Pressure Level Transmitter Series YW01-3000

Product introduction

CYB3000 series level transmitter is our advantageous product with large sales volume, which is admired by many companies in the industry. This series of products according to different industry applications, carefully selected the company's highly reliable silicon piezoresistive pressure sensor as the pressure sensitive core, after fully automatic temperature compensation, programmable digital circuit correction and signal conditioning, the output of standard industrial applications and networking signals.

The series has both universal design products suitable for multi-industry applications and specially designed products for different industry applications, which can be tailor-made according to the different needs of users to design suitable products.

Application

- Coal Mines
- Oilfield
- Chemical industry
- Civil explosives
- Medicine
- Water affairs
- Shipping
- Dyeing andprinting

Features

- Form of pressure: gauge pressure, absolute pressure
- Range: 0m～0.5m … 300m
- Overload capacity: ≤5 times
- Electrical connection:Industrial terminal, direct cable outlet
- Accuracy: ±0.1%FS(customized), ±0.25%FS, ±0.5%FS
- Output signal: 4mA～20mA(with HART protocol), RS485, 0V～10VDC (Output range can be customized), I^2C
- Response time: ≤3ms (10% to 90%)
- Measuring media: fluids compatible with 304, 316L or ceramics

Output signal and supply voltage

Form	Output signal	Supply voltage
Current (2 wire)	4mA～20mA	12V～30V DC
Voltage(3 wire)	0V～10V DC	12V～30V DC
I^2C (4 wire)	I^2C	3.3V～5V DC
RS485 (4 wire)	RS485	5V～30V DC

Load resistance (Ω)

Current (2 wire): R ≤(U-10) /0.02-RD (U: power supply voltage, RD: internal resistance of the cable)

Total current consumption

Current (2 wire): The maximum signal current is approximately 23mA

Voltage (3 wire):＜5mA

I^2C(4 wire):＜1.3mA (low power consumption can be customized＜5μA)

RS485(4 wire):＜5mA (low power＜1.1mA)

Product accuracy and performance index

Accuracy	0.1 (customized)	0.25	0.5
Non-linearity (%FS)	≤0.1	≤0.2	≤0.4
Hysteresis(%FS)	≤0.05	≤0.05	≤0.1
Repeatability (%FS)	≤0.05	≤0.05	≤0.1
Long-term stability (%FS/year)	≤0.1	≤0.2	≤0.5
Zero-point temperature drift (%FS/°C)	≤0.01	≤0.03	≤0.05
Sensitivity temperature drift (%FS/°C)	≤0.01	≤0.03	≤0.05

Reference conditions

Temperature: 20℃～25℃

Power supply voltage: 24V±0.24V,5V±0.05V

Installation direction: the product vertical down test

Items	Temperature range
Compensation temperature	0℃～+50℃(typical value),-10℃～60℃
Medium temperature	-30℃～+65℃
Ambient temperature	-40℃～+70℃
Storage temperature	-40℃～+70℃
Note: the measured medium icing will cause irrecoverable damage to the product.	

Environmental conditions

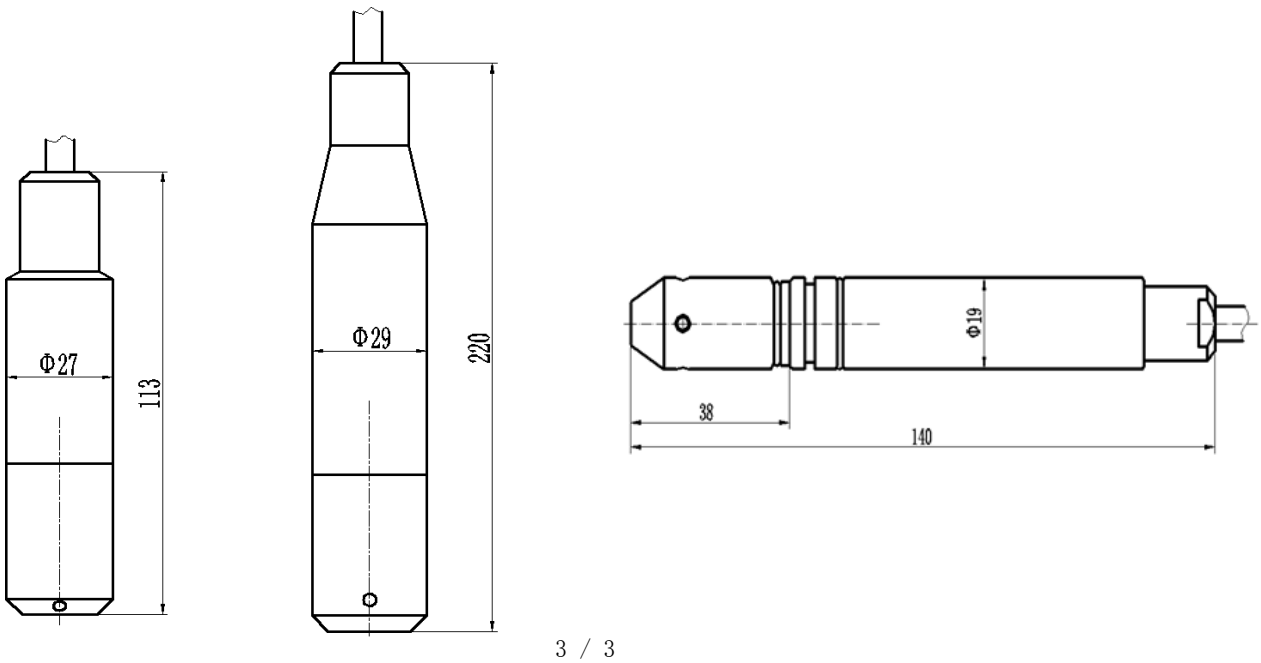
- When the pressure transmitter is operating normally, it is required that the measured medium cannot be solidified.

Items	Temperature range
Protection level	IP68
Atmospheric pressure	86kPa～106kPa
Vibration environment	10g(@10Hz～2000Hz)
Shock resistance	100g/11ms
Service life	＞10 million cycles of load capacity (within measurement range)

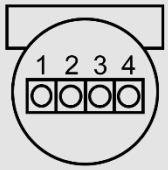
Operating conditions

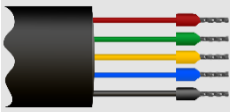
Typical appearance structure drawing (unit: mm)

- The following figures show the typical product structure. Other structuresplease contact Huatian for consultation and customization.

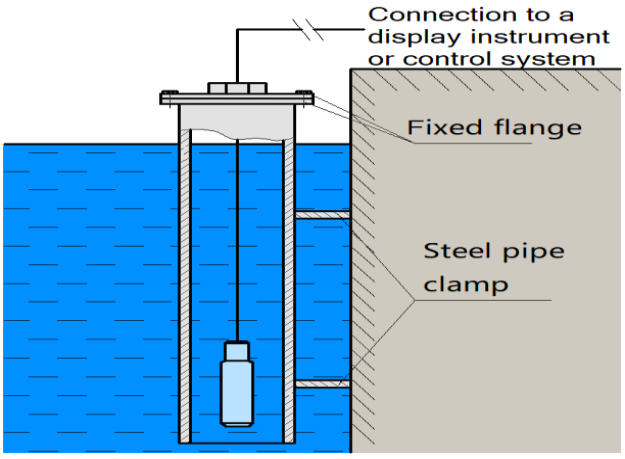


Electrical connection wiring diagram

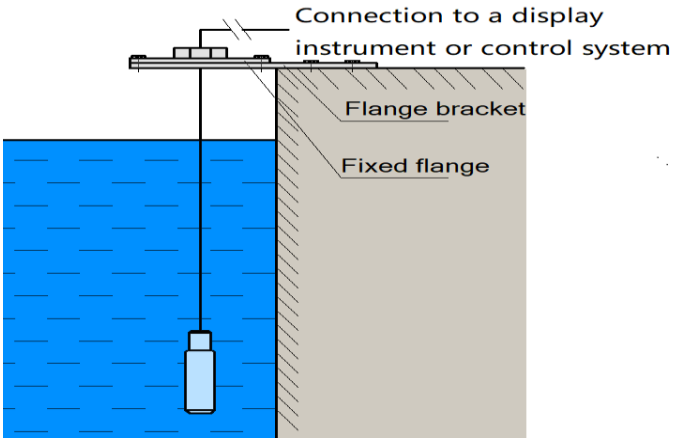
Industrial terminal					
Structure diagram	Wiring post	Current (2 wire)	Voltage (3 wire)	IIC (4 wire)	RS485 (4 wire)
	1	PE	PE	SDA	RS485B
	2	/	Vout	SCL	RS485A
	3	Iout	GND	GND	GND
	4	Vcc	Vcc	Vcc	Vcc

Cable direct outlet							
	Cable color	Current (2 wire)	Dual current (3 wire)	Voltage (3 wire)	Dual voltage (4 wire)	IIC (4 wire）	4-20mA+RS485 (4 wire)
	Red	VDC	VDC	VDC	VDC	VDC	VDC
	Green	Iout	PIout	GND	GND	GND	Iout
	Yellow	/	TIout	Vout	PVout	SCL	RS485A
	Blue	/	/	/	TVout	SDA	RS485B
	Black	PE	PE	PE	PE	PE	PE

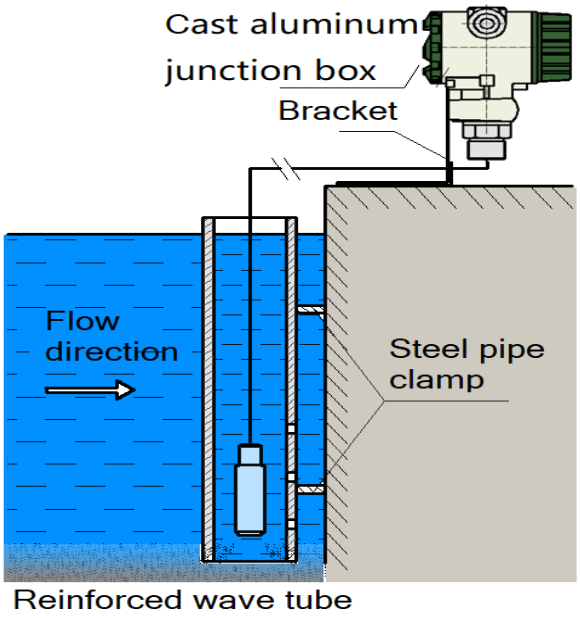
Product installation diagram



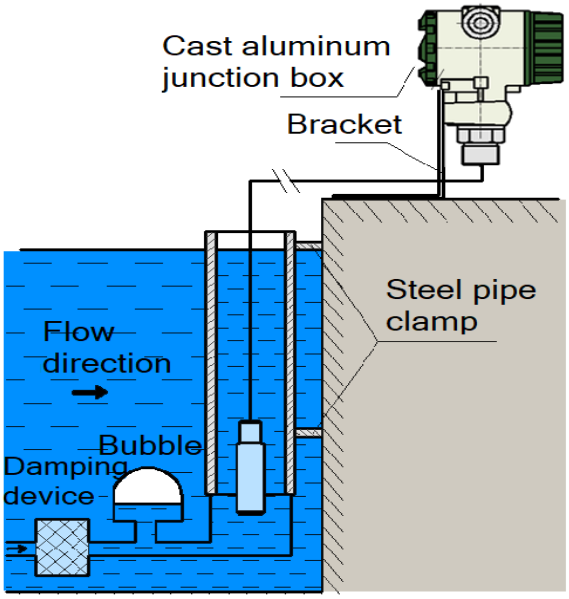
In the level measurement of reservoirs, tanks, etc., in order to prevent the transmitter from change of position in the long-term measurement process, it is recommended to use the fixed tube installation method. Fix a tube with inner diameter more than Φ30mm, the tube can be steel pipe or plastic pipe, the top and bottom of the tube are connected, put the transmitter into the tube at the corresponding depth, and fix the cable and junction box at the outlet of the tube.



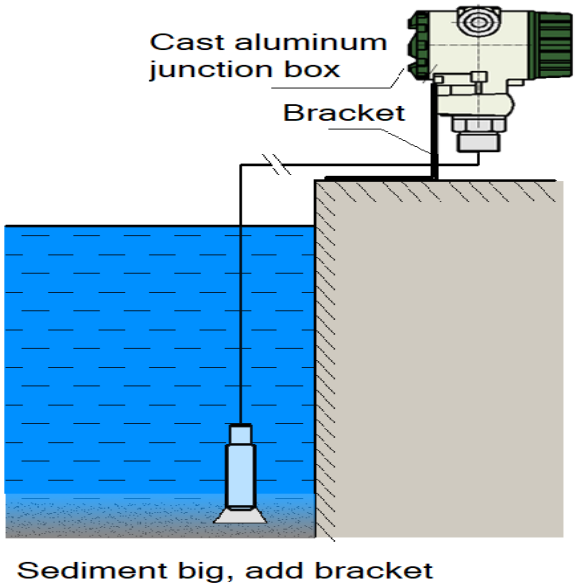
In stationary liquid measurement, the level transmitter can be plunged directly into the liquid, with the cable and junction box secured at the outlet.



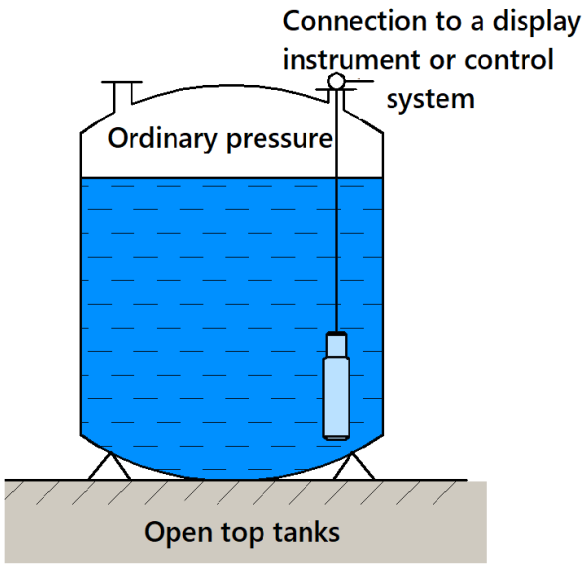
When measuring the level in a flowing liquid, insert a steel tube with an inner diameter of Φ30mm or so into the liquid, make 2 or 3 small holes of Φ5mm or so in each of the high and low levels of the tube located in the direction of the liquid flow in the opposite direction, so that the liquid can easily enter into the tube, and fix the cables and the junction box at the outlet.



When measuring the level in liquids with high fluctuations, it is recommended to add a damping device as shown in the figure to reduce the effect of the fluctuations on the level measurement, fixing the cable and junction box at the outlet.



In level measurements with large amounts of sediment, it is necessary to install a mounting bracket to prevent the sediment from clogging the pressure holes and causing testing errors.



- When measuring the level of stationary liquid in an open container, the level transmitter can be plunged directly into the bottom of the container. The cable and junction box are fixed at the container opening.

Precautions

YW01-3000	Series level transmitter
Range	Measuring range is 0～0.5m … 300m
（0～X）H_2OL	X: range; L: cable length, generally recommended L-X = (1 ~ 2) m; other liquids, please indicate the name and density

Code name	Form of pressure
G	Gauge pressure
A	Absolute pressure
D	Differential pressure
S	Sealed gauge pressure

Code name	Supply voltage
U_1	24VDC
U_2	12VDC
U_3	5VDC
U_4	3VDC（3.3VDC）
U_5	Other power supply methods

Code name	Output signal
E_1	4mA～20mADC
E_2	0mA～10mADC
E_3	0mA～20mADC
V_1	1VDC～5VDC
V_2	0VDC～5VDC
V_3	0VDC～10VDC
V_4	0.5VDC～4.5VDC
V_5	Other voltage output
R_4	RS485 communication interface
H	HART® protocol communication
Ⅱ	I^2C protocol communication

Code name	Interface	
	Electrical interface	Mechanical interface
	Hirschmann socket（LJ_1）	G¼
	Aviation socket（LJ_2）	G½
	Waterproof connector （LJ_3）	G1
	Level outlet（LJ_4）	M20×1.5
	Others（LJ_5）	Others (direct marking)

Code name	Additional features
M_0	Without junction box
M_1	With junction box, without display
M_2	4 Bit LCD digital display (only 4mA～20mADC output)
M_3	4 Bit LED digital display (only 4mA～20mADC output)
d	Explosion-proof Exd Ⅱ CT5
i	Intrinsically safe explosion-proof Exia Ⅱ CT6
QT	Other functions

- When selecting the model, please pay attention to the compatibility of the measured medium with the product seals, cable lines and other contact materials, media compatibility related information can be consulted with Huatian.

- To ensure product stability and accuracy, it is recommended that the level transmitter range be selected according to 120% of the actual measured level height, and the maximum pressure should be within the measuring range.
- In order to ensure the reliable operation of the outdoor products, it is recommended that users order transmitters with lightning protection. Users should ensure that the product and power supply are reliably grounded during installation to reduce the probability of lightning damage to the transmitter.
- When selecting a digital display product, theoperating ambient temperature range of the transmitter is -30°C to 70°C, and the power supply should be no less than 15VDC.
- Media containing silt and sand particles, the transmitter head needs to take filtration, bracket and other protective measures to prevent the pressure measurement hole clogging or particles scratching the diaphragm.
- If the transmitter is used in flammable and explosive environments, please install the safety isolationbarrier according to the regulations, and the cable connection should be sealed reliably. Please make sure the inner cavity of the transmitter is isolated from the environment before power on. When cleaning and overhauling the product, power must be cut off first, then disassemble and move to a safe environment for processing. It is strictly prohibited to operate with electricity on site.
- If you need metrological verification certificate or other special requirements, please contact us and indicate in the order.
- When the cable wires are exposed outdoors, pay attention to the waterproofing of the wiring to prevent rainwater from entering the transmitter probe through the cable from that location and causing damage to the product.