

# 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:  $P = \text{Vacuum up to } 40 \text{ bar}$
  - Limit density:  $\rho \geq 600 \text{ kg/m}^3$

### 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-A

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 from stainless steel 1.4571
- Float from stainless steel 1.4571, titanium 3.7035 or Buna (NBR)
- 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

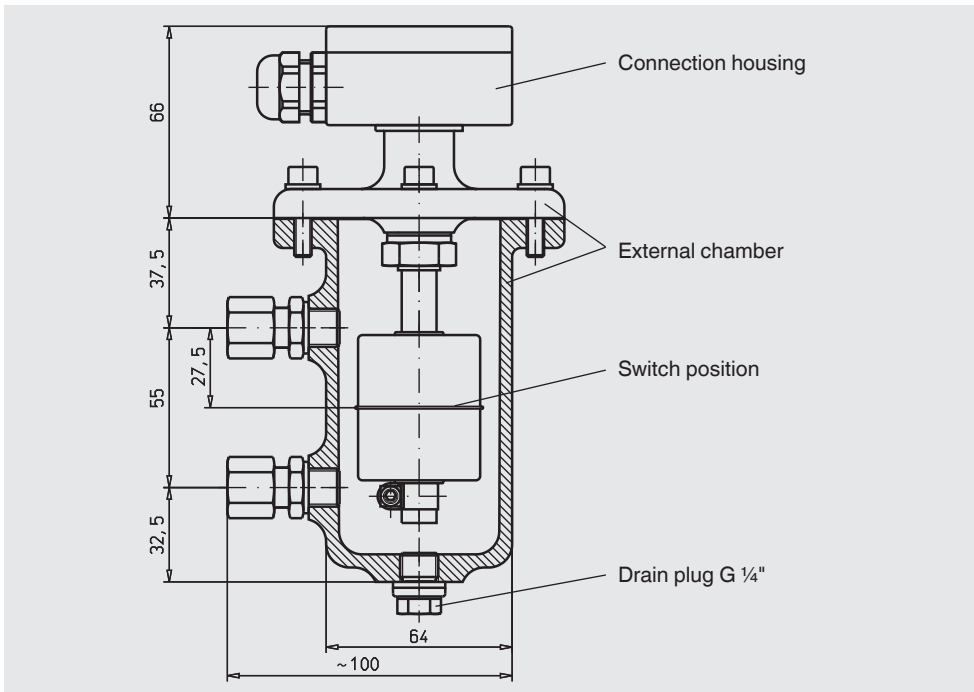
Logo	Description	Country
	<b>EU declaration of conformity</b> <ul style="list-style-type: none"> <li>■ Low voltage directive</li> <li>■ RoHS directive</li> </ul>	European Union
	<b>EAC</b> EMC directive and low voltage directive No. RU Д-DE.A301.B.00815	Eurasian Economic Community
	<b>DNV GL</b> Ships, shipbuilding (e.g. offshore) No. TAA00001YK	International
	<b>Bureau Veritas</b> Ships, shipbuilding No. 30168/B0 BV	International

Approvals and certificates, see website

# Float switch, version with external chamber from aluminium

## Model ELS-A

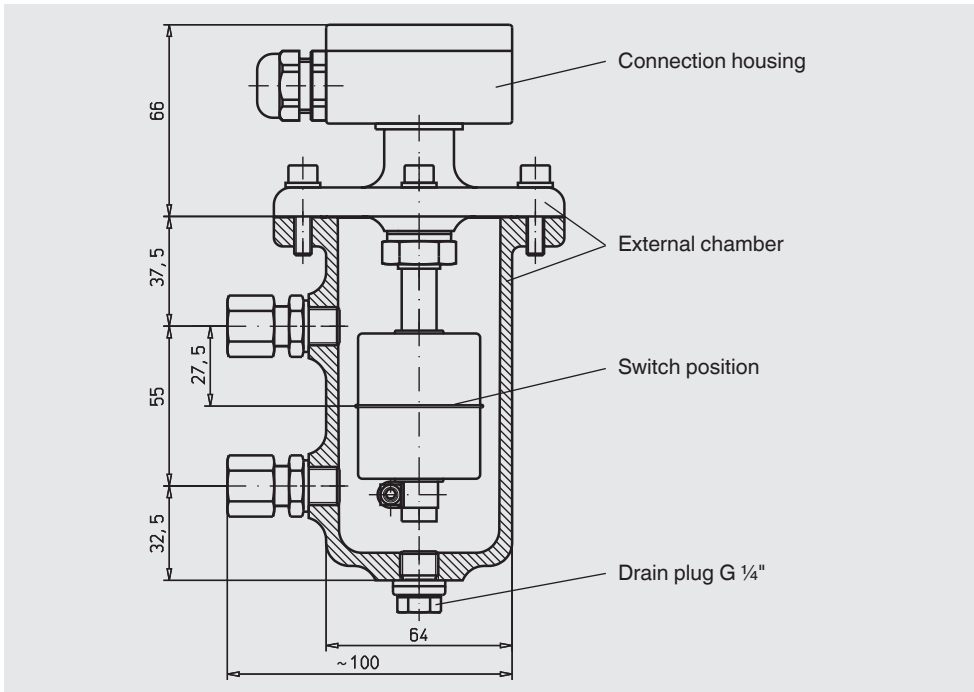
Guide tube from stainless steel 1.4571



	Model ELS-A
<b>External chamber</b>	Aluminium AlMg5
<b>Electrical connection</b>	Connection housing, aluminium 64 x 58 x 34 mm Cable entry in the direction of the process connection (other alignment on request)
<b>Process connection</b>	Compression fitting with ferrule GE10-LR, galvanised steel (other sizes on request)
<b>Max. operating pressure</b>	1 bar Special version: 6 bar
<b>Guide tube</b>	Material: Stainless steel 1.4571 Diameter: 12 mm
<b>Float</b>	Material: Stainless steel 1.4571, Buna (NBR) or titanium 3.7035 Float diameter: 40 ... 52 mm Float selection depending on process conditions (see page 6)
<b>Temperature range</b>	-30 ... +150 °C
<b>Switching function</b>	Change-over 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 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

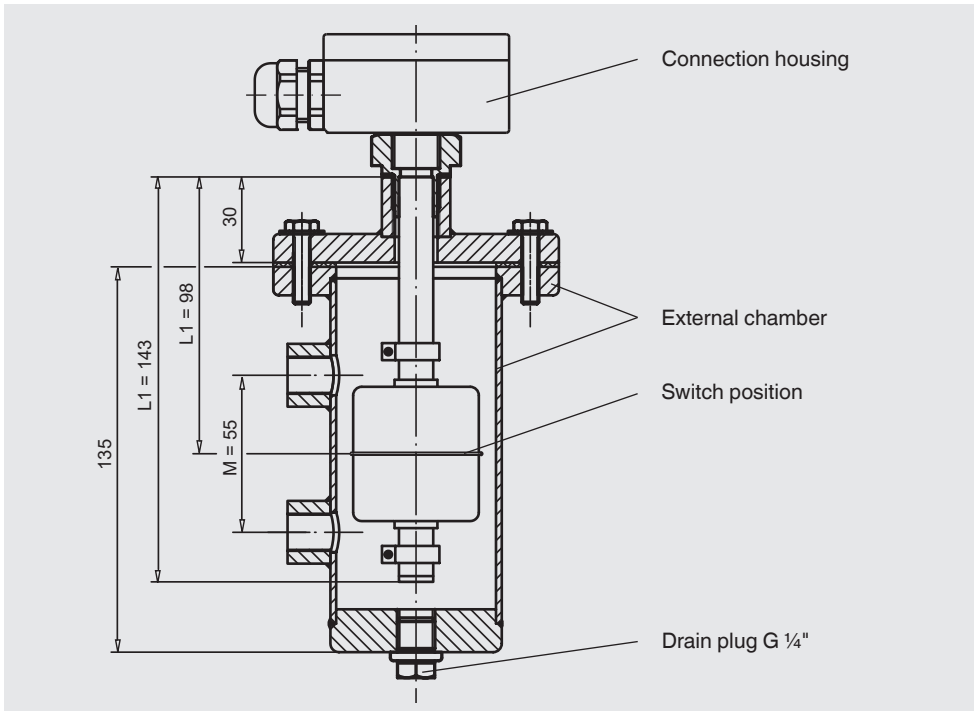
Guide tube from stainless steel 1.4571



	Model ELS-B
<b>External chamber</b>	Red bronze Rg5
<b>Electrical connection</b>	Connection housing, aluminium 64 x 58 x 34 mm Cable entry in the direction of the process connection (other alignment on request)
<b>Process connection</b>	Compression fitting with ferrule GE10-LR, brass (other sizes on request)
<b>Max. operating pressure</b>	6 bar
<b>Guide tube</b>	Material: Stainless steel 1.4571 Diameter: 12 mm
<b>Float</b>	Material: Stainless steel 1.4571, Buna (NBR) or titanium 3.7035 Float diameter: 40 ... 52 mm Float selection depending on process conditions (see page 6)
<b>Temperature range</b>	-30 ... +150 °C
<b>Switching function</b>	Change-over 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 DC ≤ 230 V; 20 W; 0.5 A
<b>Mounting position</b>	Vertical ±30°
<b>Ingress protection</b>	IP65 per IEC/EN 60529

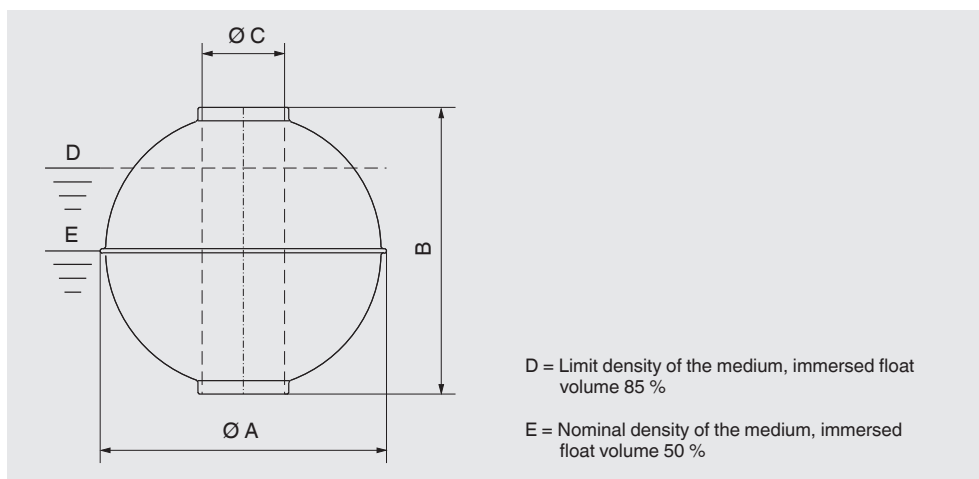
# Float switch, version with external chamber from stainless steel Model ELS-S

Guide tube from stainless steel 1.4571



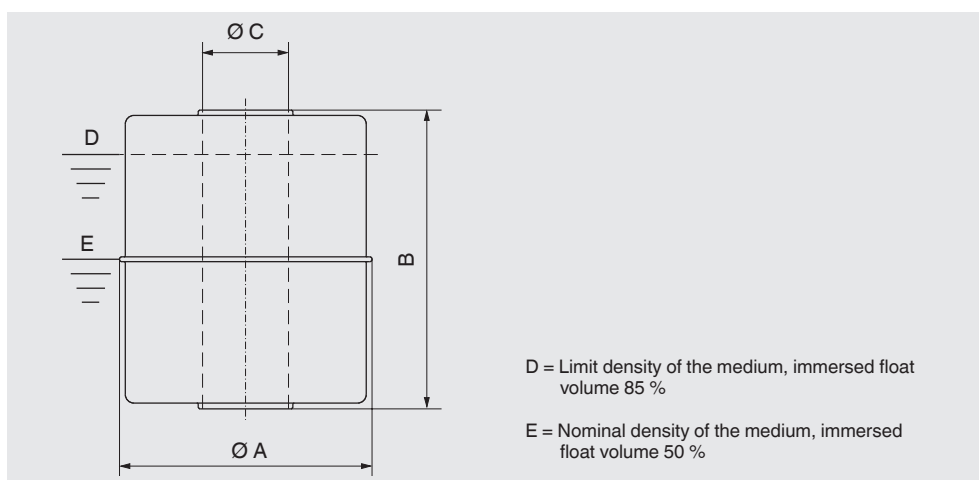
	Model ELS-S
<b>External chamber</b>	Stainless steel 1.4571
<b>Electrical connection</b>	Connection housing, aluminium 64 x 58 x 34 mm Cable entry in the direction of the process connection (other alignment on request)
<b>Process connection</b>	<ul style="list-style-type: none"> <li>■ Flange connection</li> <li>■ Threaded nipple</li> <li>■ Threaded bushing</li> <li>■ Compression fitting with ferrule GE10-LR, stainless steel (other sizes on request)</li> </ul>
<b>Max. operating pressure</b>	Chamber end top Ø 100 = 1 bar Chamber end top Ø 130 = 40 bar The maximum pressure is also limited by the float.
<b>Guide tube</b>	Material: Stainless steel 1.4571 Diameter: 12 mm
<b>Float</b>	Material: Stainless steel 1.4571, Buna (NBR) or titanium 3.7035 Float diameter: 40 ... 52 mm Float selection depending on process conditions (see page 6)
<b>Temperature range</b>	-30 ... +150 °C
<b>Switching function</b>	Change-over 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 DC ≤ 230 V; 20 W; 0.5 A
<b>Mounting position</b>	Vertical ±30°
<b>Ingress protection</b>	IP65 per IEC/EN 60529

## Spherical float



Material	Version	Suits guide tube Ø in mm	Ø A in mm	B in mm	Ø C in mm	Max. operating pressure in bar	Max. operating temp. in °C	Limit density 85 % in kg/m <sup>3</sup>	Order no.
<b>Stainless steel 1.4571</b>	V52A	12	52	52	15	40	300	770	5462

## Cylindrical float



Material	Version	Suits guide tube Ø in mm	Ø A in mm	B in mm	Ø C in mm	Max. operating pressure in bar	Max. operating temp. in °C	Limit density 85 % in kg/m <sup>3</sup>	Order no.
<b>Stainless steel 1.4571</b>	V44A	12	44	52	15	16	300	780	9681
<b>Titanium 3.7035</b>	T44A	12	44	52	15	16	300	600	9744
<b>Buna (NBR)</b>	B40A	12	40	30	15	3	80	580	9728

Note: The optimum float will be selected after a feasibility test carried out by WIKA.

## 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.



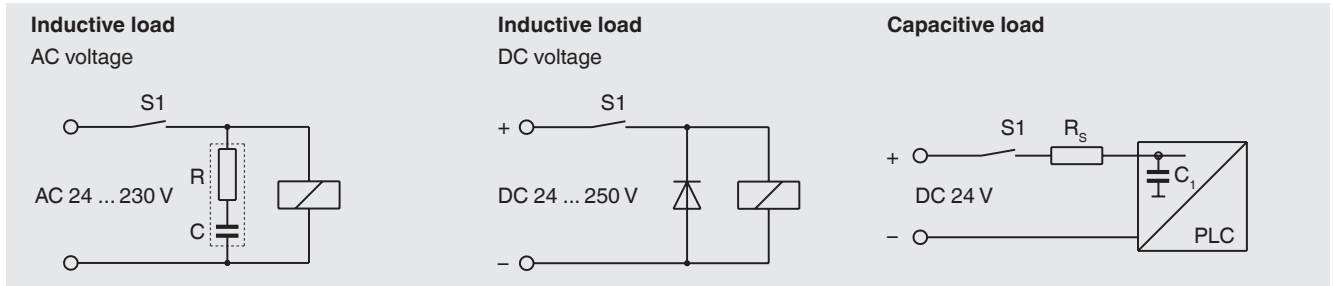
Model KFD2-ER-1.6



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 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 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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