**Float switch**

**For the process industry, horizontal installation**

Models HLS-S, HLS-P

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**Applications**

- Level detection for almost all liquid media
- Pump and level control
- Chemical, petrochemical industry, natural gas, offshore, shipbuilding, machine building, power generating equipment, power plants
- Process water and drinking water treatment

**Special features**

- Large range of application due to the simple, proven functional principle
- For harsh operating conditions, long service life
- Operating limits:
  - Operating temperature: $T = -120 \ldots +350 \, ^\circ C$
  - Operating pressure: $P = \text{Vacuum to 232 bar}$
  - Limit density: $\rho \geq 600 \, \text{kg/m}^3$
- Stainless steel and plastic versions
- Explosion-protected versions

**Description**

In addition to the various applications for float switches for vertical installation (model FLS), the model HLS horizontal float switches likewise offer innumerable possibilities to monitor and/or switch levels in order to indicate minimum/maximum levels.

The float is attached to a supported, swivelling lever and moves with the level of the medium being measured. By means of a permanent magnet, fixed to the end of the lever, when a preset switch point is reached, a reed contact (inert gas contact) within the contact tube is actuated.

By using a permanent magnet and a reed contact the switching operation is non-contact, free from wear and needs no power supply. The functioning of the float switch is independent of foaming, conductivity, vapours, bubble formation and vibrations.

The signal processing is universal. Direct connection to PLCs, NAMUR connections, signal amplifiers or contact protection relays is possible.

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

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Data sheets showing similar instruments:
- Float switch, vertical installation; model FLS; see data sheet LM 30.01
- Float switch, lateral installation; model ELS; see data sheet LM 30.03
- Float switch, horizontal installation, miniature design; model HLS-M; see data sheet LM 30.06
Model overview

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Materials</th>
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<tr>
<td></td>
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<td>Stainless steel 1.4571 (316Ti)</td>
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<tr>
<td>HLS-S</td>
<td>Standard version</td>
<td>x</td>
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<tr>
<td>HLS-P</td>
<td>Plastic version</td>
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Temperature range (process)
- Model HLS-S  -120 ... +350 °C
- Model HLS-P  -10 ... +80 °C

Operating pressure
- Model HLS-S   232 bar
- Model HLS-P   6 bar

Approvals

Model HLS-S

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<th>Description</th>
<th>Country</th>
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Model HLS-P

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Approvals and certificates, see website
**Float switch with connection housing, standard version, models HLS-SA, HLS-SB**

Process connection, contact tube and float from stainless steel 1.4571

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### Electrical connection
- Connection housing, stainless steel 1.4571

### Process connection
- Mounting flange
  - DIN DN 50 ... DN 100, PN 6 ... PN 400
  - DIN EN 1092-1 DN 50 ... DN 100, PN 6 ... PN 400
  - ANSI 2" ... 4", class 150 ... 600
  - Square flange DN 80 and DN 92
- Others on request

### Insertion length L
- Float model V44HI: 190 ... 990 mm
- Float model T52HI: 190 ... 990 mm
- Float model ZVSS43/100HI: 240 ... 990 mm

### Contact tube length K
- Float model V44HI: 100 ... 900 mm
- Float model T52HI: 100 ... 900 mm
- Float model ZVSS43/100HI: 100 ... 850 mm

### Float
- **Material**
  - Float model V44HI: Stainless steel 1.4571
  - Float model T52HI: Model T52HI; Titanium 3.7035, grade 2
  - Float model T52HI/Gr. 5: Model T52HI/Gr. 5; Titanium 3.7165, grade 5
- **Diameter**
  - 44 mm
- **Length**
  - 52 mm
- **Max. operating pressure**
  - 6 bar
  - Model T52HI: 100 bar
  - Model T52HI/Gr. 5: 232 bar
  - 20 bar

### Min. density
- 600 kg/m³

### Temperature range
- **Standard version**
  - -50 ... +250 °C
- **High-temperature version HT**
  - -50 ... +350 °C
- **Low-temperature version**
  - -120 ... +250 °C

### Switching function
- Alternately normally open (NO), normally closed (NC) or change-over (SPDT) - on rising or falling level

### Switching power
- AC ≤ 230 V; 40 VA; 1 A
- DC ≤ 230 V; 20 W; 0.5 A

  Please observe contact protection measures!

  Attention - versions without protective conductor connection:

  Attention: Operation only at safety extra-low voltage, e.g. contact protection relay or external grounding

### Mounting position
- Horizontal ±30°

### Ingress protection
- IP67 per IEC/EN 60529

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Versions in titanium, Hastelloy or other materials on request
**Float switch, explosion-protected version Ex i, intrinsically safe**  
**Model HLS-SBI (HAG)**  
II 1G/2GD EEx ia IIC T6-T2 IP6X T80 °C (Nr. IBExU03ATEX1038 X)  
Process connection, contact tube and float from stainless steel 1.4571

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**Electrical connection**  
Connection housing, stainless steel 1.4571

**Process connection**
- Mounting flange
  - DIN DN 50 ... DN 100, PN 6 ... PN 160
  - DIN EN 1092-1 DN 50 ... DN 100, PN 6 ... PN 160
  - ANSI 2" ... 4", class 150 ... 900
  - Square flange DN 80 and DN 92
  - others on request

**Insertion length L**  
190 ... 990 mm

**Contact tube length K**  
100 ... 900 mm

**Float**
- **Material**
  - Stainless steel 1.4571
  - Model T52HI: Titanium 3.7035, grade 2
  - Model T52HI/Gr. 5: Titanium 3.7165, grade 5
  - Stainless steel 1.4571

**Max. operating pressure**  
6 bar  
Model T52HI: 100 bar  
Model T52HI/Gr. 5: 180 bar  
20 bar

**Min. density**  
600 kg/m³

**Temperature range**  
-50 ... +180 °C depending on the temperature class

**Temperature class**
- **Process temperature**
  - T2 ≤ 180 °C
  - T3 ≤ 160 °C
  - T4 ≤ 108 °C
  - T5 ≤ 80 °C
  - T6 ≤ 65 °C

**Ambient temperature**
- ≤ 60 °C
- ≤ 80 °C
- ≤ 80 °C
- ≤ 80 °C
- ≤ 60 °C

**Switching function**  
1 x change-over (SPDT)

**Switching power**  
Only for connection to a certified intrinsically safe circuit with $U_{\text{max}} = 36$ V, $I_{\text{max}} = 100$ mA

**Mounting position**  
Horizontal ±30°

**Ingress protection**  
IP67 per IEC/EN 60529
## Float switch, plastic version

**Model HLS-P**

Process connection, contact tube and float from polypropylene (PP)

### Intended Use
- Connection housing, polypropylene or polyester
- Polypropylene

### Mounting Flange
- DIN DN 50 ... DN 100, PN 16, form A
- ANSI 2" ... 4", class 150 FF

### Insertion Length L
176 mm

### Contact Tube Length K
111 mm

### Float
- **Material**: Polypropylene
- **Diameter**: 44 mm
- **Length**: 52 mm

### Max. Operating Pressure
4 bar

### Min. Density
750 kg/m³

### Temperature Range
-10 ... +80 °C

### Switching Function
- Alternatively normally open (NO), normally closed (NC) or change-over (SPDT) - on rising level

### Switching Power
- AC ≤ 230 V; 40 VA; 1 A
- DC ≤ 230 V; 20 W; 0.5 A

**Please observe contact protection measures!**

**Attention**: Operation only at safety extra-low voltage, e.g. contact protection relay or external grounding

### Mounting Position
- Horizontal ±30°

### Ingress Protection
- IP65 per IEC/EN 60529
Electrical connections

Reed contact

1 switch point

Wiring for operation with a PLC

1 switch point

NAMUR circuit per DIN EN 60947-5-6

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.

Contact protection relay | 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 | - | 123806 |
KFD2-SR2-Ex2.W | 2 x change-over AC 253 V, 2 A | 2 x contacts | DC 20 ... 30 V | II 1GD Ex ia IIC PTB 02 ATEX 2073 | 124344 |
KFA6-ER-1.6 | 1 x change-over AC 250 V, 2 A | 2 x contacts | AC 230 V | - | 124341 |
KFA6-SR2-Ex2.W | 2 x change-over AC 253 V, 2 A | 2 x contacts | AC 230 V | II 1GD Ex ia IIC PTB 02 ATEX 2073 | 123794 |

RC element

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<tr>
<th>Capacitance</th>
<th>Resistance</th>
<th>Voltage</th>
<th>Order no.</th>
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<tr>
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<td>0.33 µF</td>
<td>470 Ω</td>
<td>AC 110 V</td>
</tr>
<tr>
<td>B3/230</td>
<td>0.33 µF</td>
<td>820 Ω</td>
<td>AC 230 V</td>
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</table>

Inductive load

AC voltage

Inductive load

DC voltage

Capacitive load

Model KFD2-ER-1.6

RC element
Ordering information
To order the described product the order number (if available) is sufficient.

Alternatively:
Model / Version / Electrical connection / Process connection / Contact tube (insertion length L, contact tube length K) / Options