

SPECIFICATION

BX-SW1 Liquid Level Sensor



CATALOG

Instruction	3
Functions	3
Dimension	4
Connection	5
Technical parameters	6
Measure level	7
Measure solid	13
Install flange	13
Installation of screw thread connecting pipe	14
Installation on dragon frame	15
Attention	16
CONTACT US	19

Instruction

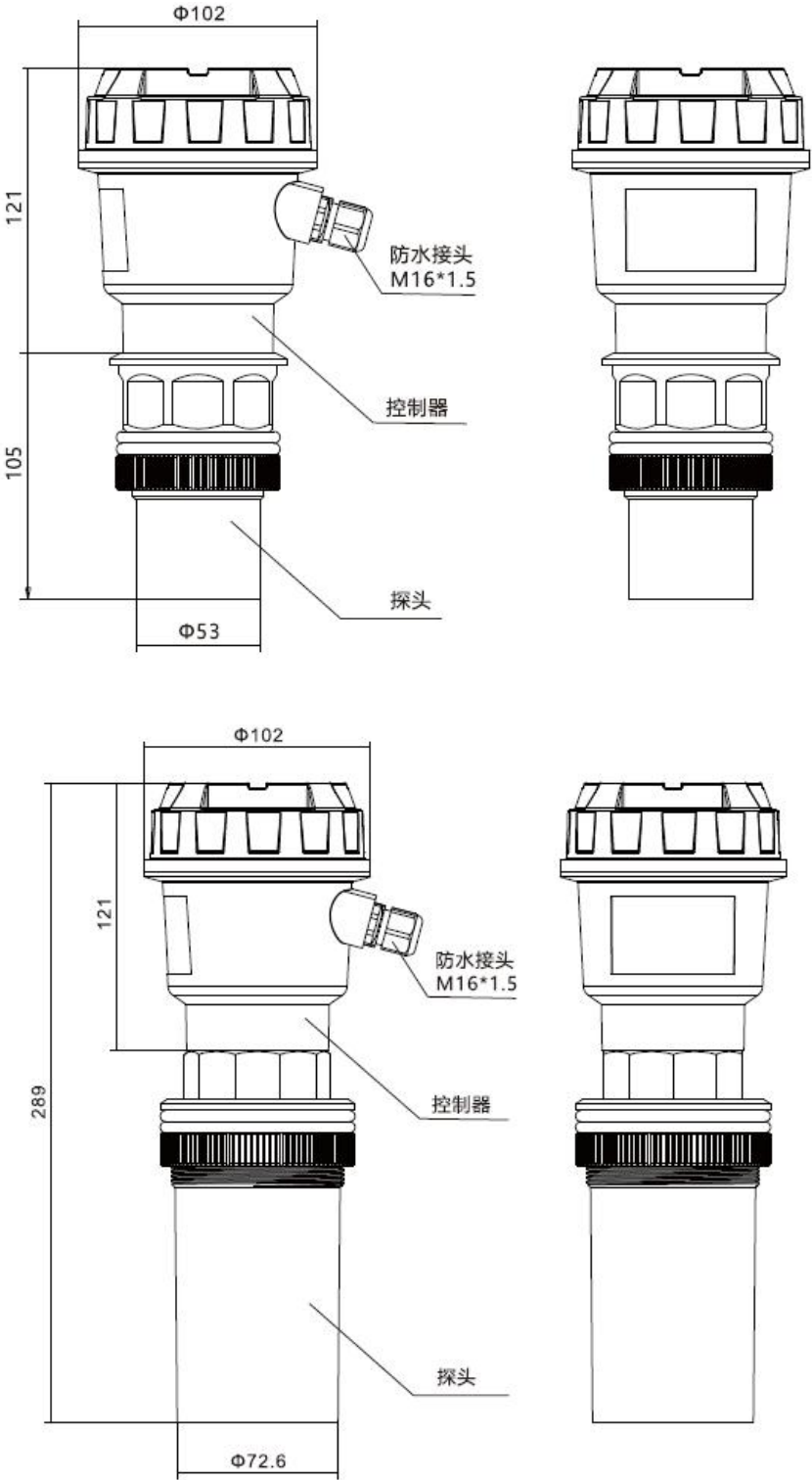
BX-SW1 liquid level sensor is a liquid/material level measuring apparatus which is non-contact, Hi-REL, cost-effective and easy to install. So, it can satisfy most of liquid/material measuring requirements without contacting, and it adopts ABS waterproof shell, very small but firm.

Functions

- ◆ Easy to operate, and support both Chinese&English;
- ◆ Touch key-press;
- ◆ Diagnose by itself when there' s issue;
- ◆ Many kinds of arithmetic for industrial situations;
- ◆ Resolution is less then 3mm;
- ◆ Quick response, the fastest is 2 seconds;
- ◆ Automatic temperature compensation, as to enhance measuring accuracy;

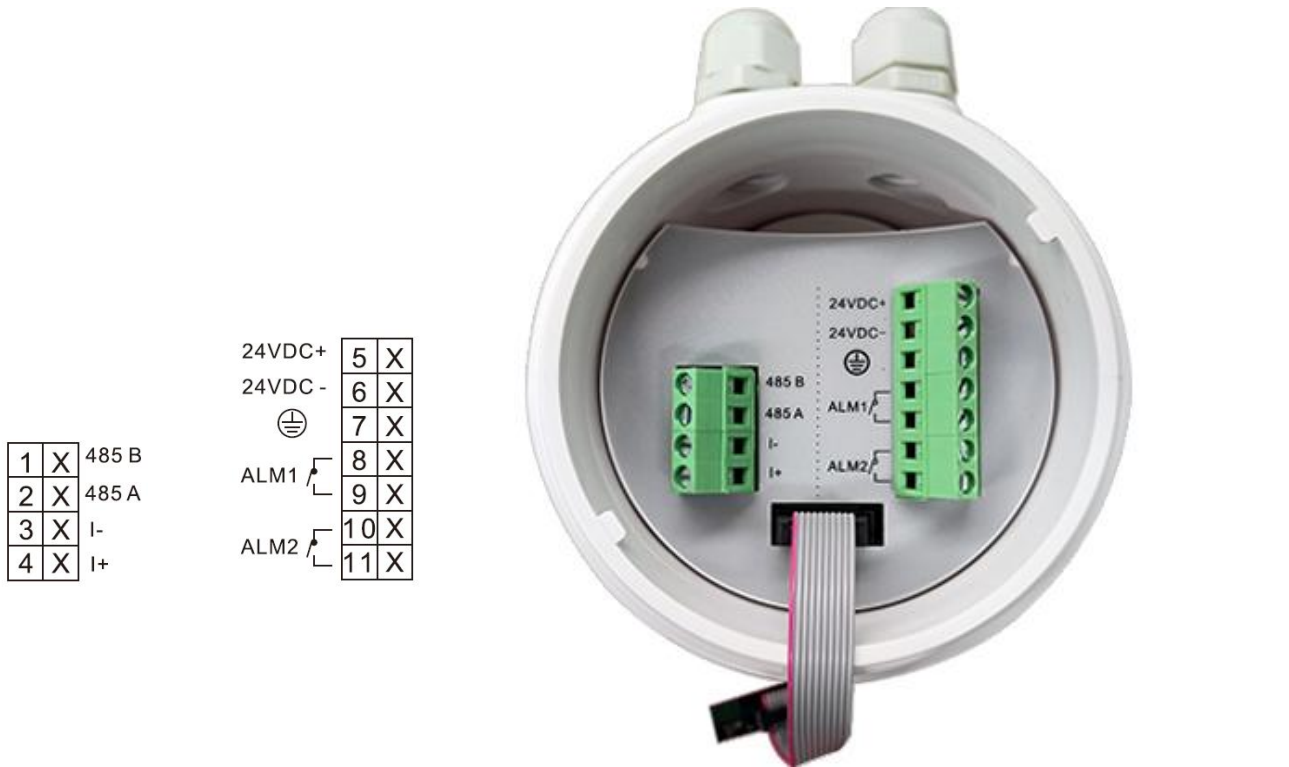
Dimension

Unit: MM



Connection

Connect same serial numbers.



1/2: 485 B/A: RS485 通讯输出 communication output B/A

3/4: I-/I+: (4~20)mA 输出 output -/+

5/6: 24VDC +/-: 24V 3/4 线制供电接线端 wiring system power supply port +/-7: 接地 ground

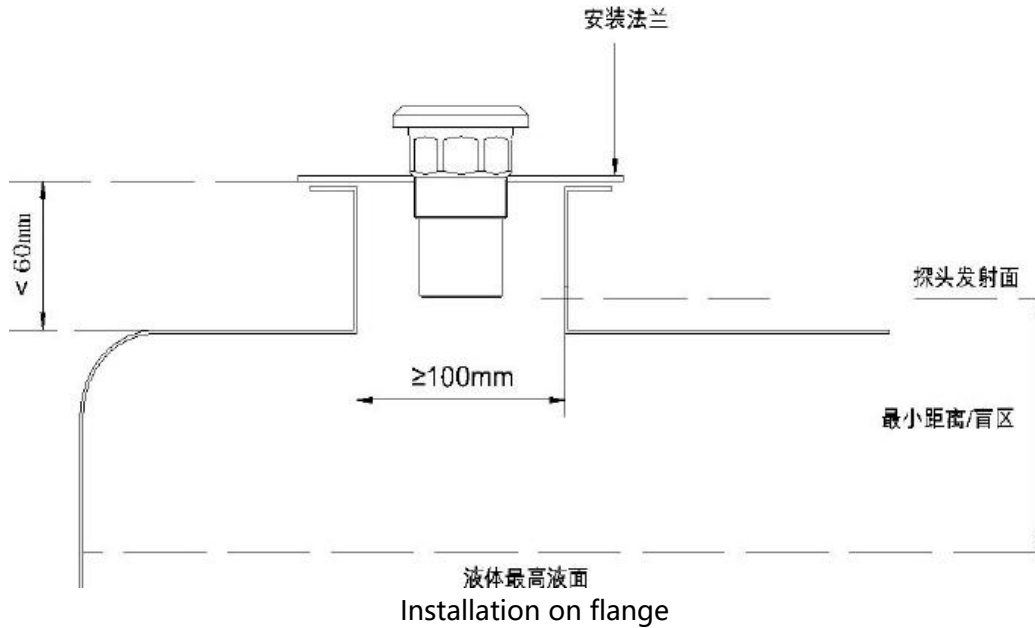
Technical parameters

Parameters	Specification
Measuring range	0-10m
Dead zone	0.35m
Measuring accuracy	±0.5%FS
The smallest resolution	1mm
Work voltage	DC 18 ~ 28V
Electric current output	Separate form, (4 ~ 20)mA , The most load is 500Ω, Output accuracy ±0.2%FS
Respond time	2s
Rated power	< 5W
Output	RS485, Modbus-RTU communication protocol
Working temperature	Instrument (-20°C ~ +60°C) Probe (-20°C ~ +80°C)
Environmental temperature	(10% ~ 85%)RH(without moisture condensation)

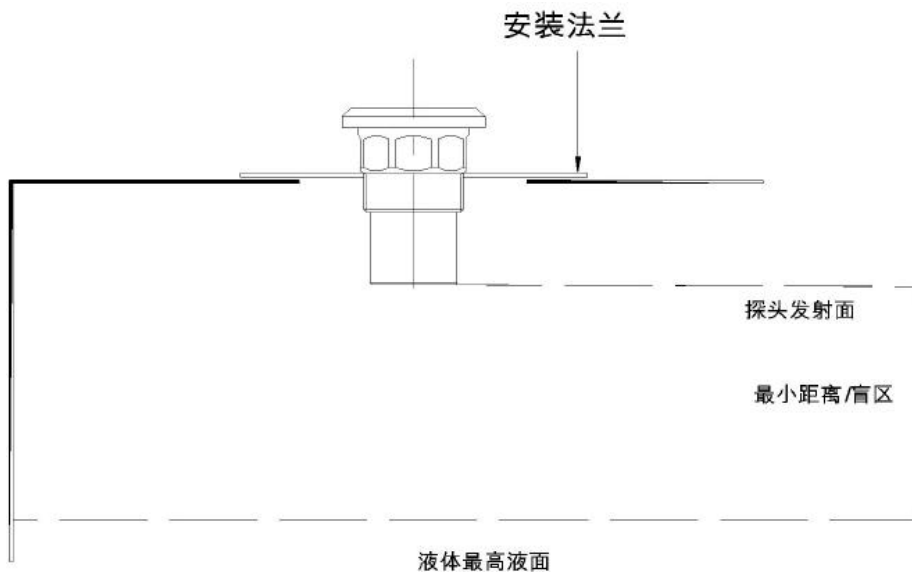
Measure level

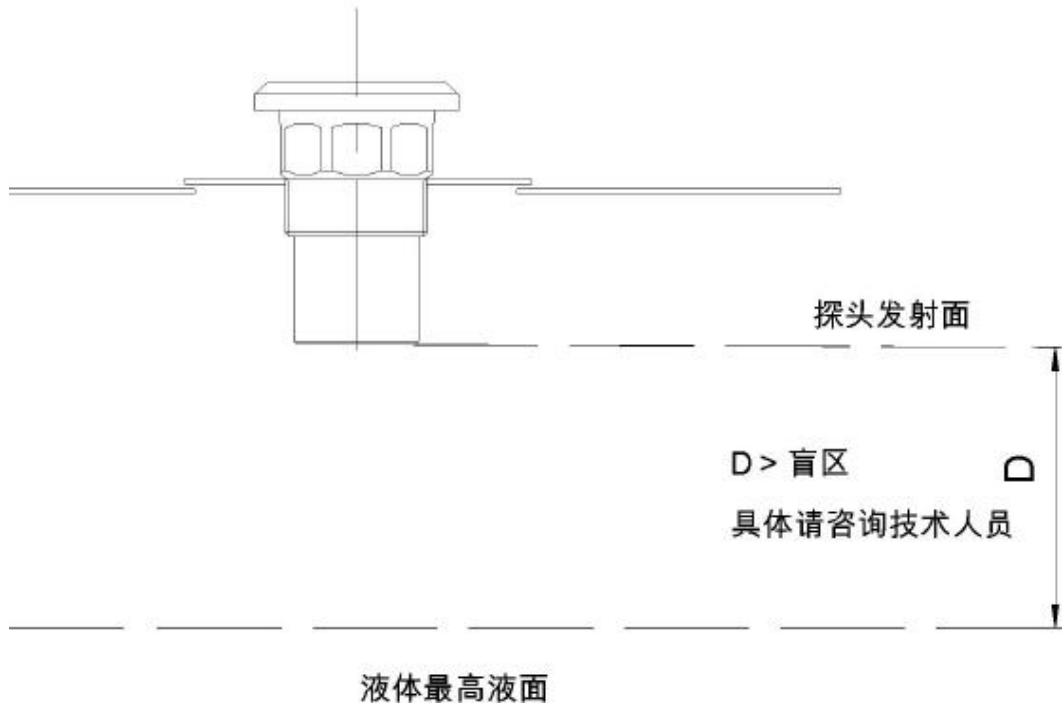
(1) Flat top can

Usually there is a very short connecting pipe on flat top can, and install on connecting pipe. The base level of pipe is under flange, users install on the premise of “pipe length $\leq 60\text{mm}$; pipe inner diameter $\geq 100\text{mm}$; Internal face of pipe is smooth and burr-free” . After installation, the distance between emitting surface of probe and underside of flange should less then 30mm.



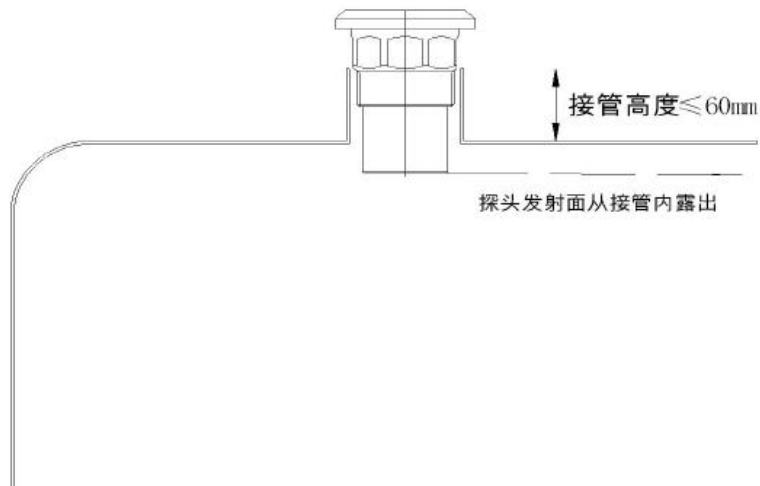
Install directly on flat top can, and the vessel port is enough for flange. Emitting surface of probe is under base level.





Installation on flat top can (without connecting pipe)

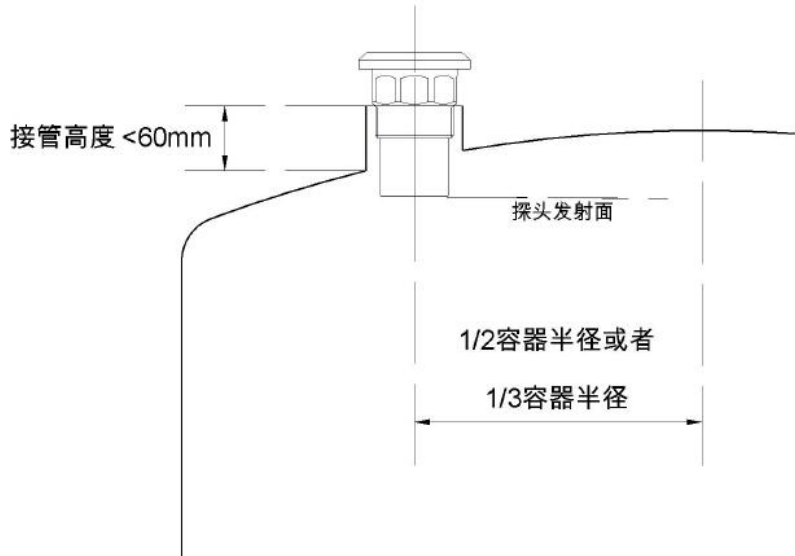
If the connecting pipe of flat top can is screw thread pipe, means that the inner diameter size of connecting pipe is same with screw thread. Emitting surface of probe should stick out at least 10mm to connecting pipe.



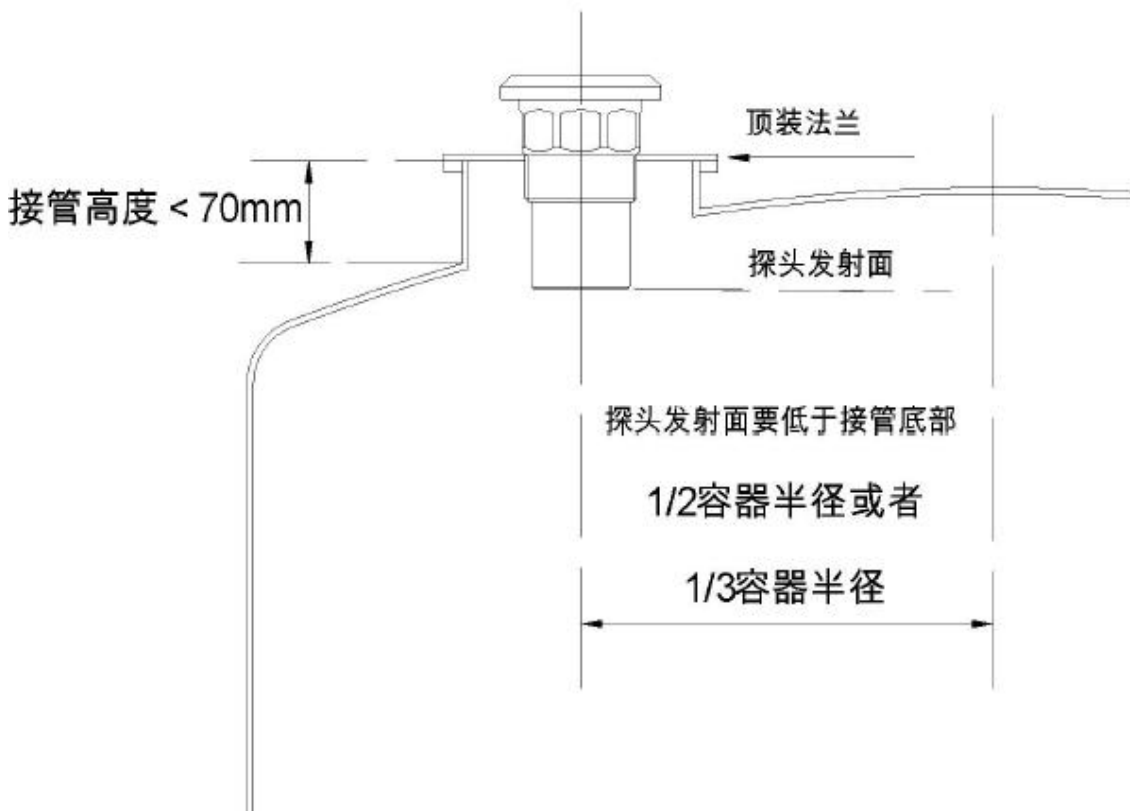
Installation on screw thread pipe

(2) Arched can

Install on arched can, instrument is not allowed to install in the middle of top can. It should be installed on radius of top can about 1/2 or 1/3.



Installation on screw thread pipe of arched can



Installation on the flange of arched can

If the length of connecting pipe is longer than probe, please buy a longer probe. As below:

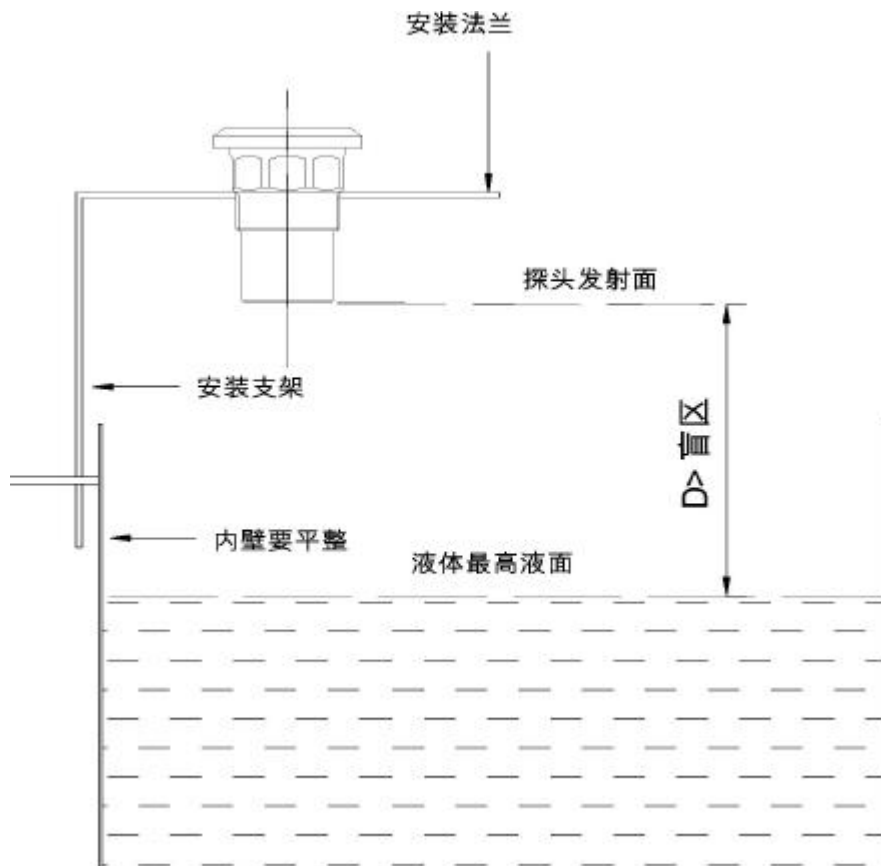
Pipe length --- Pipe inner diameter

Number	Pipe length	Smallest inner diameter size of pipe	Note
1	150mm	100mm	Internal face of pipe is smooth and burr-free, including welding line. The joint between pipe and top can should be polished about 45 °C , from inside to outside.
2	200mm	150mm	
3	250mm	180mm	
4	300mm	220mm	
5	400mm	280mm	

(3) Open container

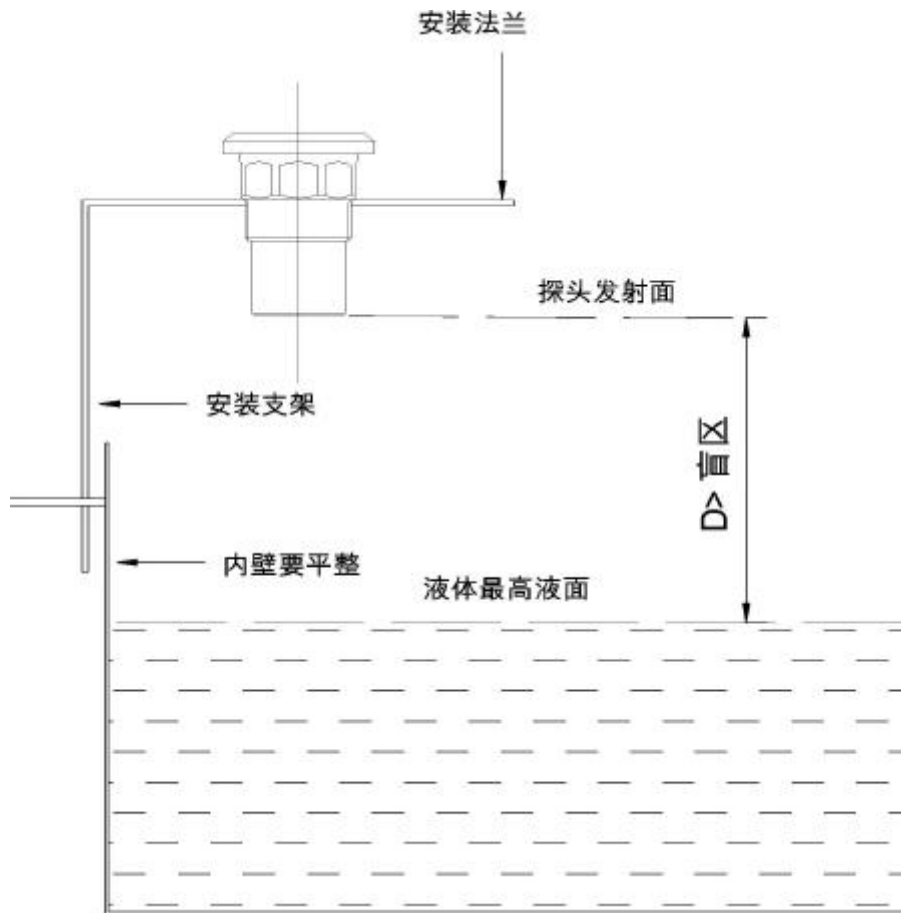
Users can install with holder, and please pay attention to the bearing capacity of holder, there also should be a distance between probe and wall of container. Also, wall of container should be smooth, distance between probe and wall of container should be:

Maximum range	Minimum distance with wall of container
10m	1.0m



Installation on one side open container

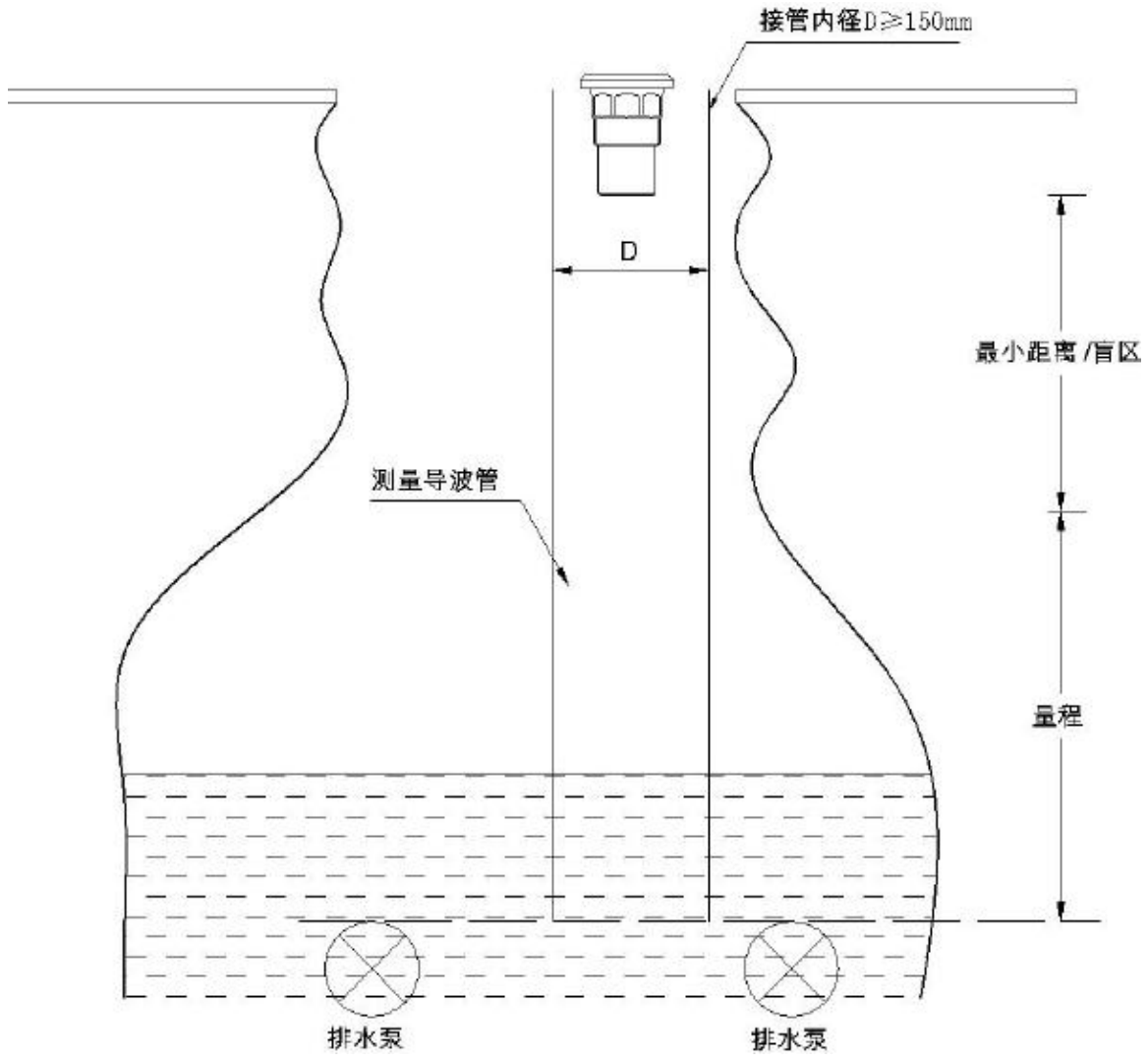
You can install the sensor in the middle of container.



Installation on mid of open container

(4) Pumping shaft and open well

Usually, wellhole and well mouth of pumping shaft is very narrow, so the wall of well is not smooth, it is a difficult to measure. You can solve it by install a connecting pipe. But you need to know that when you put sensor in pipe, dead zone will be increased about 50%~100%, at the mean time, measure range F value will be smaller (Like Picture 1). If probe dead zone is 0.5m, after put it into pipe, dead zone will be 0.75m~1.00m.



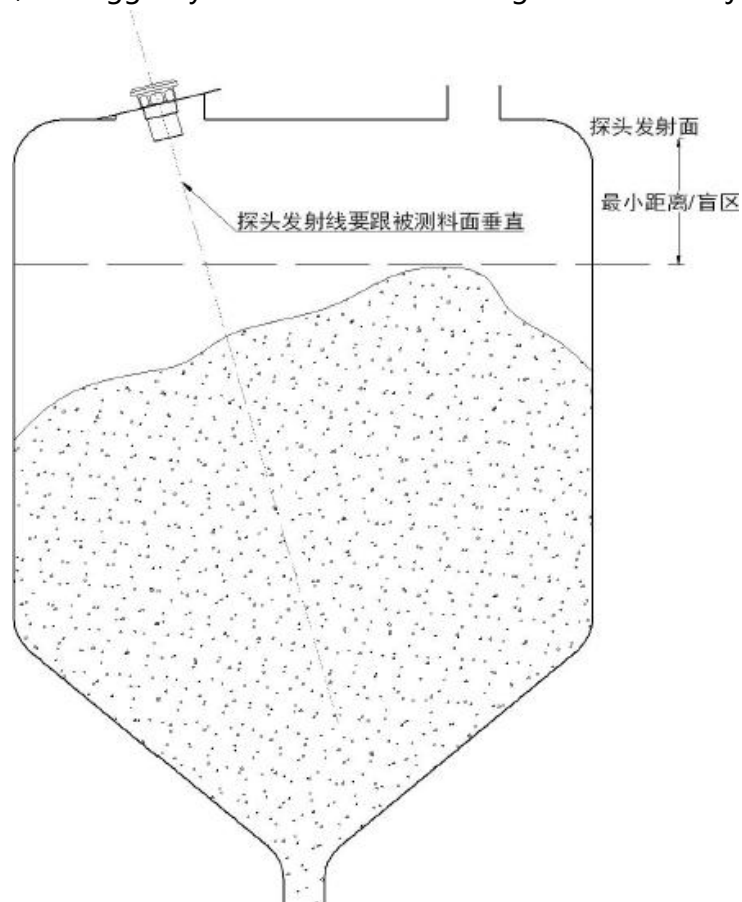
Well (including water source well, deep well), usually diameter is not big, so we suggest you to install wave guide which is PVC, PR, or 304 materials. Inner diameter of wave guiding $\geq 150\text{mm}$ (measuring range is under 4M), if measuring range is over 4M, please contact with us. As to ensure the accuracy of measuring, the inner side of wave guide should be smooth and without joint inside, also the bottom of wave guide should be totally soaked.

Measure solid

Install flange

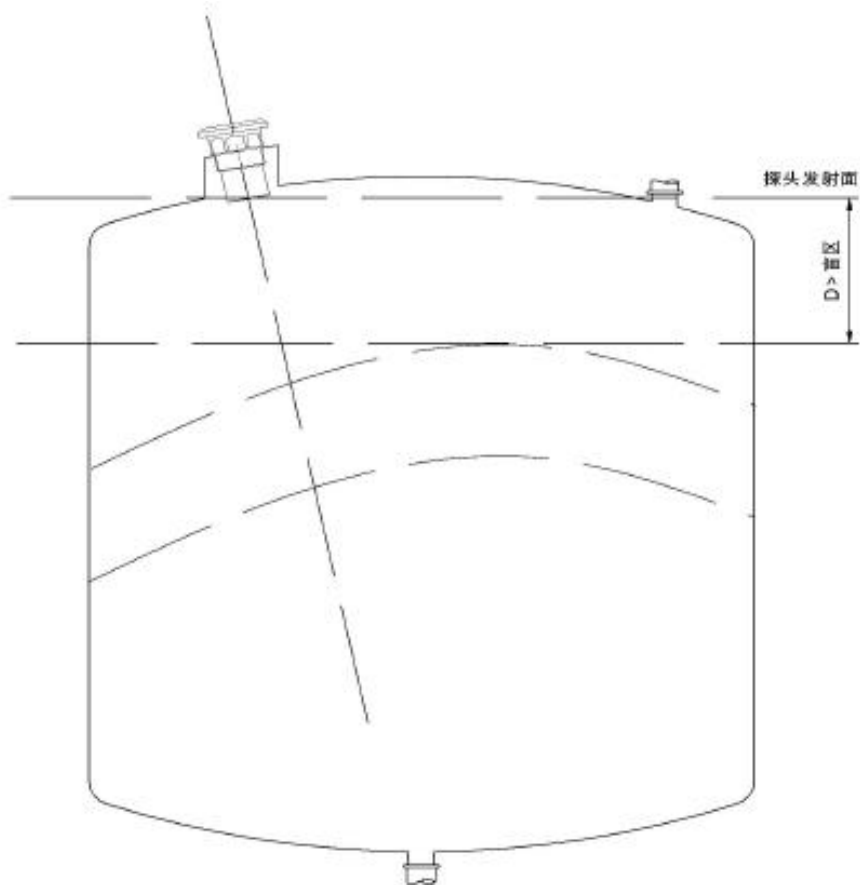
Same with measuring liquid, instrument can be installed on flange, but the reflective surface is different with liquid, so, the emitting surface of probe should be perpendicular to solid surface, at the mean time, probe should be out over connecting pipe.

In the site of measuring solid, measure data will be unstable if probe is inside the pipe, so, as to solve this issue, we suggest you to use universal flange. Users can adjust by rotate flange.



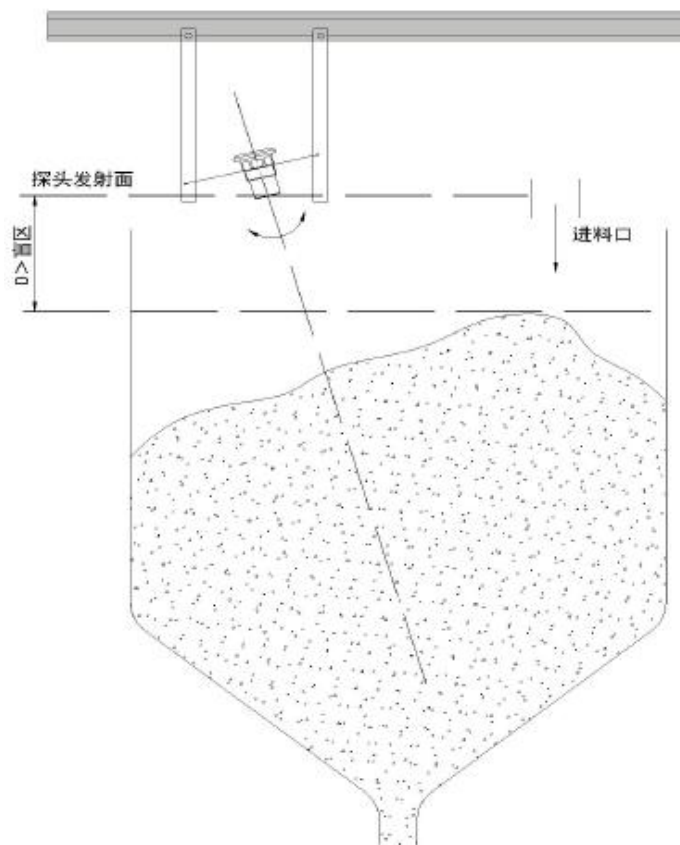
Installation of screw thread connecting pipe

When you install by screw thread connecting pipe, probe should be out over pipe bottom at least 20mm.



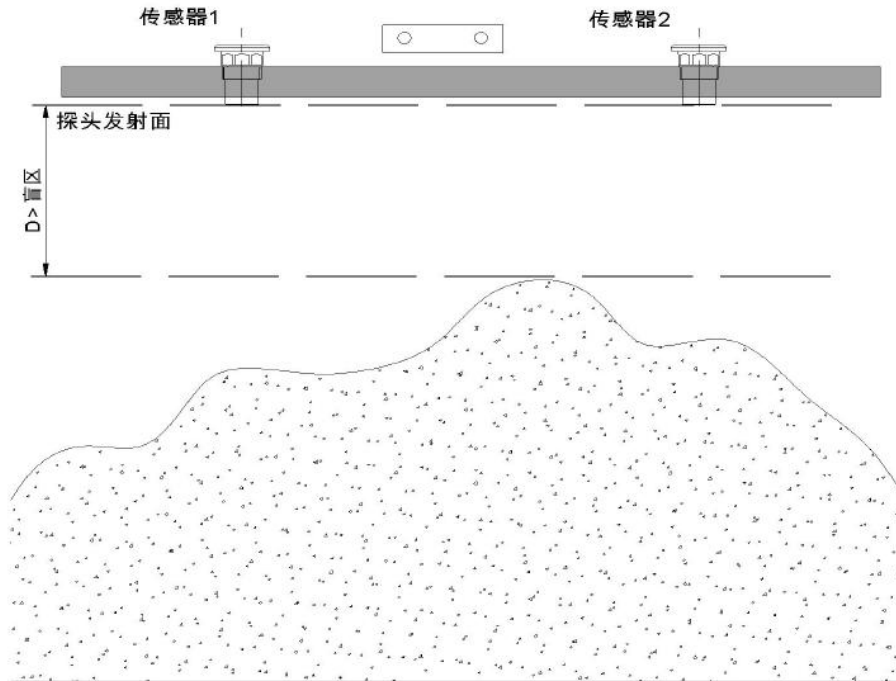
Installation on dragon frame

For open container, you can install by dragon frame, as below.



Dragon frame installation

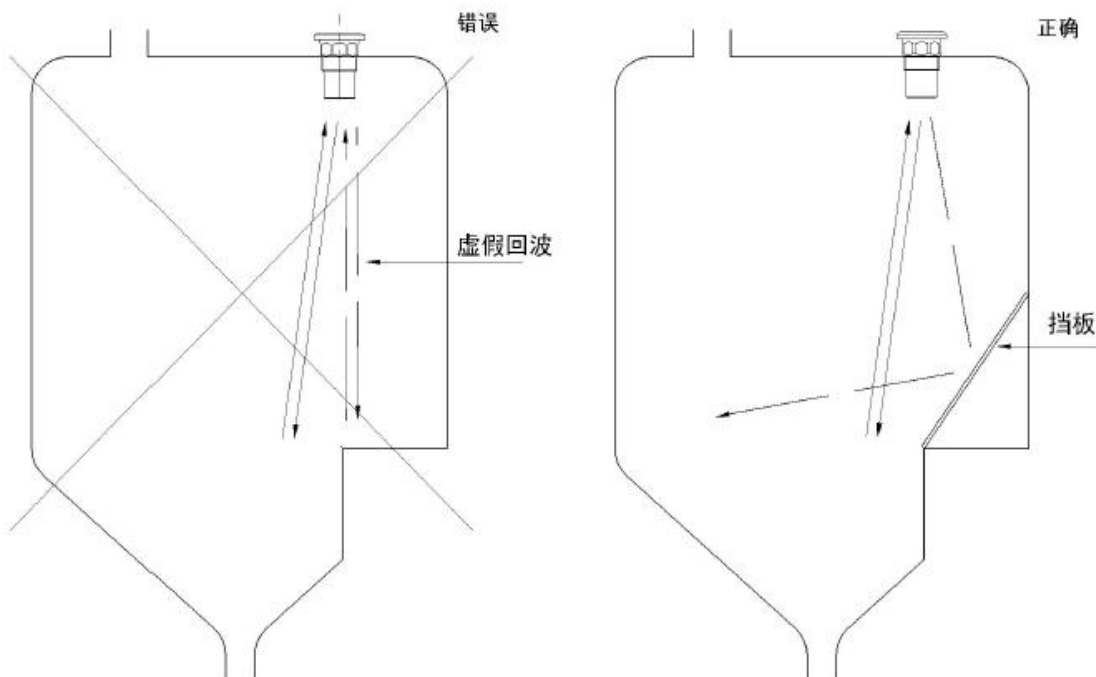
In outdoor material pile, for a big outdoor material pile, users should install many instruments, and fix it on gantry. Also, probe of sensor should aim to medium surface.



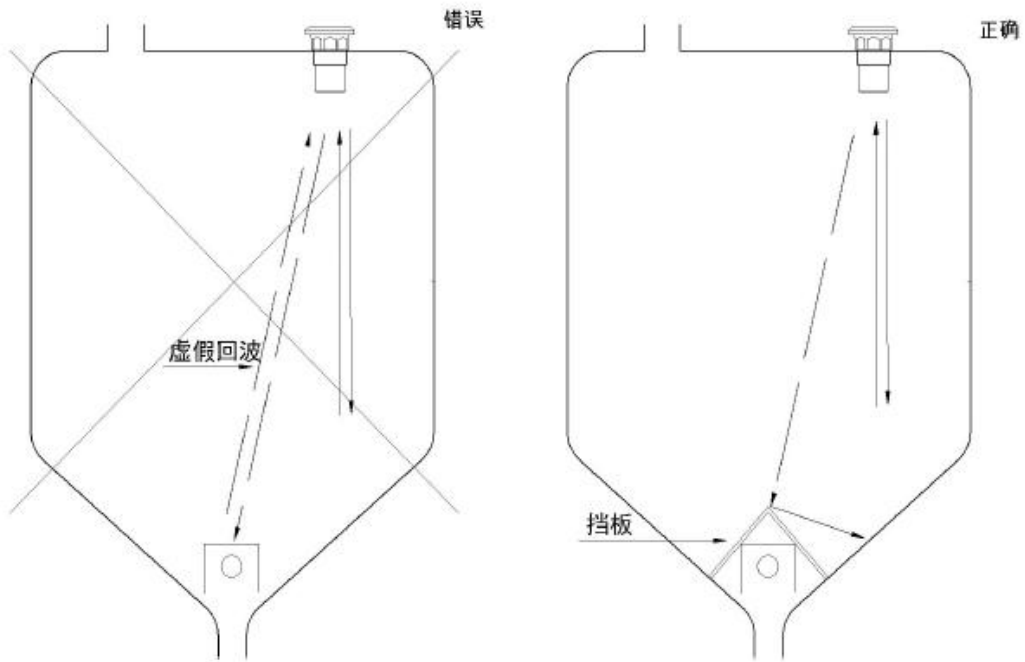
Attention

(1) Installation in inside of container

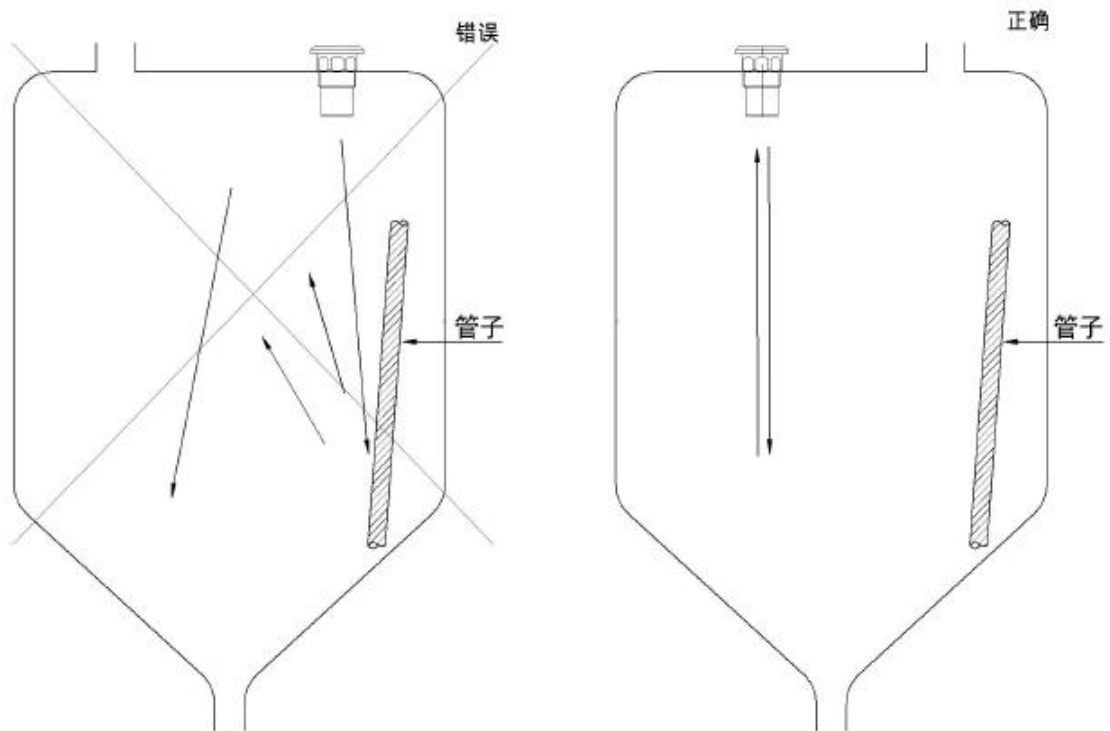
When you install liquid level probe, please pay attention that there should be no other equipment or materials which block the ultrasonic beam. Or the measurement will be unstable, you can put a deflector under the blocks.



If there' s material in the underpart of container, you must use a reflector.



There should be no material in container, like: tube, holder, etc.

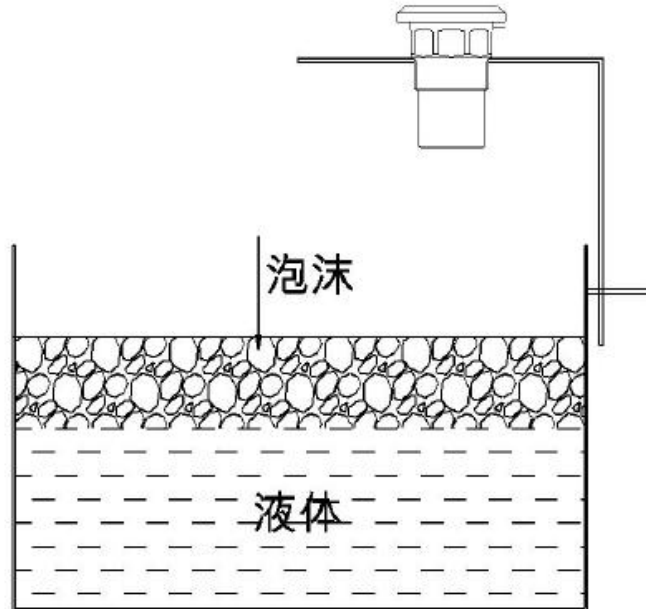


Far away from the tube

(2) Installation errors

①Bubble: If there are many bubbles on medium surface, measurement will be unstable, or

you even cannot get data. Please do something to stop the bubble, or put sensor in by-pass pipe. If you cannot avoid bubble, we suggest you to use other measurement instrument, like Radar liquid level sensor or magnetostriction liquid level sensor.



②Direction error of probe installation

If you do not install sensor probe in a correct direction (aim to medium surface), signal will be weak.

③Install in the place which has big temperature distance

In some places which has big temperature distance, example: strong sunshine, it will make a measuring error, and error will be about 2%-4% higher, so, you' d better install sun shield.

④The minimum distance to medium is less then dead zone

If the distance of the highest place between probe and medium is less then dead zone of instrument, the measurement value will be incorrect, please pay attention.

⑤Sensor probe is too close to container inside

Do not install liquid level sensor with a close distance with container wall, data will be incorrect. According to the maximum distance which you need to measure, there should be distance between liquid level probe and container wall. And if the measure situation is very bad, you need to enlarge the distance.

⑥Sensor probe is installed on flange, without washer or installed too tight.

Ultrasonic wave is gave by expansion of sensor probe, if you install too tight or there' s no washer, there will be sympathetic vibration between probe and installation board. So, when you install, you can fix it by hand only, and add washer on it.

CONTACT US

Shanghai ONBON Technology Co.,ltd (Headquarters)

Address: 7 Floor, Tower 88, 1199#, North Qinzhou Road, Xuhui District, Shanghai City,

China

Tel Phone: 086-21-64955136

Fax: 086-21-64955136

Website: www.onbonbx.com

ONBON (Jiangsu) Optoelectronic Industrial Co.,LTD

Address: 1299#, Fuchun Jiang Road, Kunshan City, Jiangsu Province, China

Sales Contacts

Tel: 0086-15921814956 0086-15800379719

Email: onbon@onbonbx.com

Second Development

Tel: 0512-66589212

Email: dev@onbonbx.com

iLEDCloud

Website: <http://www.iledcloud.com/>