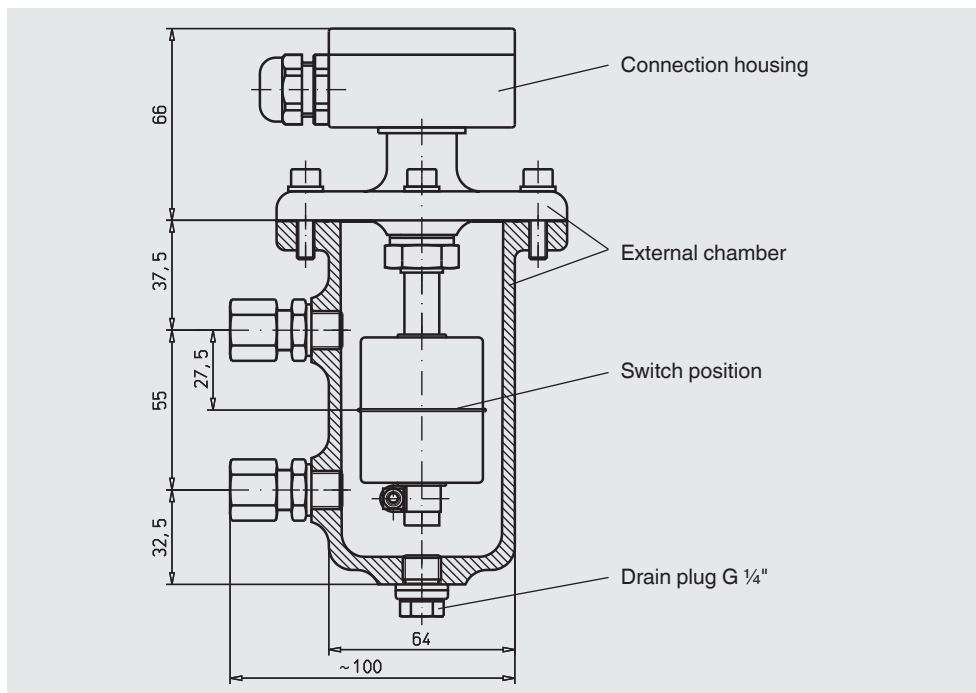
## Approvals

| Logo   | Description  | Country                     |
|--|--|-----------------------------|
|  | <b>EU declaration of conformity</b> <ul style="list-style-type: none"><li>■ Low voltage directive</li><li>■ RoHS directive</li></ul> | European Union              |
|  | <b>EAC</b><br>EMC directive and low voltage directive<br>No. RU Д-DE.A301.B.00815  | Eurasian Economic Community |
|  | <b>GL</b><br>Ships, shipbuilding (e.g. offshore)<br>No. 76735 - 78 HH  | International               |
|  | <b>Bureau Veritas</b><br>Ships, shipbuilding<br>No. 30168/B0 BV  | International               |

Approvals and certificates, see website

## Float switch, version with external chamber from aluminium Model ELS-A

Guide tube and float from stainless steel 1.4571

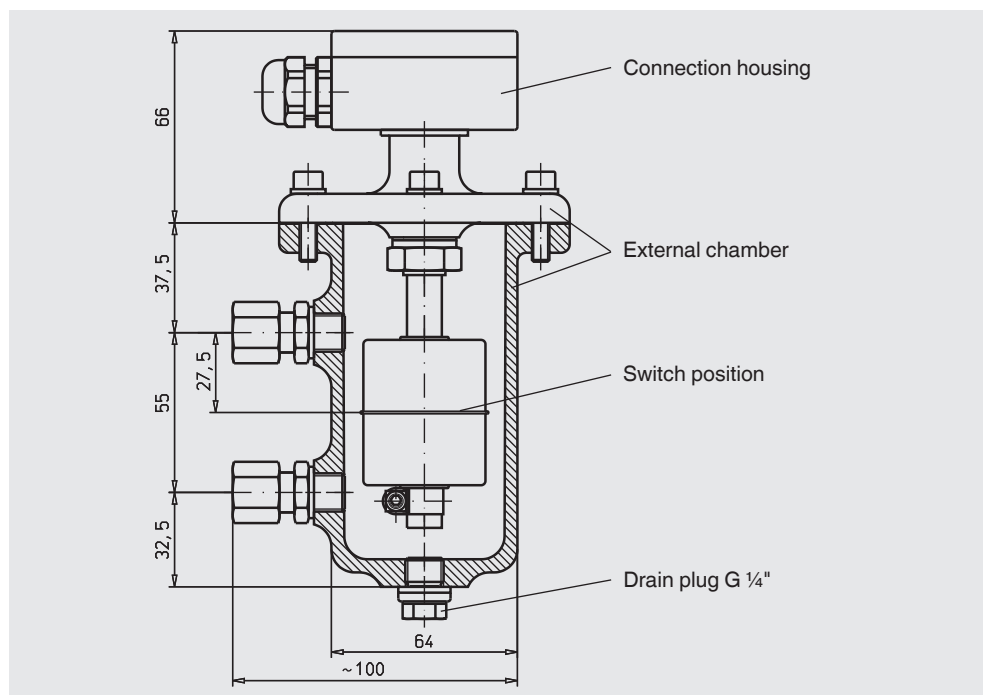


|                                     | Model ELS-A  |
|-------------------------------------|--|
| <b>External chamber</b>             | Aluminium AlMg5  |
| <b>Electrical connection</b>        | Connection housing, aluminium 64 x 58 x 34 mm  |
| <b>Process connection</b>           | Threaded pipe connection GE10-LR, galvanised steel   |
| <b>Max. operating pressure</b>      | 1 bar  |
| <b>Guide tube</b>                   | Material: Stainless steel 1.4571<br>Diameter: 12 mm  |
| <b>Float</b>                        | Material: Stainless steel 1.4571<br>Outer diameter: 44 mm, inner diameter: 15 mm<br>Limit density 85 %: 720 kg/m <sup>3</sup><br>Nominal density 50 %: 1,230 kg/m <sup>3</sup> |
| <b>Temperature range</b>            | -30 ... +150 °C  |
| <b>Switching function</b>           | Change-over<br>Switch position fixed (centred, see drawing)  |
| <b>Max. number of contacts</b>      | 1 change-over  |
| <b>Switching power, change-over</b> | AC ≤ 230 V; 40 VA; 1 A<br>DC ≤ 230 V; 20 W; 0.5 A  |
| <b>Mounting position</b>            | Vertical ±30°  |
| <b>Ingress protection</b>           | IP65 per IEC/EN 60529  |

## Float switch, version with external chamber from red bronze

### Model ELS-B

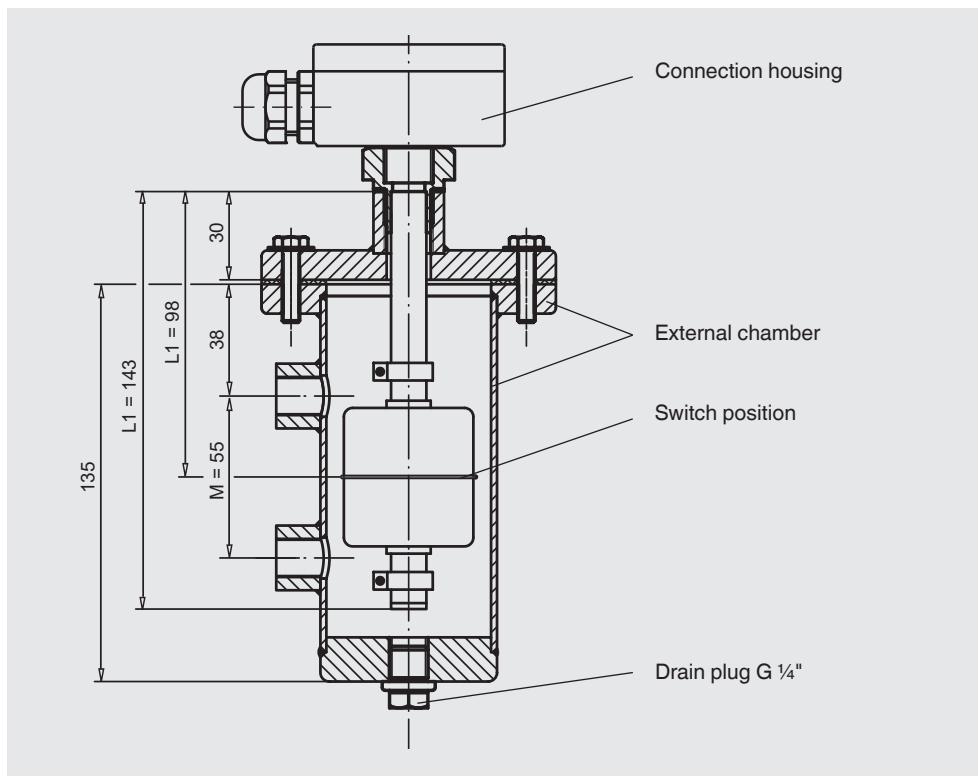
Guide tube and float from stainless steel 1.4571



|                                     | Model ELS-B  |
|-------------------------------------|--|
| <b>External chamber</b>             | Red bronze Rg5   |
| <b>Electrical connection</b>        | Connection housing, aluminium 64 x 58 x 34 mm  |
| <b>Process connection</b>           | Threaded pipe connection GE10-LR, galvanised steel   |
| <b>Max. operating pressure</b>      | 6 bar  |
| <b>Guide tube</b>                   | Material: Stainless steel 1.4571<br>Diameter: 12 mm  |
| <b>Float</b>                        | Material: Stainless steel 1.4571<br>Outer diameter: 44 mm, inner diameter: 15 mm<br>Limit density 85 %: 720 kg/m <sup>3</sup><br>Nominal density 50 %: 1,230 kg/m <sup>3</sup> |
| <b>Temperature range</b>            | -30 ... +150 °C  |
| <b>Switching function</b>           | Change-over<br>Switch position fixed (centred, see drawing)  |
| <b>Max. number of contacts</b>      | 1 change-over  |
| <b>Switching power, change-over</b> | AC ≤ 230 V; 40 VA; 1 A<br>DC ≤ 230 V; 20 W; 0.5 A  |
| <b>Mounting position</b>            | Vertical ±30°  |
| <b>Ingress protection</b>           | IP65 per IEC/EN 60529  |

## Float switch, version with external chamber from stainless steel Model ELS-S

Guide tube and float from stainless steel 1.4571



| Model ELS-S                         |  |
|-------------------------------------|--|
| <b>External chamber</b>             | Stainless steel 1.4571   |
| <b>Electrical connection</b>        | Connection housing, aluminium 64 x 58 x 34 mm  |
| <b>Process connection</b>           | <ul style="list-style-type: none"> <li>■ Flange connection</li> <li>■ Threaded nipple</li> <li>■ Threaded bushing</li> </ul>   |
| <b>Max. operating pressure</b>      | 1 bar  |
| <b>Guide tube</b>                   | Material: Stainless steel 1.4571<br>Diameter: 12 mm  |
| <b>Float</b>                        | Material: Stainless steel 1.4571<br>Outer diameter: 44 mm, inner diameter: 15 mm<br>Limit density 85 %: 720 kg/m <sup>3</sup><br>Nominal density 50 %: 1,230 kg/m <sup>3</sup> |
| <b>Temperature range</b>            | -30 ... +150 °C  |
| <b>Switching function</b>           | Change-over<br>Switch position fixed (centred, see drawing)  |
| <b>Max. number of contacts</b>      | 1 change-over  |
| <b>Switching power, change-over</b> | AC ≤ 230 V; 40 VA; 1 A<br>DC ≤ 230 V; 20 W; 0.5 A  |
| <b>Mounting position</b>            | Vertical ±30°  |
| <b>Ingress protection</b>           | IP65 per IEC/EN 60529  |

## Contact protection measures

The reed contacts should be protected against any voltage or current spikes that might occur.

Depending on the different load types different protective circuits are used.



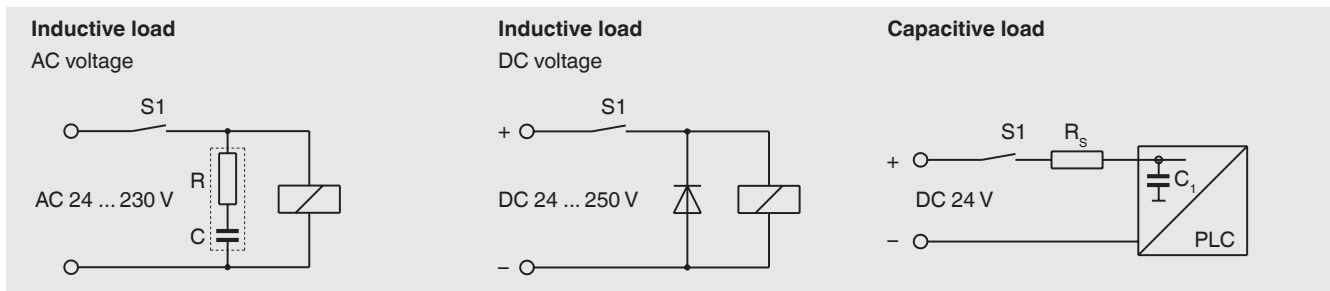
Model KFD2-ER-1.6



RC element

| Contact protection relays | Contacts                      | Input        | Power supply   | Approval number                        | Order no. |
|---------------------------|-------------------------------|--------------|----------------|--|-----------|
| KFD2-ER-1.6               | 1 x change-over AC 250 V, 2 A | 2 x contacts | DC 20 ... 30 V | -                                      | 112941    |
| KFD2-SR2-Ex2.W            | 2 x change-over AC 253 V, 2 A | 2 x contacts | DC 20 ... 30 V | II 1 GD EEx ia IIC<br>PTB 02 ATEX 2073 | 112944    |
| KFA6-ER-1.6               | 1 x change-over AC 250 V, 2 A | 2 x contacts | AC 230 V       | -                                      | 112942    |
| KFA6-SR2-Ex2.W            | 2 x change-over AC 253 V, 2 A | 2 x contacts | AC 230 V       | II 1 GD EEx ia IIC<br>PTB 02 ATEX 2073 | 112943    |

| RC element | Capacitance  | Resistance | Voltage  | Order no. |
|------------|--------------|------------|----------|-----------|
| B3/115     | 0.33 $\mu$ F | 470 Ohm    | AC 115 V | 110446    |
| B3/230     | 0.33 $\mu$ F | 1,000 Ohm  | AC 230 V | 110460    |



## Ordering information

To order the described product the order number (if available) is sufficient.

Alternatively:

Model / External chamber material / Number of change-over contacts / Options

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