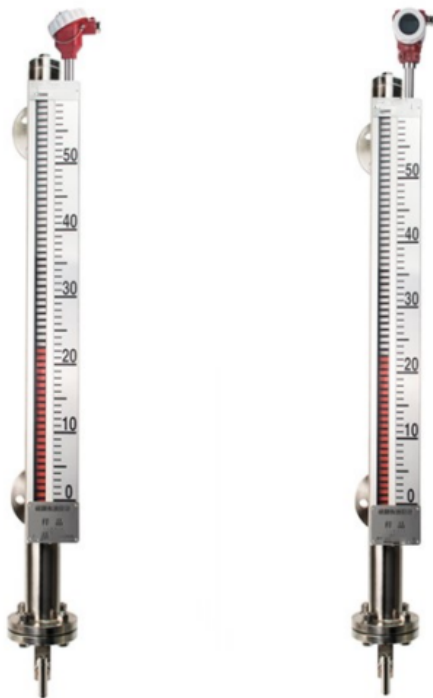


Magnetic float level Meter

Operating manual



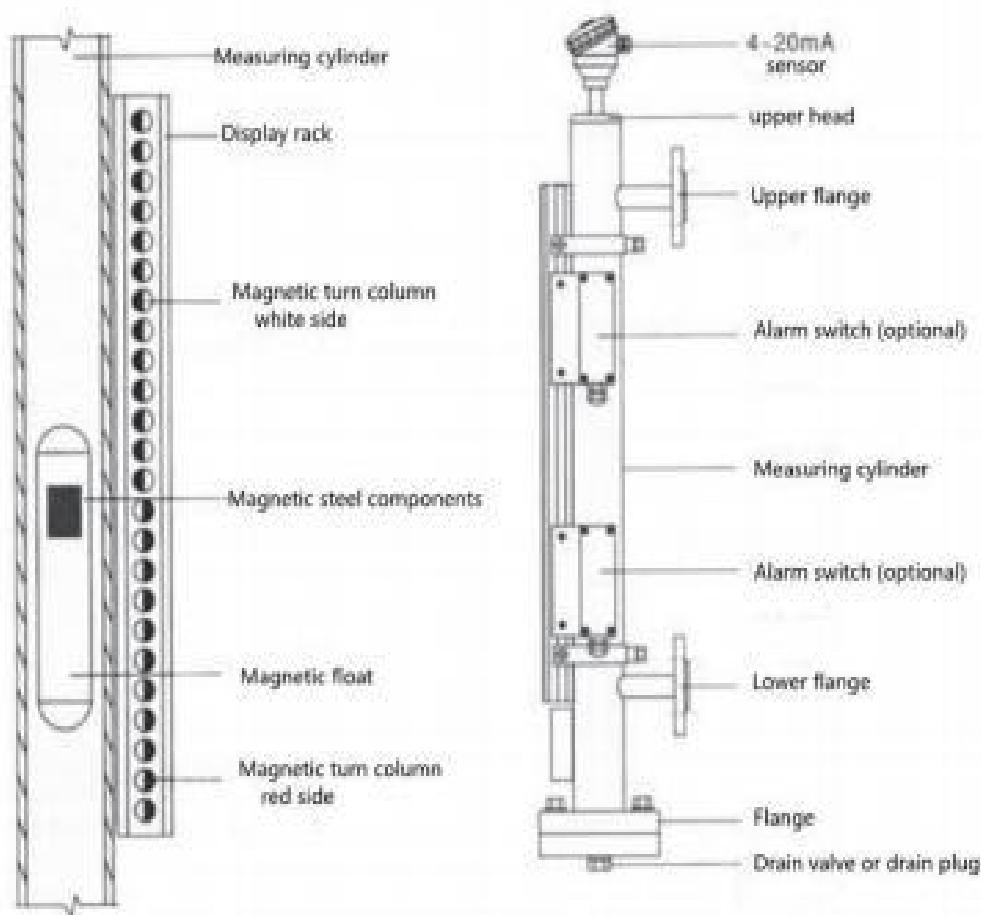
CN Boiler Engineering Solution LLC

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I. Product Overview:

The series of magnetic column using the connector principle, connected to the container through gas and liquid phase connection flanges. According to the principle of buoyancy and magnetic coupling, the magnetic float in the measuring cylinder (i.e., the connector) drives the double-color flip column flip on the external display of the measured cylinder. When the liquid level rises, the magnetic float drives column rotation 180°, Display red or yellow; when the liquid level drops, the magnetic float drive column rotates 180°, white or black. The height of the red band (or yellow band) is the height of the liquid tested surface, realizing the purpose of measuring and displaying the position of the liquid (boundary) surface being tested.



Each magnetic flip column is a two-color axial symmetric structure, and the spacing between the two magnetic flip columns is 10mm.

The gas and liquid parts indicate red in white and red (or yellow), respectively

The (or yellow) and the white (or black) junction is at the boundary of the liquid phase

and gas phase. The level gauge measures both the liquid level and the interface of two different density media

Because the magnetic flip plate indicator can reflect the liquid level changes in the container without any power supply, safely isolate the liquid medium from the measurement indication, and provide a safe and reliable means and method for the liquid level detection of flammable, explosive and toxic media'

Product execution standard: HG/T 21584-95

Flange execution standard: when the HG/T 20592_2009 (order is not indicated)

II. Technical advantages

The component materials of this magnetic flip column potentiometer are 304\321\316L\ICr18Ni9Ti\0Cr18Ni9\304 or 0Cr18Ni9 lined PTEE (PTFE), PVCXPPR and imported high quality electronic components with high reliability, good stability, durability, strong corrosion resistance and remarkable characteristics.

1. Simple in structure, strong and reliable, durable, with little maintenance workload, and can be installed outdoors for a long time.

2. The measured medium is completely isolated from the level gauge display part, the level sensor, and the magnetic switch.

3. Working pressure range is wide and pressure resistant from vacuum to 42MPa.

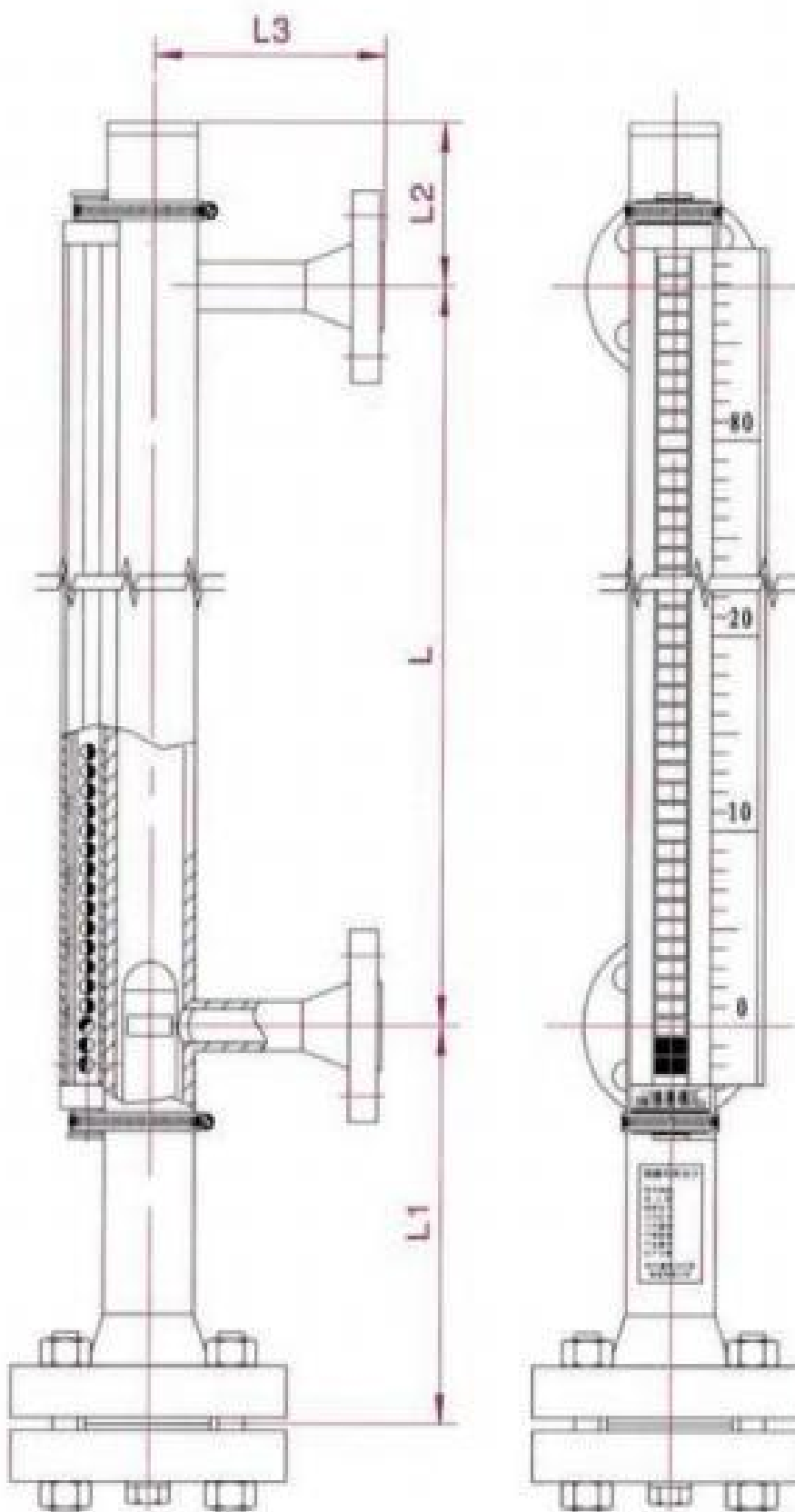
4. Operating temperature range is wide for use from -190-550°C.

5. Not affected by the physical and chemical state of the measured medium such as medium conductivity, dielectric constant, foam, pressure, temperature, evaporation, boiling, bubbles are widely used for the measurement of various strong and weak corrosion, flammable, explosive, toxicity, strong radioactivity, agitated and dirty liquid surface and interfaces.

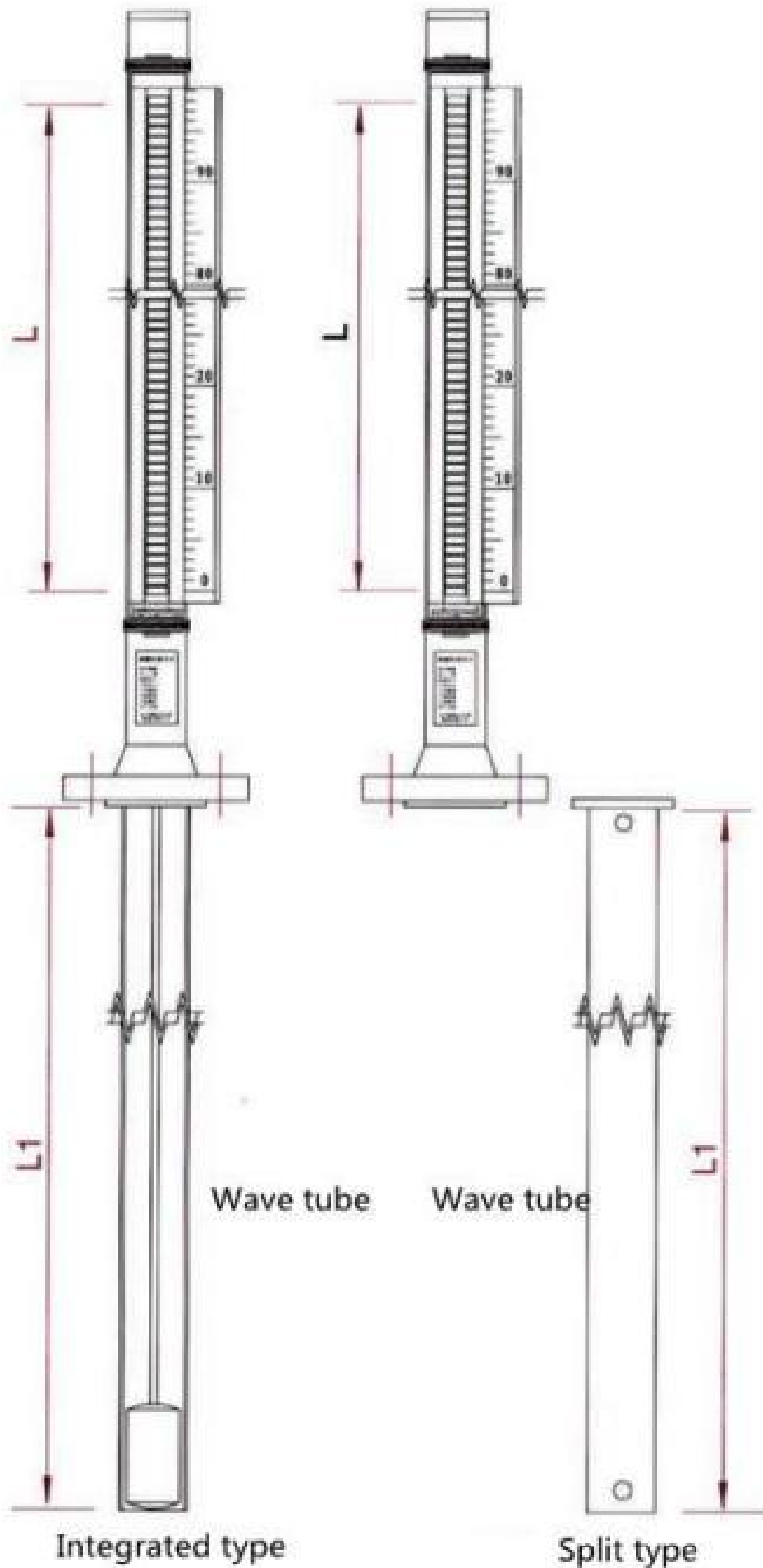
6. Optional single knife single throw (SPST). Single knife double roll (SPDT) type passive dual stable magnetic switch, which realizes the control or alarm of high and low liquid level, interface, and the number of magnetic switches.

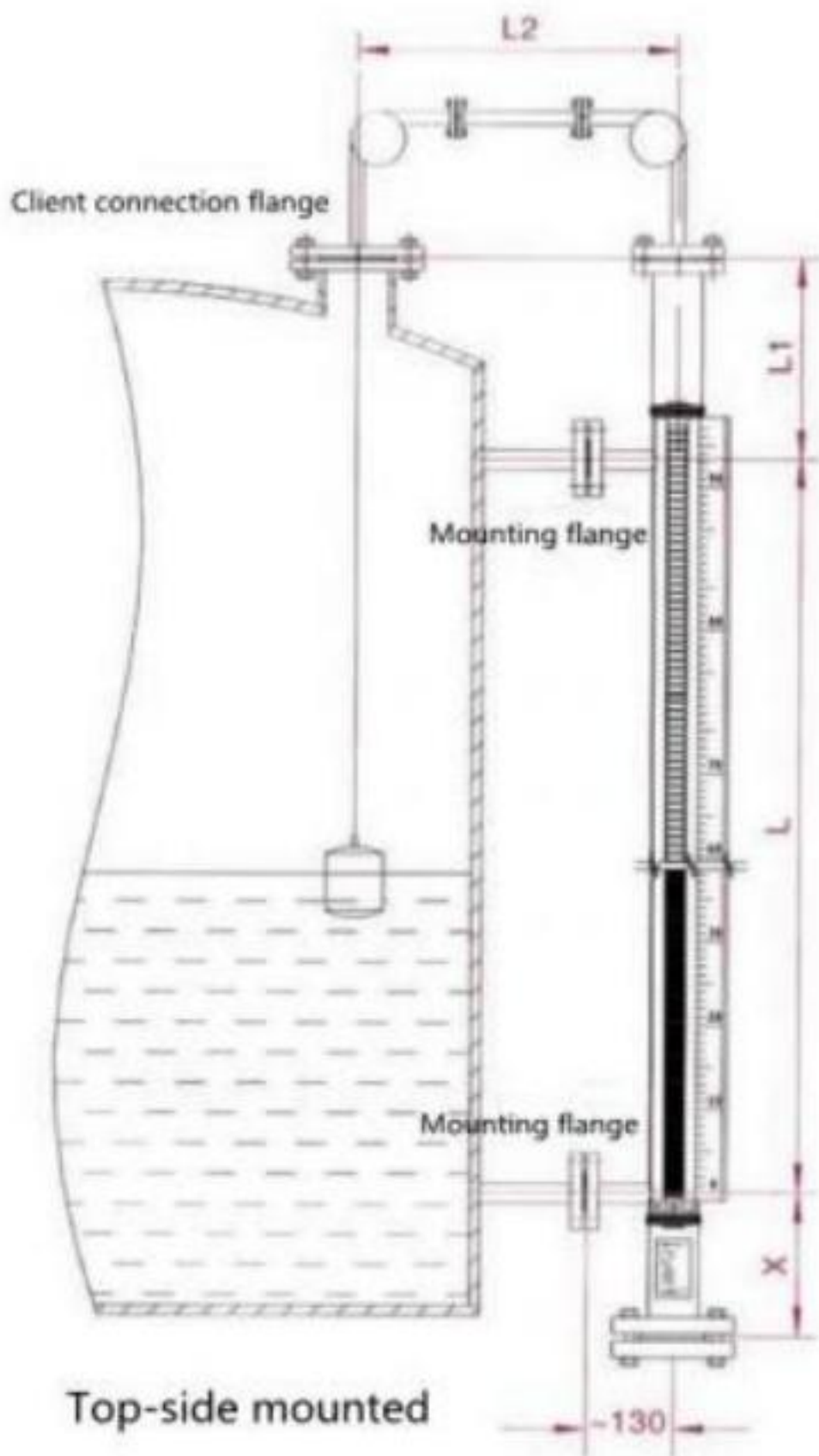
7. The dry reed level sensor or magnetostrictive second-line liquid level sensor can output 4-20mA DC (or with HART protocol, RS485) signal for remote range centralized measurement and control.

8. Various installation methods are optional, illustrated as follows:



Side mounted





III. Applicable objects

The series magnetic level gauge double column can widely used in petroleum, chemical industry, oil field, medicine, food, wine and other industries all kinds of storage tank, storage

tank, storage tank, liquid pool, reaction pot, fermentation tank, liquid ammonia tank, ammonia separator, boiler steam drum, deaerator, drain tank, water tank, high and low pressure heater, condenser, evaporator and other pressure container and 304、 321、 316L、 0Cr18Ni9, 304 or 0Cr18Ni9+PTEE, 00Cr17Ni 14Mo2, 0Cr18Ni9, PVC, PPR and other materials of the same medium liquid level, two different media interface measurement and display, there are a variety of installation forms for customers to choose, to apply to different occasions, environmental requirements.

This series of magnetic column liquid level meter can be reliably used in high temperature, low temperature, high pressure, strong corrosion, toxic, dangerous environment of liquid level detection.

IV. Technical parameters

Measurement range: 300- 15000mm (customized according to site requirements)

Measurement accuracy: 10mm

Working pressure: 1.0, 1.6, 2.5, 4.0, 6.4, 10.0, 16.0, 22.0, and 32.0, 42.0MPa

Medium specific gravity: $\geq 0.45\text{g/cm}^3$

Operating temperature: $\leq 550^\circ\text{C}$

Main material: 304 / 304L/316L/Stainless steel lining PTFE / PVC / PPR

Transmission output: second-line system: 4-20mA, 24VDC two-line system

Connection flange: DN20/DN25 (If other flanges are used, please indicate when ordering)

Additional options

1. optional single pole single throw (SPST), single pole double throw (SPDT) passive bistable magnetic switch, to achieve high and low liquid level, interface control or alarm, the number of magnetic switch is not limited.

2. optional non-explosion-proof or explosion-proof two-line system reed pipe liquid level sensor, output, 4-20MADC signal, to achieve remote measurement and control.

3. optional non-explosion-proof or explosion-proof magnetostrictive two-wire liquid level sensor, output 4-20MADC, to achieve high precision, continuous measurement and control.

4. Output 4-20MADC with HART protocol, RS485 communication.

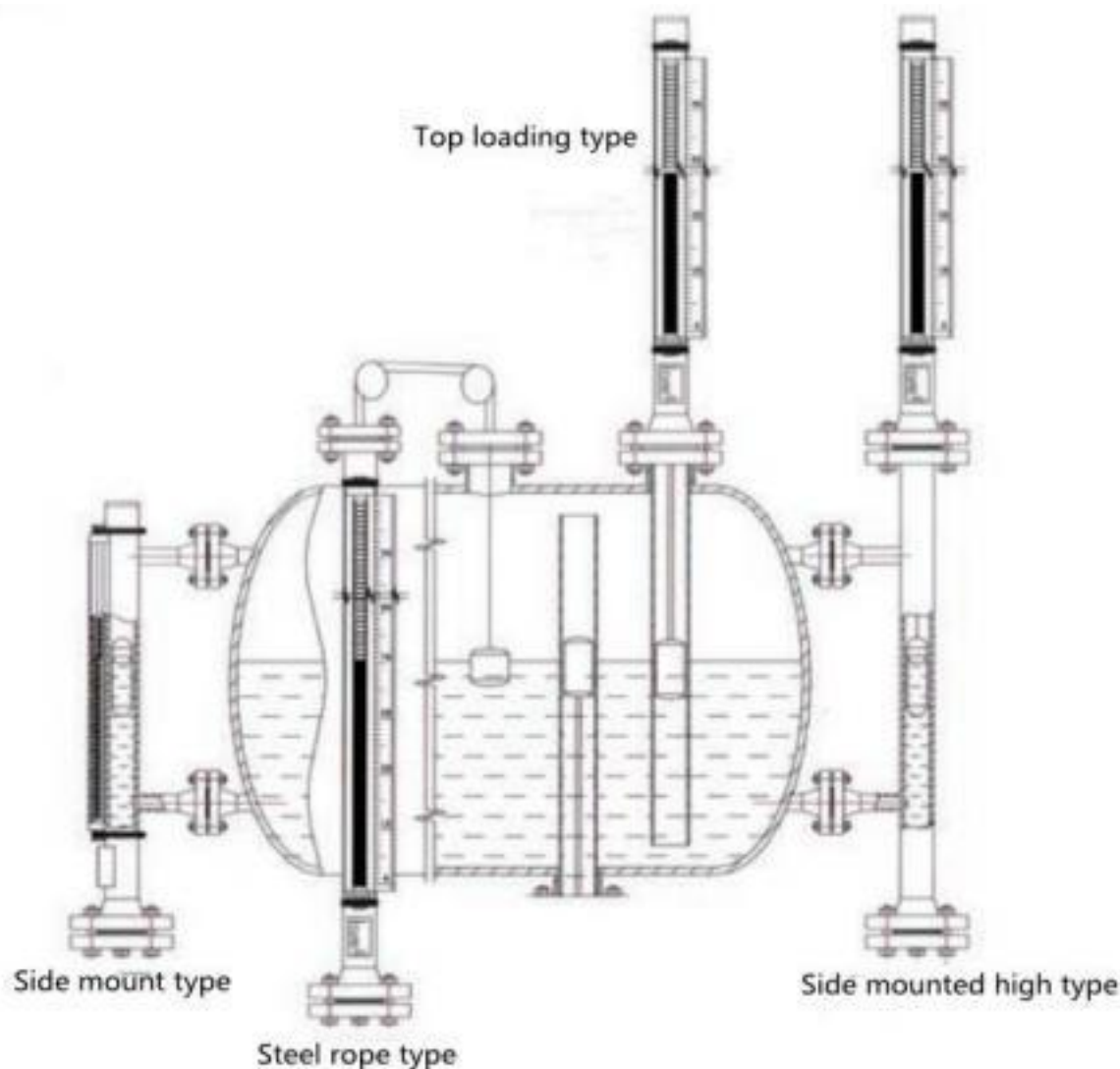
5. For low-temperature working environment, electric heat tracing, steam heat tracing and vacuum jacket can be selected:

6. Installation mode can be selected: side mounting type, top mounting type,

7. and top side installation type

V. Use instructions

1. Open the box and check whether the instrument model is the same as the purchased model, and whether the flange size and center distance are consistent with the site size of I
2. The level gauge should be installed vertically to ensure that the magnetic float can move freely up and down in the main pipe. The installation diagram is as follows:



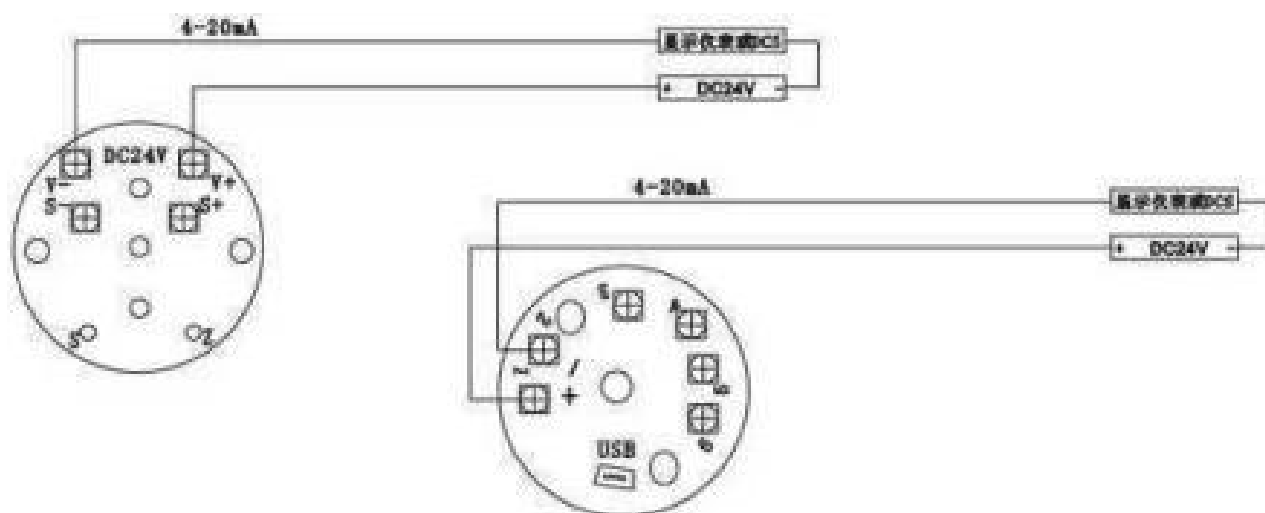
3. Valves shall be installed between the level gauge and the container to cut off the material during cleaning and overhaul.
4. Magnets are not allowed around the level gauge cylinder, otherwise the normal operation will be affected.
5. The liquid level meter is generally not insulated when leaving the factory, but it can be insulated according to the user needs. Such when using heat tracing pipe, non-magnetic material need to be chosen.
6. After the installation of the level meter, correction should be made with magnetic steel and guide the magnetic flip plate so that the zero level is white or black.

7. When the liquid level meter is put into operation, the upper pipe valve should be opened, and then the lower pipe valve slowly to let the liquid flow smoothly to avoid the rapid rise with the float, causing magnetic flip failure or upset (in case of this phenomenon, it can be re-corrected with magnetic steel).

8. If the float is needed to replace, pay attention to the heavy end magnetic end upward and cannot be inverted.

9. There should be no impurities in the liquid level gauge cylinder to avoid causing jam resistance to the float. According to the medium situation, the leading pipe can be cleaned regularly to remove the sediment impurities in the tank.

10. Wiring of remote transmitter: remote transmitter is DC24V, Note that V + and V- are not allowed to reverse.



HT08 Series

11. For the liquid level meter over a certain length, the intermediate reinforcement flanges or ear pads should be added as a fixed support to increase the strength and overcome their own weight;

Calibration instructions:

1. All level gauges shall be strictly calibrated before delivery with the following flanges. The centerline is zero, the above flange centerline is full, and the two flanges are the center range of the instrument. If the ruler and the zero and the actual position difference, they can release the throat hoop and move.

The position of the indicator (ruler flip) and the position of the adjustment indicator corresponds to the actual level value.

2. If the indicator flip plate is found to be disorderly, move the magnet plate from top to bottom before installation to make the flip plate neatly arranged.

3. When the flip plate is neatly arranged and the float is red and the above is white, the calibration is complete, and the water can be fed or moved to observe the change of the flip plate.

Troubleshooting:

When the equipment is operating normally, the site flip plate has no change, it is necessary to find out the position of the magnetic float, use the magnet close to the measuring external wall, slide from bottom to slowly. When the rejection force is generated, the real position of the float, to determine whether the float is in the actual position of the material: if the float is at the bottom, there may be two kinds of situations:

1. For the float inlet, open the four bolts on the fixing flange at the bottom of the level meter, remove the float and shake it manually. If there is obvious inflow, the float needs to be replaced.

2. If there is no obvious fluid inlet, then the float density and the actual material are not the same, and the same density float one should be replaced.

3. If the float is located in the real material position and the display panel does not change, a magnet is required to detect whether the display panel works properly, as follows:

Slide with a magnet down the display panel slowly from top to bottom, if the display panel needs to be replaced.

When the equipment is operating normally, the site flip plate changes normally, and the remote transmitter has no signal output or the signal output is abnormal, then the liquid level transmitter shall be repaired. Please contact the manufacturer for specific matters.

VI. Purchase Guide:

When you choose to order a magnetic float level gauge, verify the following option parameters:

1. Solution level and installation method: side mounting type, top mounting type, and top side installation type.
2. Flange installation center distance.
3. Flange installation caliber and flange standard.
4. Media name and media density.
5. Medium temperature and medium operating pressure.
6. Equipment main material.
7. Is a remote transmission or remote alarm output required,
8. Whether thermal insulation or electrical heat tracing is required.

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