**Magnetic float level meter**

**Summary**

UHC-517 Series magnetic float level meters are suitable for measuring the liquid in open vessel or pressure vessel. With the features of tight sealing and leak proof, the meters can measure safely and reliably the liquid level in the severe conditions, such as high temperature, high pressure, high viscosity, strong corrosion. The meters are featured also without blind zone, distinct indication, easy reading and wide measuring range.

With liquid level switch as optional part, the meter can realize liquid level upper and lower limit alarm and control. With liquid level transmission sensor as optional part, the meter can convert the liquid level signal into two-wire system (4–20)mA standard signal, realizes long distance detection, indication, recording and controlling. This series meters are widely used in the liquid level measurement and control of electricity, petroleum, chemical industry, metallurgy, environment protection, ship building, civil construction, food and other industries.

**Technical parameters and requirement**

<table>
<thead>
<tr>
<th>Main technical parameters</th>
<th>Technical requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range (300~15000) mm</td>
<td>±10mm ~ ±150mm</td>
</tr>
<tr>
<td>Measuring accuracy</td>
<td>±10mm</td>
</tr>
<tr>
<td>Media density</td>
<td>≥0.45 g/cm³</td>
</tr>
<tr>
<td>Working pressure</td>
<td>≤1.0MPa</td>
</tr>
<tr>
<td>Working temperature</td>
<td>-50℃ ~ 480℃</td>
</tr>
<tr>
<td>Explosion-proof sign</td>
<td>II2/III2/II2G</td>
</tr>
<tr>
<td>Output signal</td>
<td>4~20mA</td>
</tr>
<tr>
<td>Working current</td>
<td>≤20mA</td>
</tr>
<tr>
<td>Power supply</td>
<td>24V DC</td>
</tr>
<tr>
<td>Maximum load resistance</td>
<td>≥270Ω</td>
</tr>
</tbody>
</table>

**Working Principle**

Level meter structure bases on the principle of bypass, the liquid lever in the main pipe is as same as that in the vessel device. According to Archimedes Theorem, the buoyancy force of magnetic float in the liquid is equal to the float weight. Floaters floats on the surface of liquid, the floaters in the main pipe of level meter will move up and down with the movement of level in the vessel measured. The permanent steel magnet in the floaters will turn 180° through the red-white turn post in the magnetic coupling drive indicator. When liquid level rises, the turn post turns white side to red one, when the lever lowers, turn post turns red side to white one. The red and white interface of indicator is the actual height of media level in the vessel. Thus the level indication is realized.

**BK-1 Cam magnetic - driven level switch**

**Summary**

BK-1 cam magnetic - driven level switch(called level switch hereinafter) is used together with UHC-517 series magnetic turn post level meter to control or alarm the liquid level in the vessel. When the liquid lever reaches the control or alarm position, the level switch movement issues on-off signals.

**Technical parameters and requirement**

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<tr>
<td>Power supply</td>
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</tr>
<tr>
<td>Output signal</td>
<td>(4 ~ 20)mA</td>
</tr>
<tr>
<td>Working temperature</td>
<td>-20℃ ~ 65℃</td>
</tr>
<tr>
<td>Explosion-proof sign</td>
<td>II2/III2/II2G</td>
</tr>
<tr>
<td>Flameproof enclosure</td>
<td>d II BT5</td>
</tr>
<tr>
<td>Maximum load resistance</td>
<td>≥270Ω</td>
</tr>
</tbody>
</table>

**Working Principle**

The level switch installed on the panel of magnetic turn post level meter and level meter are at the same magnetic coupling system. Floaters in the main pipe of level meter moves from bottom to top with the changed level. When floater flows near the level switch, magnetic floaters generated by alnico in the floaters repels magnetic field generated by alnico in the level switch to drive movement of switch through alnico in the level switch and the connected cam sway. Floaters goes on rising and the switch maintains the state. When floater moves near the level switch from top to bottom, the magnetic repulsion promotes conversion of level switch and floaters, magnetic field generated by alnico in the floaters repels magnetic field generated by alnico in the level switch to drive movement directly.

**Main technical parameters of transmitter**

- Power supply: 24V DC
- Output signal: (4 ~ 20)mA
- Working temperature: -20℃ ~ 65℃
- Explosion-proof sign: II2/III2/II2G
- Flameproof enclosure: d II BT5
- Maximum load resistance: ≥270Ω
Magnetic float level meter

Main technical parameters

**BK-1 level switch**
- Switch type: Cam magnetic - driven switch, SPDT, with shockproof protection function 250V AC 16A
- Switch contact capacity: Resistive load: 30V DC 10A, 125V DC 0.6A
- Inductive load: 250V AC 10A, 30V DC 10A, 125V DC 0.6A
- Working temperature: -50 ~ 180℃
- Electrical interface: Two M20*1.5 internal threads
- Explosion-proof class: Flameproof enclosure ExdIIBT4
- Intrinsic safety ExiaIIBT1 ~ T6
- Protection class: IP65

**EK-1 level switch**
- Switch type: Dry reed switch, SPST or SPDT
- Contact capacity: SPST: 220V AC 0.1A or 100V DC 0.5A
- SPDT: 220V AC 0.1A or 30V DC 0.2A
- Working temperature: Electrical interface: M20*1.5 internal thread
- Explosion-proof class: Only applicable to non-flammable, non-explosive common occasions
- Protection class: IP65

**Summary**
Dry reed level switch (CK-1 type, EK-1 type) is used together with UHZ-517 series turn post level meters and installed on the indication panel. It's used to control or alarm the liquid level.

**Working principle**
The level switch installed on the indication panel of magnetic turn post level meter and level meter are at the same magnetic coupling system. Floater in the main pipe of level meter moves up and down with the changed level. When floater flows near the level switch from bottom to top, alnico in the floater acts on dry reed pipe in the guide rod, issues on-off switch signal. Normally open reed switch is in the state of connection when in a magnetic field and in the state of disconnect when outside the magnetic field. While normally closed reed switch contraries to the normally open reed switch in the same state.

**Profile and connection diagram**

**Dry reed level switch**

- Switch type: dry reed switch, SPST or SPDT
- Contact capacity: SPST: 220V AC 0.1A or 100V DC 0.5A
- SPDT: 220V AC 0.1A or 30V DC 0.2A
- Working temperature: Electrical interface: M20*1.5 internal thread
- Explosion-proof class: Flameproof enclosure
- Intrinsic safety
- Protection class: IP65

**The installation schematic diagram**

- UHC-517C side mounted
- UHC-517D top mounted
- UHC-517DA side mounted, top display
- UHC-517DB side mounted, bottom display
UHC-517C is the most common used magnetical float level meter with side mount. It’s used to measure the level of liquid media when the working pressure $\leq 6.4$ MPa, working temperature $\leq 480$ ℃.

**Measuring range:** (300 ~ 15000) mm (Center distance between the two flanges)

**Working pressure:** $\leq 6.4$ MPa

**Working temperature:** $\leq 480$ ℃

**Media density:** (0.45 ~ 2.0) g/cm$^3$

**Flange standard:** HG20592-20635-97

If other flange standard is required, users should note it.

**Material:**
- Conventional type: stainless steel 304, 316L
- Floater: 304, 316L

If other material is required, users should note it.

**Connection mode:** Bypass side mounted flange

**Options**

<table>
<thead>
<tr>
<th>Options</th>
<th>UHC-517C-</th>
<th>UHC-517D-</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Output (4-20)mA two-wire system transmitter</td>
<td></td>
</tr>
<tr>
<td>Q</td>
<td>Intrinsic safety ibIICT5</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Flameproof enclosure dIIBT5</td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>With isolation safety barrier</td>
<td></td>
</tr>
</tbody>
</table>

**Switching points**

- Q: Intrinsic safety ibIICT5
- B: Flameproof enclosure dIIBT5
- T: With isolation safety barrier

**Indication type**

- P: 1Cr18Ni9Ti stainless steel
- R: 316L stainless steel
- L: Stainless steel with inner lining of PTFE
- N: Polyvinyl chloride PVC
- Z: Polypropylene PP

**Electric transmission device**

- M: Electric heat tracing device

**Switch type**

- W: Heating interface DN20 or G1/2 external thread
- X: Vacuum jacket

**Switching points (digital indication)**

- A: With fluorescent post display adjusting alarm (vertical type)
- B: With fluorescent post display adjusting alarm (horizontal type)
- C: With other digital indicating meters

**Explosion-proof type**

- (-90 ~ 480) ℃

**Working pressure**

- $\leq 32$ MPa

**Media density**

- Unit: g/cm$^3$

**Flange center distance**

- Unit: L/mm

**Flange specification**

**Measuring range L:mm**

- 80
- 100
- 150

**Video options**

- A: With fluorescent post display adjusting alarm (vertical type)
- B: With fluorescent post display adjusting alarm (horizontal type)
- M: Electric heat tracing device

**Other options**

- D: Output (4-20)mA two-wire system transmitter
- Q: Intrinsic safety ibIICT5
- B: Flameproof enclosure dIIBT5
- T: With isolation safety barrier
- P: Electric heat tracing device

**Technical parameters**

- Measuring range: (300 ~ 15000) mm
- Working pressure: $\leq 6.4$ MPa
- Working temperature: $\leq 480$ ℃
- Media density: (0.45 ~ 2.0) g/cm$^3$
- Flange standard: HG20592-20635-97
- If other flange standard is required, users should note it.
- Material: Conventional type: stainless steel 304, 316L
- Floater: 304, 316L
- If other material is required, users should note it.
- Connection mode: Bypass side mounted flange
- Flange specification
- Measuring range L:mm

**Type selection chart**

- Indication type
- Electric transmission device
- Switch type
- Technical parameters

**Sphere of application**

UHC-517C is the most common used magnetical float level meter with side mount. It’s used to measure the level of liquid media when the working pressure $\leq 6.4$ MPa, working temperature $\leq 480$ ℃.
UHC-517D Magnetical float level meter

Sphere of application

UHC-517D magnetical float level meter is mainly used to measure the level of various underground storage tanks and vessels with side sealed. In respect of structure, there exists blind zone when measures whose value will be different corresponding to different media density. The zero position of the scale calibration has been moved to the actual value when our products can be sold.

Technical parameters

Measuring range: \( \leq 5000 \text{ mm} \)
Working pressure: \( \leq 2.5 \text{ MPa} \)
Working temperature: \(-20 \sim 200^\circ \text{C}\)
Media density: \(0.5 \sim 2.0 \text{ g/cm}^3\)

Note: When media density \( \leq 0.8 \text{ g/cm}^3 \) choosing flange \( \geq \text{DN100} \)

Flange standard: HG20592-20635-97
If other flange standard is required, users should note it.

Material: Top catheter: 304L or 316L
Floater: stainless steel

Options

UHC-517D-

D Output (4~20)mA two-wire system transmitter
\[ \square \] Level switch: C, E, F can be chosen any one as options
Q Intrinsc safety: ibIICT5
B Flameproof enclosure: dIIBT5
\[ \square \] With isolation safety barrier
M Electric heat tracing device
A With fluoresceon post display instrument (vertical type)
B With fluoresceon post display instrument (horizontal type)
\[ \square \] Working pressure MPa
\[ \square \] Media density \( \text{g/cm}^3 \)
\[ \square \] Measuring range \( \text{L=} \text{ mm} \)

UHC-517DA/DB/DC magnetic float level meter (Other installations)

Sphere of application

UHC-517DA/DB/DC magnetic float level meters include several other installations for users to choose. When choosing, please refer to the front "The installation schematic diagram" and "Type selection chart".

UHC-517C Corrosion resistant magnetical float level meter

Sphere of application

UHC-517C corrosion resistant magnetical float level meter without blind zone is used to measure the level in such occasion: larger corrosive media and higher working temperature. It adopts stainless steel with inner lining of polytetrafluoroethylene push flanging advanced new technology. It's featured with reliable structure and long life. Corrosion resistant type adopts UP-VC. PP tubes combination to be suitable for common acid, alkaline solution in low working temperature, but it isn't suitable for aromatics, hydrocarbon, ketone, esters etc.

Technical parameters

Measuring range: \((300 \sim 6000) \text{ mm} \)
(Center distance between the two flanges)
Working pressure: \(< 2.5 \text{ MPa} \)
Working temperature: \(< 200^\circ \text{C} \)
Media density: \((0.45 \sim 2.0) \text{ g/cm}^3\)
Flange standard: HG20592-20635-97
If other flange standard is required, users should note it.

Material: Stainless steel with inner lining of polytetrafluoroethylene, PP, PVC
Floater: Polytetrafluoroethylene, PP, PVC
If other material is required, users should note it.

Options

UHC-517C-

D Output (4~20)mA two-wire system transducer
\[ \square \] Level switch: C, E, F can be chosen any one as options
Q Intrinsc safety: ibIICT5
B Flameproof enclosure: dIIBT5
\[ \square \] With isolation safety barrier
M Electric heat tracing device
A With fluoresceon post display instrument (vertical type)
B With fluoresceon post display instrument (horizontal type)
\[ \square \] Working pressure MPa
\[ \square \] Media density \( \text{g/cm}^3 \)
\[ \square \] Measuring range \( \text{L=} \text{ mm} \)

Technical parameters

Measuring range: \(< 5000 \text{ mm} \)
Working pressure: \(< 2.5 \text{ MPa} \)
Working temperature: \((-20 \sim 200)^\circ \text{C} \)
Media density: \((0.5 \sim 2.0) \text{ g/cm}^3\)

Note: When media density \( \leq 0.8 \text{ g/cm}^3 \) choosing flange \( \geq \text{DN100} \)

Flange standard: HG20592-20635-97
If other flange standard is required, users should note it.

Material: Top catheter: 304L or 316L
Floater: stainless steel

Options

UHC-517D-

D Output (4~20)mA two-wire system transducer
\[ \square \] Level switch: C, E, F can be chosen any one as options
Q Intrinsc safety: ibIICT5
B Flameproof enclosure: dIIBT5
T With isolation safety barrier
M Electric heat tracing device
A With fluoresceon post display instrument (vertical type)
B With fluoresceon post display instrument (horizontal type)
\[ \square \] Working pressure MPa
\[ \square \] Media density \( \text{g/cm}^3 \)
\[ \square \] Measuring range \( \text{L=} \text{ mm} \)
**UHC-52D Series magnetical float ball level meters**

**Technical parameters**
- Measuring range: (300 ~ 6000)mm
- Power supply: 24V DC ± 5%
- Working pressure: 0.6MPa, 1.6MPa, 2.5MPa
- Working temperature: < 80°C
- Measuring accuracy: ± 1.5%
- Output signal: (4 ~ 20)mA two-wire system
- ± Measuring accuracy: 1.5%
- Working temperature: ≤ 80°C
- Working pressure: 0.6MPa, 1.0MPa, 1.6MPa, 2.5MPa
- Media density: > (0.5 ~ 2.0)g/cm³
- Output signal: (4 ~ 20)mA output, spot LED digital display

**Type selection chart**

<table>
<thead>
<tr>
<th>UHC-52D- □</th>
<th>□ Stainless 304, 316, 316L</th>
<th>□ Corrosion resistant type U/PVC, PP</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ (4 ~ 20)m Acutput</td>
<td>O</td>
<td>Output mode</td>
</tr>
<tr>
<td>□ (4 ~ 20)m spot LED digital display</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>□ Spot LED digital display</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>□ Intrinsic safety: ibICT5</td>
<td>G</td>
<td></td>
</tr>
<tr>
<td>□ Flameproof enclosure: dIBT5</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>□ T</td>
<td>T</td>
<td>With isolation safety barrier</td>
</tr>
<tr>
<td>□ With fluorescence post display adjusting alarm (vertical type)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>□ With fluorescence post display adjusting alarm (horizontal type)</td>
<td>B</td>
<td></td>
</tr>
</tbody>
</table>

**UHC-52D Series magnetical float ball level meters**

**Technical parameters**
- Measuring range: (300 ~ 6000)mm
- Working temperature: -30 ~ 120°C
- Working pressure: 0.6MPa, 1.0MPa, 1.6MPa, 2.5MPa
- Media density: > (0.5 ~ 2.0)g/cm³
- Note: density>0.8, DN100
- Contact capacity: 220V AC/24V DC 0.5A
- Joint life: 5 × 10⁶times
- Explosion-proof sign: Intrinsic safety: ibICT5
- Flameproof enclosure: dIBT5
- Electrical interface: M20x1.5 internal thread
- Process connection: Flange connection DN100
- Flange standard: HG20593-20635-97
- Note: If other flange standard or connection mode is required, users should note it.

**Type selection chart**

<table>
<thead>
<tr>
<th>UHC-51D □</th>
<th>□ Stainless 304, 316, 316L</th>
<th>□ Corrosion resistant type PP, PVC</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ (4 ~ 20)m Acutput</td>
<td>O</td>
<td>Output mode</td>
</tr>
<tr>
<td>□ (4 ~ 20)m spot LED digital display</td>
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</tr>
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<td>B</td>
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</tr>
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**Float ball level switch selection chart**

<table>
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</tr>
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**Technical parameters**
- Measuring range: (300 ~ 6000)mm
- Working temperature: -30 ~ 120°C
- Working pressure: 0.6MPa, 1.0MPa, 1.6MPa, 2.5MPa
- Media density: > (0.5 ~ 2.0)g/cm³
- Note: density>0.8, DN100
- Contact capacity: 220V AC/24V DC 0.5A
- Joint life: 5 × 10⁶times
- Explosion-proof sign: Intrinsic safety: ibICT5
- Flameproof enclosure: dIBT5
- Electrical interface: M20x1.5 internal thread
- Process connection: Flange connection DN100
- Flange standard: HG20593-20635-97
- Note: If other flange standard or connection mode is required, users should note it.

**Float ball level switch selection chart**

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<td></td>
</tr>
</tbody>
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**Technical parameters**
- Measuring range: (300 ~ 6000)mm
- Working temperature: -30 ~ 120°C
- Working pressure: 0.6MPa, 1.0MPa, 1.6MPa, 2.5MPa
- Media density: > (0.5 ~ 2.0)g/cm³
- Note: density>0.8, DN100
- Contact capacity: 220V AC/24V DC 0.5A
- Joint life: 5 × 10⁶times
- Explosion-proof sign: Intrinsic safety: ibICT5
- Flameproof enclosure: dIBT5
- Electrical interface: M20x1.5 internal thread
- Process connection: Flange connection DN100
- Flange standard: HG20593-20635-97
- Note: If other flange standard or connection mode is required, users should note it.