



上海思派电子科技有限公司

SHANGHAI SPES ELECTRONIC TECHNOLOGY CO.,LTD.

Magnetic Level Gauge Product Selection Guide

ISO9001:2015 CE



Company Introduction

Shanghai SPES Electronic Technology Co., Ltd.

was founded in January, 2003 with a registered fund of 10.1 million Yuan, which is a professional high-tech private company specializing in R&D, production, and sales of various level meters. At the very beginning of establishment, SPES has gathered a group of professionals and managerial personnel, and brought together many senior engineers. Their R&D experience of automation instruments guaranteed the quality and excellent performances of products.

SPES has won international certificates such as ISO, CE, and SIL, as well as anti-explosion and metrology certificates, specializing in the production of level switches, RF admittance sensors, capacitance sensors, radar level meters, magnetic level gauges, float switches, and temperature/pressure/differential pressure instruments. Our comprehensive product portfolio caters to diverse industrial applications across chemical processing, pharmaceuticals, new energy, grain & oils, environmental power, feed production, cement, plastics, and construction machinery sectors. Widely distributed across domestic and global markets, we serve as a trusted supplier to Fortune 500 companies including SANY Heavy Industry, CNPC, and CSSC, having earned the distinction of "Outstanding Supplier" from our clients.

Shanghai SPES adheres to the concept of innovation, pragmatism and professionalism, and serves new and old customers at home and abroad with new technology, high quality and high efficiency.



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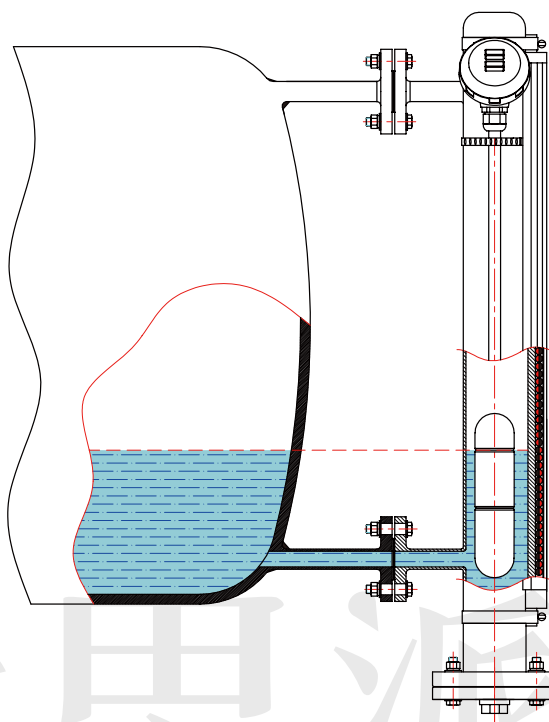
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Product Introduction

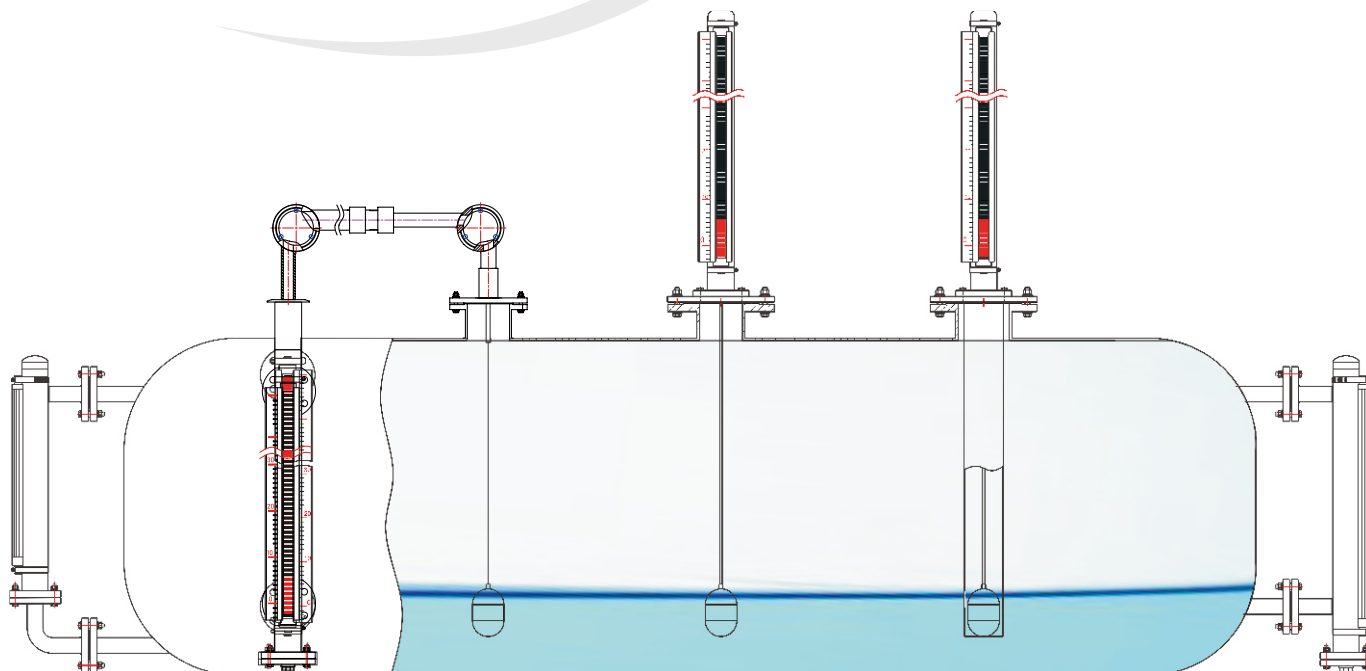
The magnetic level gauge operates by forming a communicating vessel between the bypass pipe and the tank (or process equipment), ensuring identical liquid levels in both systems. When the liquid level rises or falls, the float moves correspondingly under buoyancy. The permanent magnet inside the float magnetically couples with the bicolor (red-white) indicator flaps, causing them to rotate 180°. This rotation creates a distinct red-white demarcation line against the scale, providing clear and intuitive level indication.

For enhanced functionality, our optional remote transmitters or magnetic switches deliver precise and stable electrical signal output, enabling reliable long-distance level monitoring and control.

1. Unique inward-flanging process ensures a weld-free main conduit with smooth inner walls and no sharp edges, completely preventing float jamming during operation;
2. Anodized aluminum alloy panel offers enhanced aesthetics, superior corrosion resistance, and long-term durability;
3. High-temperature indicator flaps are precision ceramic-sintered for permanent color retention;
4. Standard remote transmission system utilizes imported reed switch components for exceptionally stable and reliable performance.



Installation Diagram



Model Number: UHZ-661-A8A

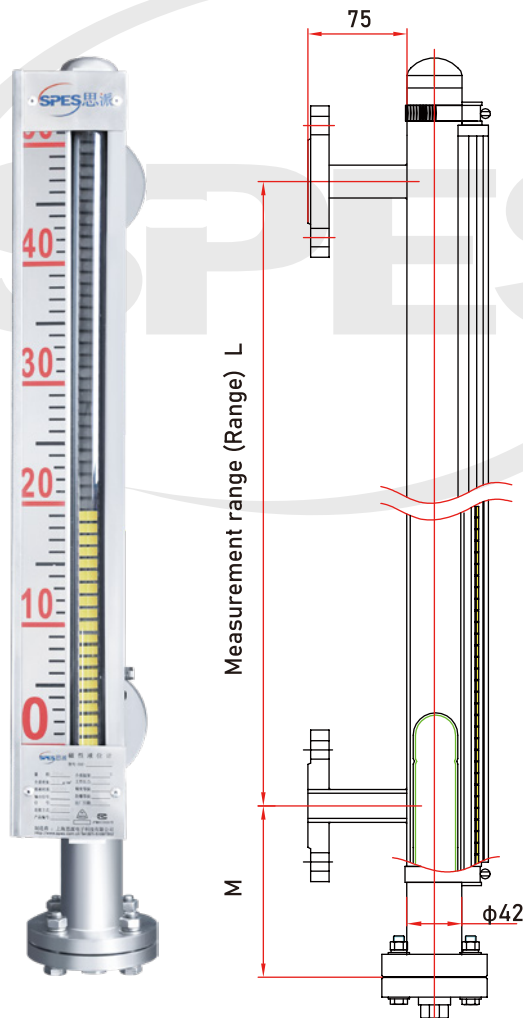
Compact Side-Mounted Magnetic Level Gauge

1. $\phi 42$ diameter tube design with lightweight construction;
2. Ideal for small-scale equipment with measuring ranges up to 1000mm;
3. Titanium alloy float with minimized displacer spacing;
4. Main tube material options: SUS304 or SUS316L stainless steel.

Measuring Range: 200~1000mm

Process Temperature: 120°C, 200°C

Working Pressure: 0.6, 1.0, 1.6MPa



M=105mm at NTP ($\rho=1.0\text{g/cm}^3$)

Model Number: UHZ-661-A1A

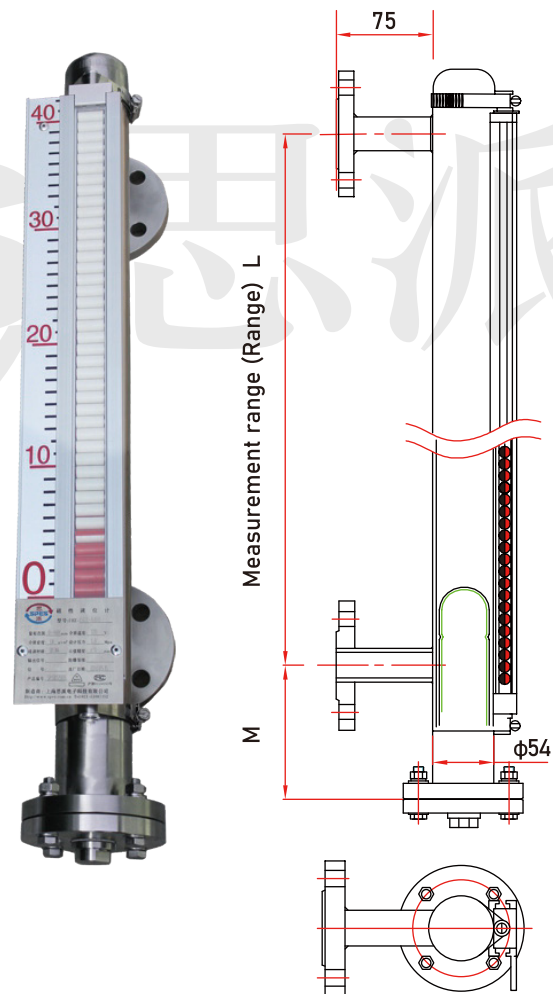
Standard Side-Mounted Magnetic Level Gauge

1. Accurate and reliable measurement across all measurement ranges.
2. Features a reinforced tube for high-pressure environments.
3. Main tube material options: SUS304, 304L, 316L, or 321 stainless steels.
4. High-pressure resistant titanium alloy float available (standard: SUS316L).

Measuring Range: 300~8000mm (Segmented construction available for extended measurement ranges)

Process Temperature: 120°C, 200°C, 400°C

Working Pressure: Multiple pressure ratings available



M=225mm at NTP ($\rho=0.8\text{g/cm}^3$)

M=155mm at NTP ($\rho=1.0\text{g/cm}^3$)

Model Number: UHZ-661-A3D
Anti-corrosion Side-mounted Magnetic Level Gauge

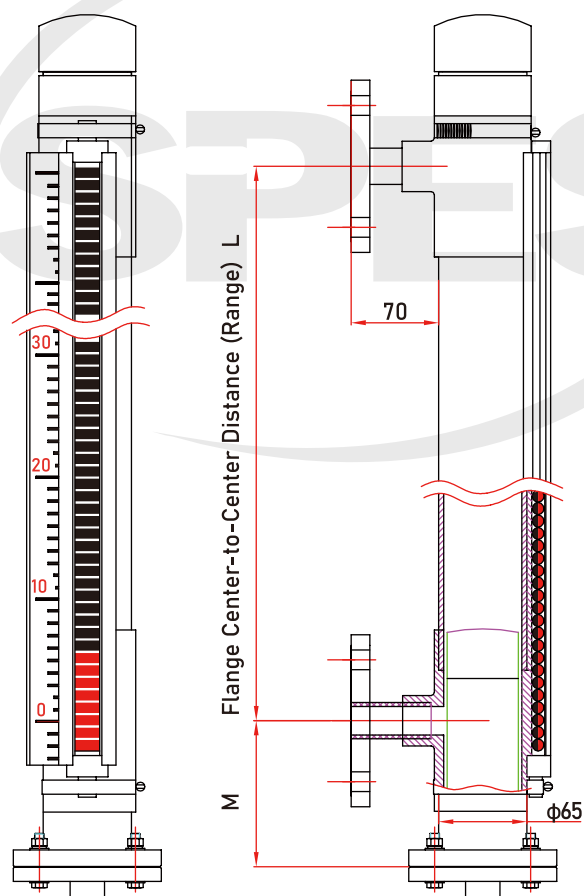
1. Full anti-corrosion construction-resistant to various corrosive media;
2. Material options: PP, PE, UPVC (max: 80°C);
3. Fully welded process for enhanced structural integrity;
4. Simple design with high cost-performance ratio.

Measuring Range: 300~2000mm

(auxiliary supports required for lengths >2m)

Process Temperature: 80°C

Working Pressure: Atmospheric Pressure



M=140mm at NTP ($\rho=1.0\text{g/cm}^3$)

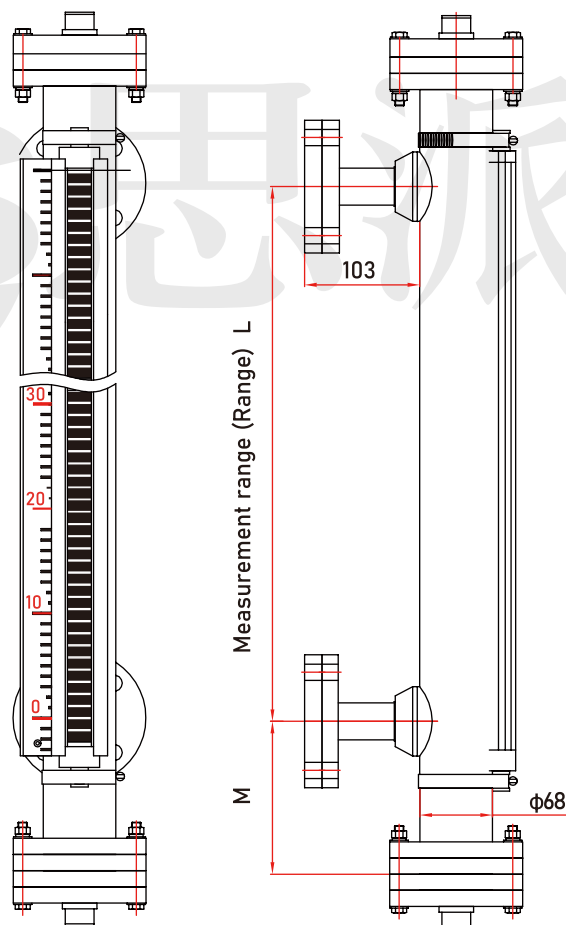
Model Number: UHZ-661-A4D
SUS-PP Lined Magnetic Level Gauge

Full SUS (Stainless Steel) body with PP/PE/UPVC lining for enhanced structural strength; suitable for longer measuring ranges.

Measuring Range: 300~4000mm (Segmented construction available for extended measurement ranges)

Process Temperature: max80°C

Working Pressure: Atmospheric Pressure



M=120mm at NTP ($\rho=1.0\text{g/cm}^3$)

Model Number: UHZ-661-A4A

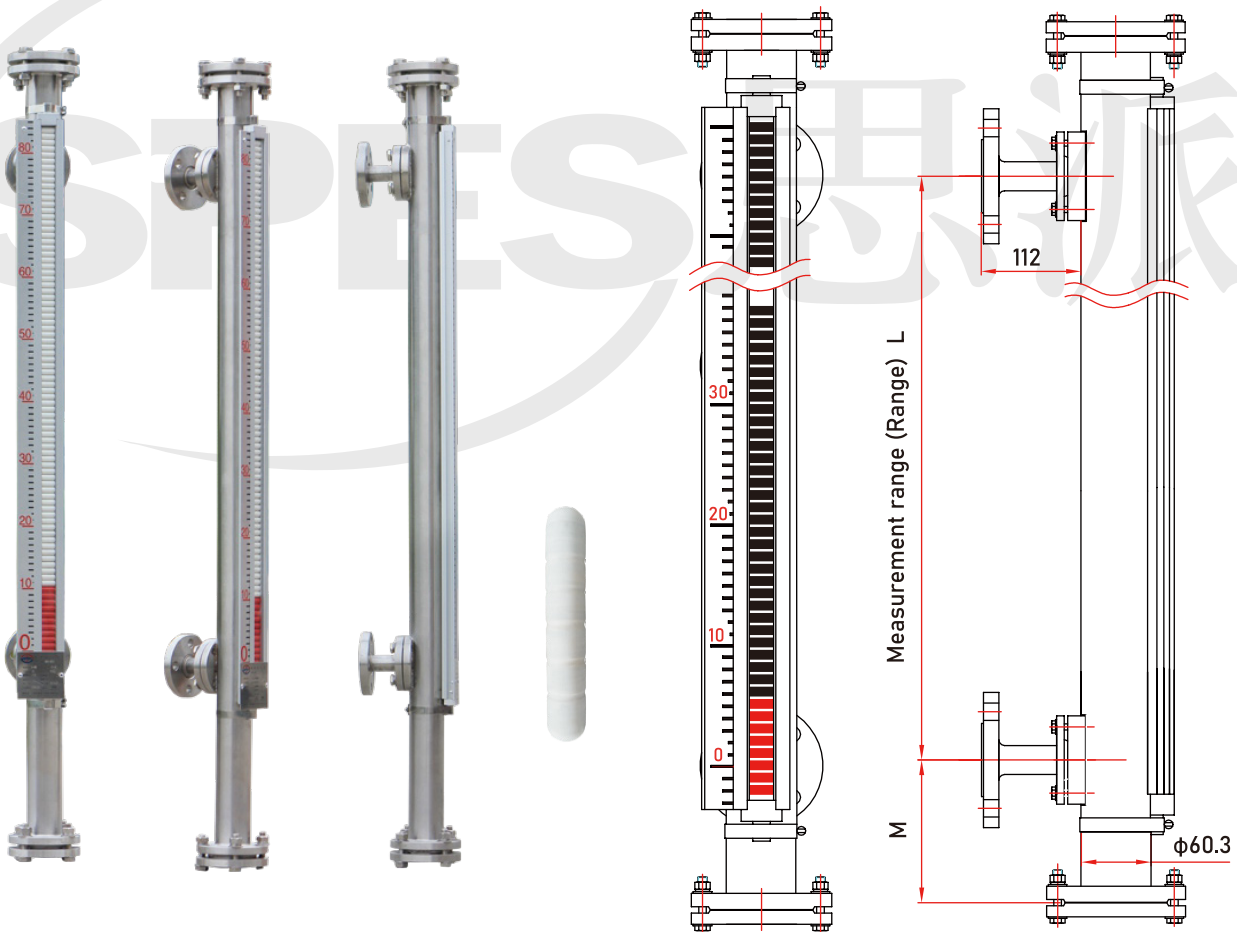
Stainless Steel PTFE-Lined Magnetic Level Gauge

Advanced monolithic PTFE lining technology with premium fluoropolymer tubing delivers unparalleled corrosion resistance against virtually all aggressive media. The seamless construction ensures dead-zone-free measurement across the entire range, while the optimized display system provides maximum liquid level visibility.

Measuring Range: 300~6000mm (Segmented construction available for extended measurement ranges)

Process Temperature: max 150°C

Working Pressure: 0.6, 1.0, 1.6, 2.5MPa



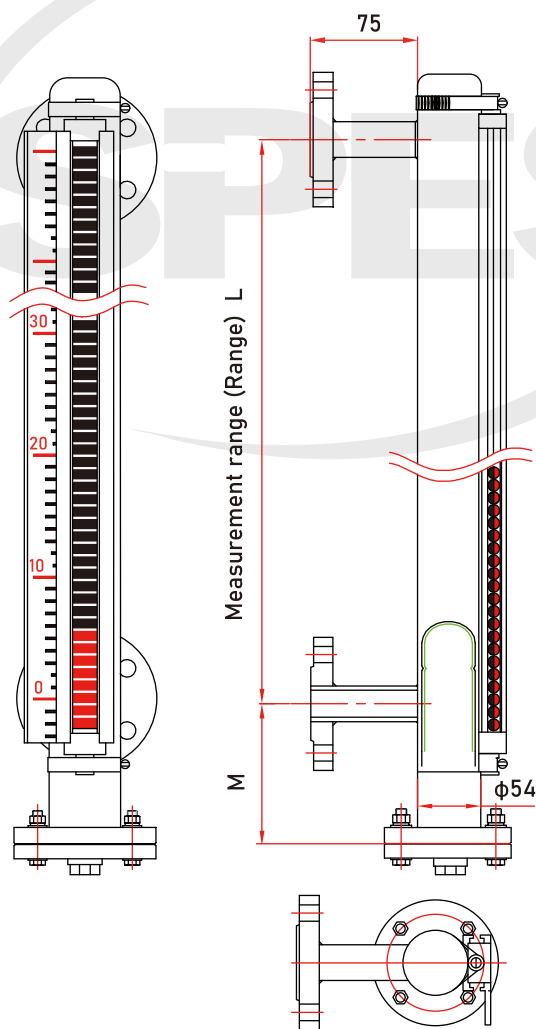
Model Number: UHZ-661-A1C
Standard High-Temperature Side-Mounted Magnetic Level Gauge

1. Precision ceramic sintered indicator flaps, colorfast for permanent visibility;
2. Dual-stage high-temperature magnetic switch, failsafe actuation unaffected by heat;
3. Main tube material options: SUS304, 304L, 316L, or 321 stainless steels.
4. High-pressure titanium alloy float available (standard: SUS316L).

Measuring Range: 300~8000mm (Segmented construction available for extended measurement ranges)

Process Temperature: 120°C, 200°C, 400°C

Working Pressure: Multiple pressure ratings available

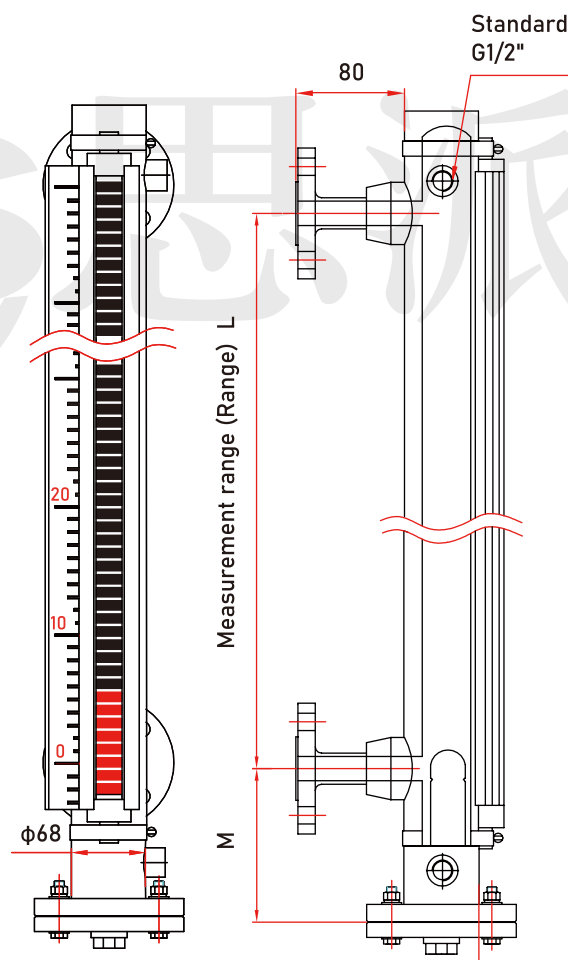


M=190mm at NTP ($\rho=1.0\text{g/cm}^3$)

Model Number: UHZ-661-A5
Steam-Jacketed Magnetic Level Gauge

Special jacketed design: the inner layer carries the measured medium, while the steam jacket maintains the temperature of the inner medium in low-temperature environments.

Standard steam connection: G1/2" female thread.



M=200mm at NTP ($\rho=1.0\text{g/cm}^3$)

Model Number: UHZ-661-B8(Figure A)

Top-mounted Magnetic Level Gauge
(Non-anti-turbulence Tube Type)

Simple in structure, suitable for non-agitated applications.

Model Number: UHZ-661-E8(Figure B)

Top-mounted Magnetic Level Gauge
(Anti-turbulence Tube Type)

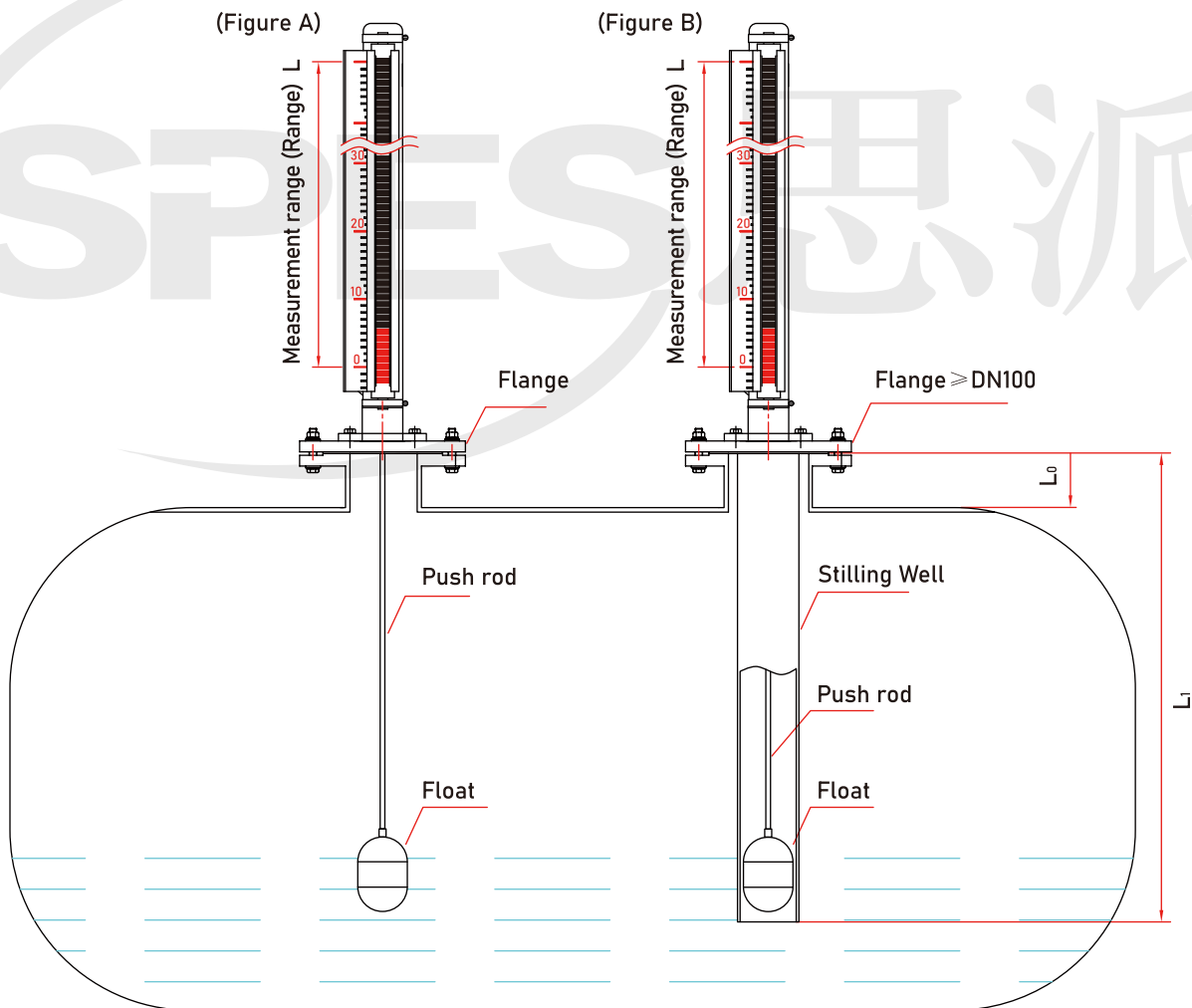
Equipped with a stabilizing tube that protects the push rod from bending, ensuring smooth vertical movement of the push rod without obstruction.

The system employs a non-magnetic float within the tank, which connects via a push rod to a magnetic follower in the guide tube. As the liquid level rises or falls, the magnetic follower moves correspondingly, accurately indicating the tank level through magnetic coupling.

Float, push rod, and magnetic follower are independently detachable for easy transport and installation.

Top-mounted installation—specifically designed for applications where side penetration is impractical, such as underground oil storage tanks and other enclosed vessels.

Level measurement remains unaffected by media corrosion, temperature variations, foaming, or crystallization.

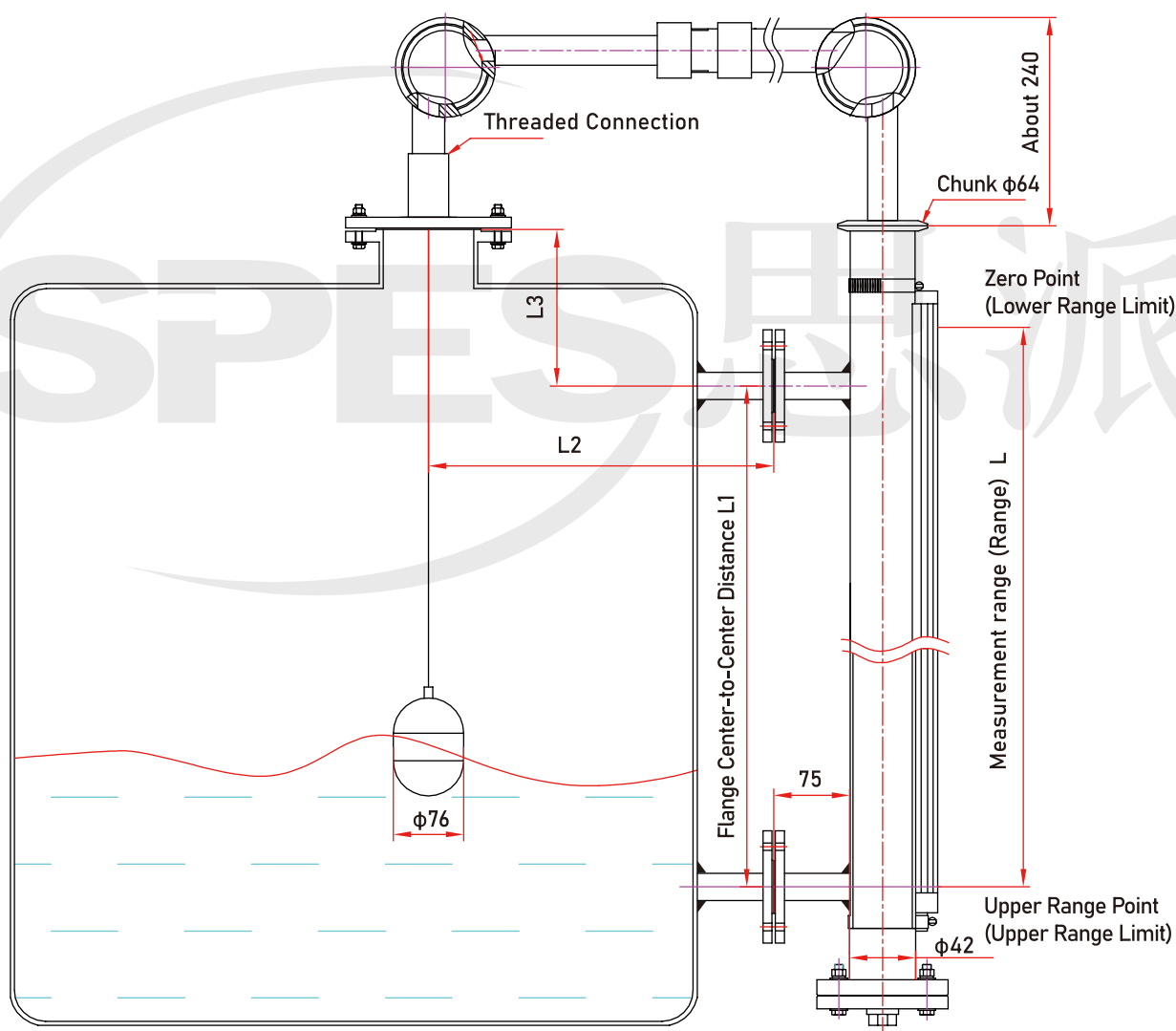


Note: When placing orders, L_1 (Total Length), L_0 , and L (Measuring Range) must be confirmed. Low-density float variants are also available for special customization.

Model Number: UHZ-661-D8**Internal-Float Magnetic Level Gauge**

As the liquid level in the vessel rises or falls, the non-magnetic float (wetted component) moves vertically, transmitting motion through a dual-reversing mechanism to drive the magnetic follower along the guide tube. This magnetic coupling causes the bicolor indicator flaps to rotate 180°, providing clear red-white indication that accurately mirrors the liquid level.

The measuring system features complete process isolation where only the external non-magnetic float contacts the medium, ensuring reliable level measurement completely unaffected by corrosive properties, extreme temperatures, suspended solids, crystallization, high viscosity, or foam formation.

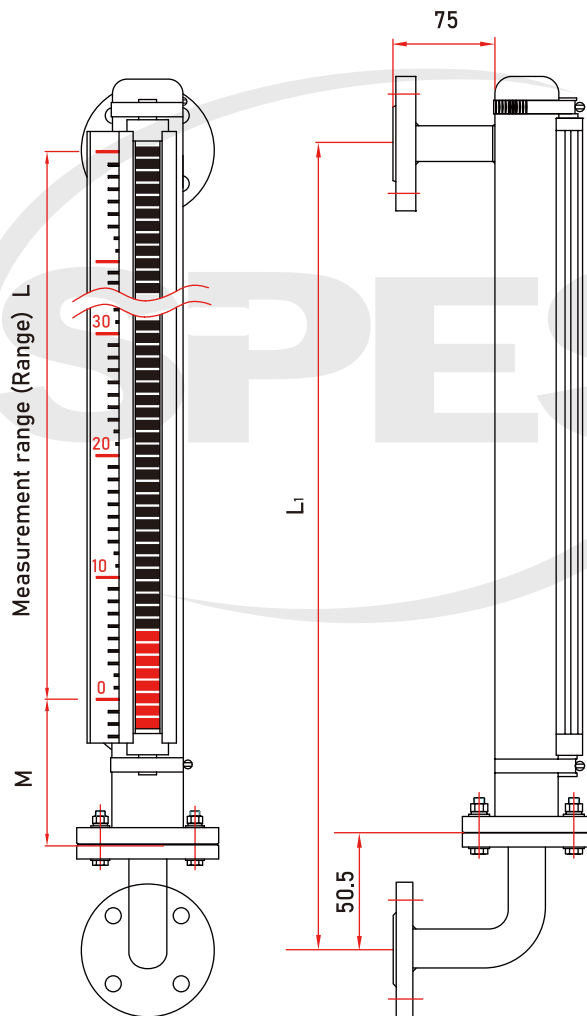


Note: When placing orders, L1, L2, L3 and L (Measuring Range) must be confirmed.

Model Number: UHZ-661-C1

Bottom / Side-Mounted Magnetic Level Gauge
(Sanitary Type)

Unique drainable design ensures complete liquid evacuation, ideal for frequent cleaning and media changeover applications.



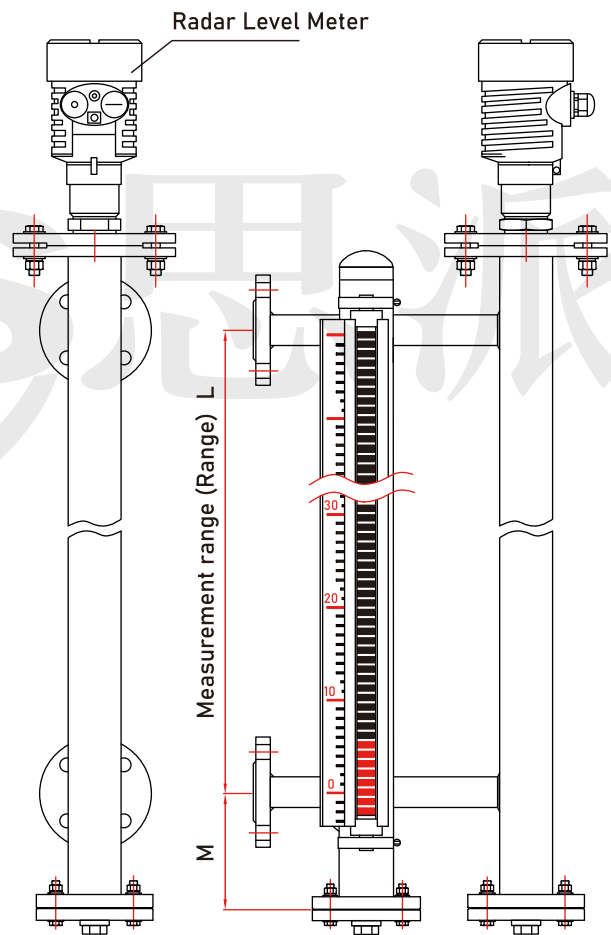
M=175mm at NTP ($\rho=1.0\text{g/cm}^3$)

Model Number: UHZ-661-A9

Dual-Chamber
Magnetic Level Gauge

A single process connection integrates two independent detection technologies for maximum safety and reliability performance.

Compatible with various level measurement technologies such as radar level transmitters, RF admittance level switches, and magnetostrictive level sensors.



Magnetic Level Gauge Selection Guide

UHZ-661 — — —

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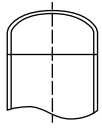
①	Mounting Options	A.Side-Mounted (Side-to-Side) B. Top-Mounted (Without Stabilizing Tube) C. Side-Bottom Mounted
		D. Internal Float Type (Side-Top Mounted) E. Top-Mounted (With Stabilizing Tube)
②	Structure	1. Standard Type 2. Sanitary Type 3. Anti-Corrosion Type 4. Lined Anti-Corrosion Type
		5. Steam-Jacketed Type 6. Vacuum-Jacketed Type 7. Vaporization Service Type 8. Compact Type
		9. Dual-Chamber Type X. Special Customized Type
③	Process Temperature	A.max120°C B. max200°C C. max400°C D.-10°C~80°C (Anti-Corrosion material)
		E.-50°C~50°C(Anti-Frost Type) F.-150°C~50°C (Cryogenic Vacuum-Jacketed Anti-Frost Type)
		G.-20°C~150°C(Lined PTFE Type) H.-60°C~200°C(Thermal Cycling Type with Vacuum Jacket)
④	Working Pressure	1. 0.6MPa 2. 1.0MPa 3. 1.6MPa 4. 2.5MPa 5. 4.0MPa
		6. 6.3MPa 7. 10MPa 8. 16MPa 9. 25MPa
⑤	Connection Method	A. Flange B. Screw C. Lap Joint Flange
		D. Direct Welded E. Sanitary Clamp F. Swivel Threaded Coupling
⑥	Measuring Range (Side-mounted: Flange/chuck center distance) Unit: mm	
⑦	Primary Tube Material	A. SUS304 B. SUS304L C. SUS316L D. SUS321
		E. PE F. PTFE Lined G. Roll-coated (F40) P. PP
		V. UPVC X. Custom Requirements (Molded PTFE, Spray-coated F40, etc.)
⑧	Additional Options (Multiple selections available)	A. Bottom drain valve B. Top vent valve C. Side connection valve
		Dn. Direct cable-output magnetic switch (n = number of magnetic switches)
		En. Junction box magnetic switch (n = number of magnetic switches)
		F1. Reed transmitter(±6mm accuracy) F2. Reed transmitter(±10mm accuracy)
		F3. Reed transmitter(±12.5mm accuracy) F8. Magnetostrictive transmitter(±5mm accuracy)
		F9. Magnetostrictive transmitter(±10mm accuracy) M. Magnetostrictive transducer(±1mm accuracy)
		H. Transmitter with HART protocol L. Transmitter with LCD display K. Transmitter with LED digital display
		J. Anti-explosion signal output W1. Electric heat tracing P. Insulation jacket X. Custom Requirements
⑨	Medium Density	Unit: g/cm ³

Note 1: Magnetostrictive transmitters are only applicable to medium temperatures $\leq 120^{\circ}\text{C}$. Reed transmitters are suitable to all medium temperatures shown in the above diagram. Reed transmitters must be selected for jacketed types, electric heat tracing models, or when the medium temperature is $>120^{\circ}\text{C}$.

Note 2: New Options: L. Transmitter with LCD display, K. Transmitter with LED digital display.

Note 3: HART protocol transmitters are only available with LCD display. Magnetostrictive transmitters (M) include HART + LCD as standard features.

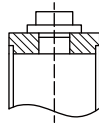
Top-mounted Selection Diagram



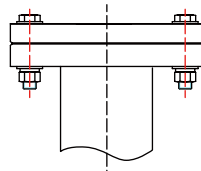
Standard
(Pipe Cap)



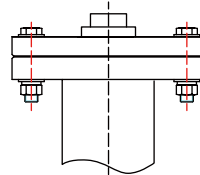
Flat Cover



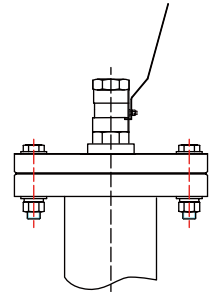
Flat Cover with Plug



Dual Flange

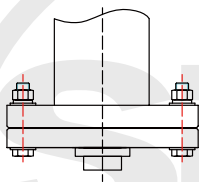


Dual Flange with Plug

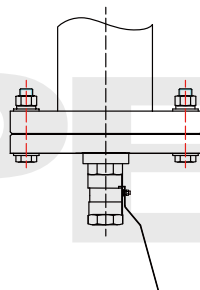


Dual Flange with Vent Valve

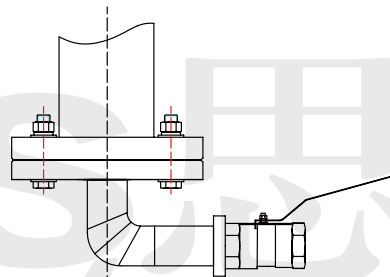
Bottom-mounted Selection Diagram



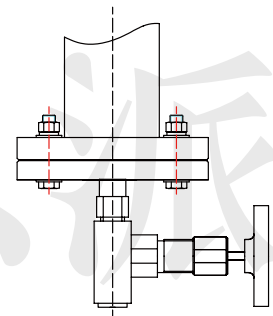
Standard
(Double Flange with M20x1.5 Plug)



Standard Drain Valve



Angled Drain Valve



Needle Valve

Switch Diagram



Standard Magnetic Switch
U1-K01



High-Temperature Magnetic Switch
U1-K02



Junction Box Magnetic Switch
U1-K03



Anti-Explosion Magnetic Switch
U1-K04



Compact Magnetic Switch
U1-K05

Note: Magnetic switches: Latching type by default; Non-latching magnetic switch: U1-K01-P (example model).

Magnetic Coupling Transmitter

Shanghai SPES magnetic coupling transmitter, without direct contact with the liquid medium, can be paired with magnetic level gauges for easy installation (simply secured to the main tube via strapping). This design ensures immunity to liquid temperature, pressure, and corrosiveness, guaranteeing stable and reliable performance.

Multiple accuracy grades are available, ensuring precise long-distance control with stable performance.



Accuracy : $\pm 5\text{mm}$, $\pm 6\text{mm}$, $\pm 10\text{mm}$, or $\pm 12.5\text{mm}$
(Refer to page 12 for details - UHZ-663 series insertion-type magnetic level gauge)



Accuracy : $\pm 5\text{mm}$
(Refer to page 13 for details - SM Series magnetostrictive Level Gauge)

Intelligent Digital Indicator

SP-W Series Intelligent Digital Indicator receives 2-wire 4~20mA signals from level gauges, displays real-time level readings in the control room, and provides control outputs.



Input Signal: 4~20mA; 0~20mA; 0~5V; 1~5V; 0~10V; 1~10V

Universal Input: RTD, Thermocouple, etc.

Display Range: 4-digit LED: -1999~9999

Accuracy: ± 1 digit or 0.2% FS ± 1 digit

Power Supply: AC85~265V / DC 16~32V

Output Signal (Optional): 4~20mA / RS485

Alarm Function: 1~4 alarm channels
with 4-digit LED indication

UHZ-663 Series Insertion-Type Magnetic Level Gauge

The reed switch assembly and precision resistors are uniformly mounted inside the conduit, forming a variable resistance circuit. As the float's permanent magnet moves with the liquid level, it accordingly alters the circuit resistance. The analyzer module detects this change, converts it into an electrical signal, and outputs it for continuous level monitoring and control. The smaller the spacing between reed switches, the higher the measurement accuracy and control precision achieved.



Technical Parameters

Measuring Range: 300~5000mm
Output Signal: 4~20mA (2-wire), HART Protocol
Operating Voltage: 18~30 VDC (24 VDC Recommended)

Measurement Accuracy: ±12mm, ±6mm, ±10mm
Multiple wetted material options with various connection types available.

Selection Guide

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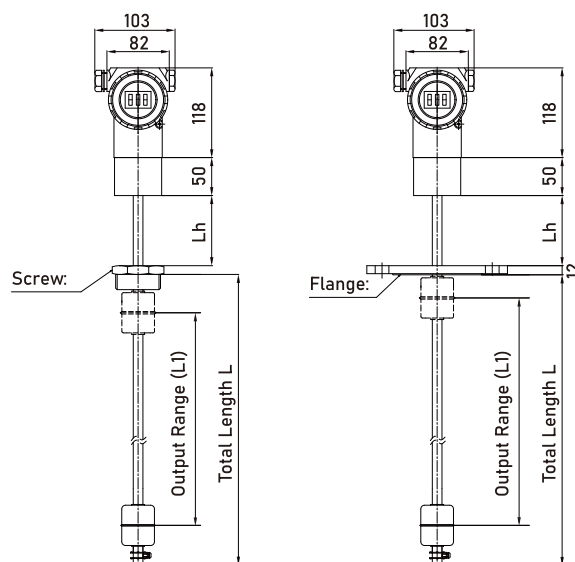
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- | | | | | | |
|----------------------|--|----------------|---------------------------------------|--------------------------------|-----------|
| ① Junction Box Type | E. Basic | B. Standard | P. Anti-Corrosion | J. Anti-Explosion (No Display) | |
| | J2. Anti-Explosion (With Display) | | M. Non- Anti-Explosion (With Display) | X. Custom | |
| ② Wetted Material | A. SUS304 | B. SUS316L | C. PP (PE/UPVC) | D. PTFE | X. Custom |
| ③ Connection Method | S. Screw | F. Flange | C. Clamp | N. No Connection | |
| ④ Total Length | Unit: mm | | | | |
| ⑤ Accuracy | Reed Switch Type: F1. ±6mm F2. ±10mm F3. ±12.5mm
Magnetostrictive Type: F8. ±5mm F9. ±10mm | | | | |
| ⑥ Additional Options | N. max125°C (PP: 80°C) | T. max200°C | G. With Still Pipet | S. Adjustable Connection | |
| | H. HART Protocol Output | L. LCD Display | K. LED Digital Tube Display | X. Custom | |

Note 1: HART output is only compatible with LCD display.
Note 2: Magnetostrictive transmitters are only suitable for media temperatures ≤80°C.

SM Series Magnetostrictive Level Gauge

The pulse transceiver inside the transmitter sends an electrical pulse along the magnetostrictive waveguide wire, generating a circular magnetic field around the waveguide wire's surface. This field interacts with the permanent magnet in the float (tracking liquid level changes), thereby creating magnetic field superposition. This interaction alters the waveguide's lattice spacing, generates, and reflects a torsional pulse wave back along the waveguide to the transceiver. By precisely measuring the time difference between pulse transmission and reception, the system accurately determines liquid level position and converts this into standardized electrical signals to enable reliable remote monitoring and control.



Technical Parameters

Measuring Range: Rigid Probe: 0.3m~6m; Flexible Probe: 3m~25m

Measurement Accuracy: $\pm 1\text{mm}$

Operating Voltage: 24VDC

Output Signal: 4~20mA/HART

Multiple wetted material options with various connection types available.

Selection Guide

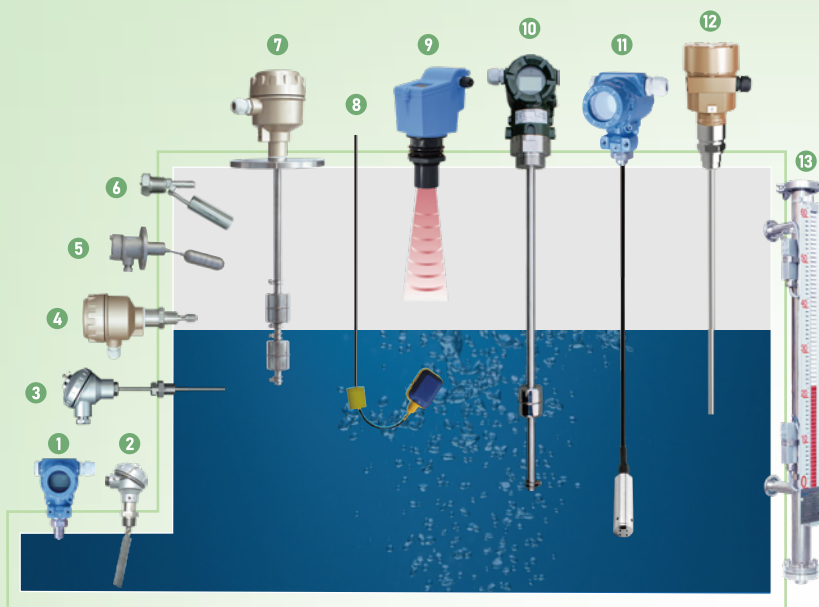
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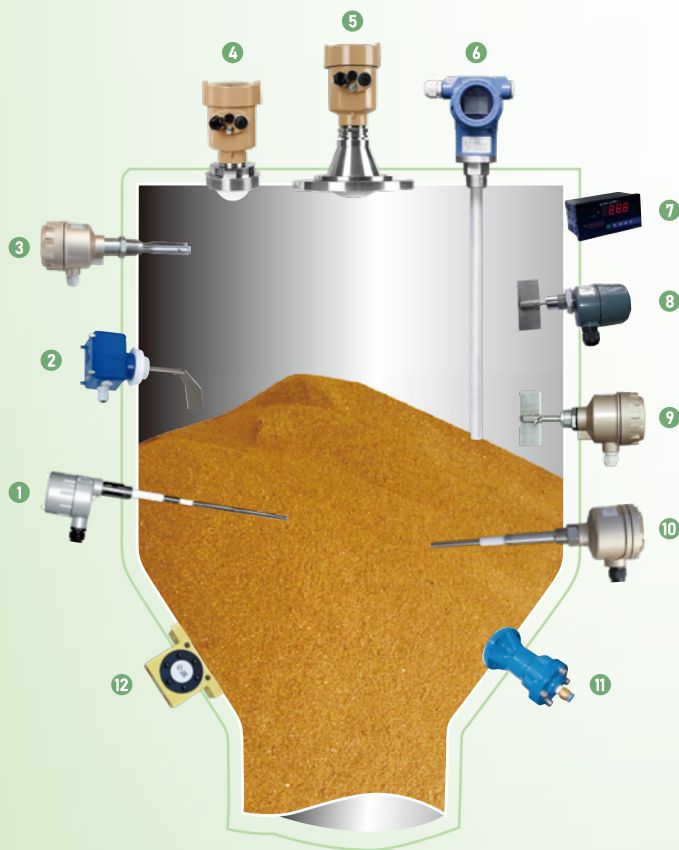
- | | | | | | |
|----------------------|--|-------------------------|---------------------|------------------|-----------|
| ① Junction Box Type | E. Basic | B. Standard | J. Anti-Explosion | X. Custom | |
| ② Wetted Material | A. SUS304 | B. SUS316L | C. PP (PE/UPVC) | D. PTFE | X. Custom |
| ③ Connection Method | S. Screw | F. Flange | C. Clamp | N. No Connection | |
| ④ Total Length | Unit: mm | | | | |
| ⑤ Probe Type | A. Rigid Probe B. Flexible Probe (SUS304 only) | | | | |
| ⑥ Additional Options | N. max125°C (PP: 80°C) | T. max200°C | G. With Still Pipet | | |
| | S. Adjustable Connection | H. HART Protocol Output | X. Custom | | |

Selection Example: **SM-B-AS-1500-AT**





1. Pressure Transmitter
2. Flow Switch
3. Temperature Transmitter
4. Tuning Fork Level Switch
5. Side-mounting Float Level Switch
6. Float Level Switch
7. Multi-point Float Level Switch
8. Cable Float Level Switch
9. Ultrasonic Level Gauge
10. Magnetostrictive Liquid Level Gauge
11. Immersion Static Pressure Liquid Level Gauge
12. Guided Wave Radar Level Gauge
13. Magnetic Level Gauge



1. RF Admittance Level Switch
2. Rotary Paddle Level Switch
3. Tuning Fork Level Switch
4. Radar Level Meter
5. Radar Level Meter
6. RF Admittance Level Gauge
7. Intelligent Digital Displayer
8. Small Rotary Paddle Level Switch
9. Rotary Paddle Level Switch
10. Capacitance Level Switch
11. Pneumatic Hammer
12. Pneumatic Vibrator



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