PRESSURE TRANSMITTER YL2088



FEATURES

- RS485 communication interface or HART communication protocol (optional)
- The digital compensation and nonlinear correction technology are adopted.
- High sensitivity and high precision
- No moving parts, reliable performance
- Provides a wide range of pressure levels, including low, medium, and high pressure
- Excellent on-site interchangeability, customizable to customer specifications

OVERVIEW

The pressure transmitter's core employs a high-performance silicon piezoresistive pressure oil-filled core. Its integrated circuit converts millivolt signals into standard long-distance transmission current signals, enabling direct interfacing with computer interface cards, control instruments, smart meters, or PLC. This product line is widely used in industrial process control, petroleum, chemical, and metallurgical industries.

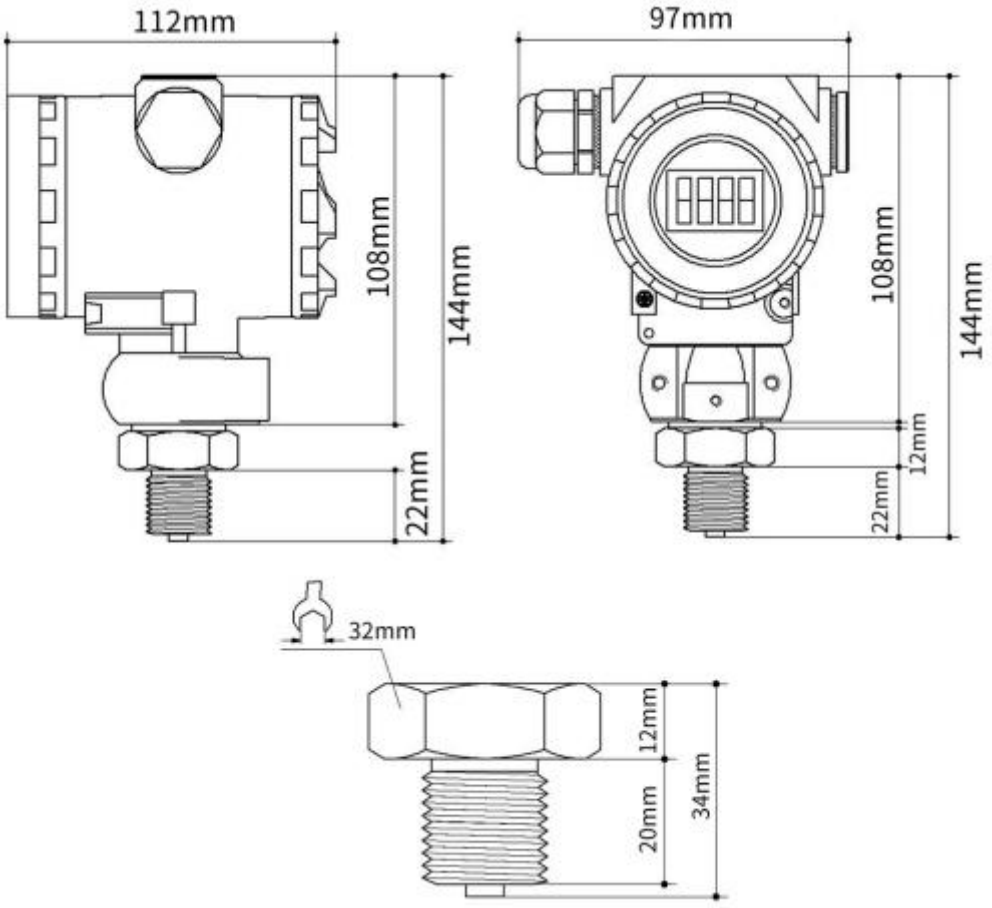
SPECIFICATIONS

Output signal: 4～20mA (HART protocol, RS485, MODBUS protocol optional)
Ranging range: -0.1～100MPa
Pressure type: gauge pressure, absolute pressure, and sealed pressure
Power supply: DC 12-32V (5V,3.3V only for voltage customization)
Compensation temperature: -10～70℃
Operating temperature: -40 to 70°C
Response time: ≤10ms
Storage temperature: -40～125℃
Zero drift: ±0.15%FS

Sensitivity temperature drift: ±0.15%FS
Overload pressure: 150%FS
Mechanical vibration: 20g (20~5000Hz)
Impact: 100g (11ms)
Precision: 0.2 or 0.5
long-term stability: ±0.2%FS/ year
Insulation: 100MΩ, 250V DC
Material: Low-copper aluminum alloy shell; 316L internal sensor
Medium compatibility: Compatible with various liquids or gases in stainless steel
Features: RS485 communication interface or HART protocol (optional); digital display; supports networked applications; employs digital compensation and nonlinear correction technology; high sensitivity and precision; reliable performance with no components; provides a wide range of pressure forces from low to high voltage.

PRODUCT SIZE

Unit：mm



PRODUCT IDENTIFICATION

Explosion-proof rating: Ex d IIC T6 Gb

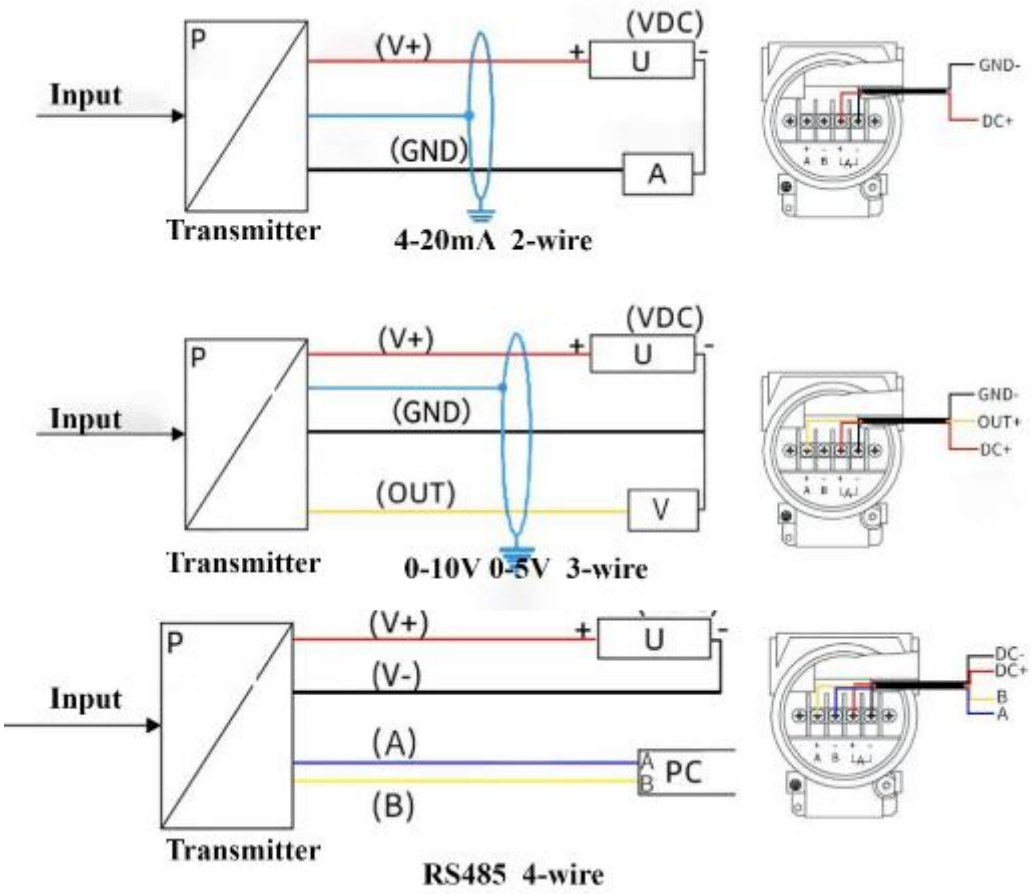
Range: 0-10 bar

Power supply: 24VDC

Signal: 4-20mA

Accuracy ： ±0.5%FS

WIRING DIAGRAM



- ⦶ indicates a shielded line, so the on-site equipment must be properly grounded.
- Only the current output has reverse connection protection (does not operate without damage) and current and voltage limit protection. Other outputs will damage the transmitter if connected in reverse.
- Users must ensure the cable's outer diameter fits within the ferrule's tolerance range. The cable should be securely and gap-free installed in the ferrule. The crimp cap locks securely for diameters of 5-9mm.
- Be sure to tighten the wire clamp nut to ensure the protection rating.

SELECTION

Part	Number
Selection Type	YL2088
Measurement range	W: -100 kPa to 10 k Pa to 60 MPa. For example: (0 to 1 MPa), or refer to the 'Standard Range Table'.
Pressure type	G: gauge pressure; A: absolute pressure; S: sealed pressure
Power supply	V1: 12-24V DC (including 24V and 12V); V2: Other (customizable)
Output signals	B1: 4~20mA; B2: 1~10V; B3: 0.5%FS; B4: RS485; B5: HART protocol; B6: Other
Precision	P1: 0.2%FS; P2: 0.5%FS; P3: Other (customizable)
Thread specifications	C1: M20x1.5; C2: G1/2; C3: G1/4; C4: M14x1.5; C5: Other (refer to the thread specification table)

Range Selection Appendix

Code	Range	Code	Range	Code	Range	Code	Range
04	▸ 0~10KPa	05	▸ 0~20KPa	06	▸ 0~50KPa	07	0~100KPa
08	0~200KPa	09	-100~100KPa	10	0~0.5MPa	11	0~0.6MPa
12	0~1MPa	13	0~1.6MPa	14	0~2.5MPa	15	0~4MPa
16	0~6MPa	17	0~10MPa	67	custom made		

▸ Precision level 0.2; if no precision level is specified, it can be customized to 0.1

SAFETY PRECAUTIONS

▸ warn !

①The installation of the equipment must be carried out without pressure and without power supply.

▸ warn !

② The transmitter must be installed by technicians who can read and understand this manual.

▸ danger !

③ To prevent explosion hazards, the following rules must be observed:

(1) Operation of the transmitter while powered is prohibited when explosion risk exists, except when the transmitter is connected through intrinsically safe circuit.

(2) Ensure the entire circuit remains in equipotential protection status, regardless of whether it is within an explosion hazard zone.

(3) If there is a possibility of damage from lightning or overvoltage, lightning and overvoltage protection measures must be taken.

(4) Ensure all connections between intrinsically safe transmitters comply with intrinsically safe requirements. Operators must verify the system's intrinsically safe status through proper installation of all intrinsically safe components.

(5) Prevent excessive dust accumulation (exceeding 5mm) or complete dust coverage on the transmitter surface.

(6) It must be combined with the related equipment that has passed the explosion-proof certification to form the explosion-proof system before it can be used in the explosion-proof gas environment. The system wiring must comply with the instructions of the transmitter and the related equipment, and the wiring terminals must not be connected incorrectly.

(7) Maintenance can only be performed after confirming the absence of flammable gases at the installation site.

(8) The connection cable between this product and associated equipment must be a shielded cable with an insulating sheath, and its shielding layer should be grounded in a safe area.

③The transmitter uses oil-filled silicon diffusion core, improper use may cause explosion. To ensure safety, it is strictly prohibited to measure oxygen.

- danger ！

④The transmitter uses a diffused silicon oil-filled core, and improper use may cause explosion. For safety, oxygen measurement is prohibited.

- warn ！

⑤ It is forbidden to measure the medium incompatible with the contact material of transmitter.

⑥ Upon receiving the product, please check the packaging integrity and verify that the transmitter model and specifications match your purchased item.

⑦To prevent diaphragm damage, remove the protective cap from the packaging box before activating the device. Keep the original protective cap provided with the product during shipping. Immediately reattach the protective cap to the pressure interface after removing the device. Handle unprotected diaphragms with extreme caution, as they are highly sensitive and prone to damage.

⑧Handle with care and avoid random disposal. Do not apply excessive force when installing or modifying the transmitter.

⑨ Install vertically with a pressure below 0.03MPa to avoid measurement accuracy issues. Other angles are acceptable at measurement points. If the interface dimensions differ from the site specifications, custom-made adapters can be used for connection.

⑩ In hydraulic systems, ensure the equipment's pressure interface is installed upward to facilitate gas discharge.

⑪When installing the transmitter with the pressure port facing upward or sideways, ensure no liquid flows inside the housing. Otherwise, moisture and dirt may clog the air vents near the electrical connections, potentially causing equipment failure. Additionally, verify that the threaded edges of the electrical connections are free from dust or residue.

⑫ Try to install in the place with less temperature gradient change.

⑬If the transmitter is installed in hazardous environments where it may be exposed to lightning strikes or overvoltage damage, we recommend installing lightning and overvoltage protection between the power distribution box or power supply and the transmitter.

⑭When measuring steam or other high-temperature media, ensure the medium temperature does not exceed the transmitter's operational limit. If necessary, install a cooling device.

⑮ Pressure shut-off valve should be installed between transmitter and medium during installation, so as to prevent the pressure tap from being blocked and the measurement accuracy

from being affected.

⑯ During installation, use a wrench to tighten the transmitter by the hex nut at the bottom of the device, and avoid directly rotating the upper part of the equipment to prevent the connection cable from breaking.

⑰This product is classified as low-voltage equipment. During installation, it must be routed separately from high-voltage cables and comply with national wiring standards (GB/T50312-2016).

⑱ Ensure the power supply voltage meets the transmitter's requirements. Confirm the pressure source's upper limit falls within the transmitter's measurement range.

⑲ In the process of pressure measurement, pressure should be slowly increased and decreased to avoid sudden high pressure or low pressure.

▸ warn ！

②⑩ When disassembling the transmitter, ensure it is disconnected from both the pressure source and power supply to prevent accidents caused by media ejection.

②Users should not disassemble the device or touch the diaphragm during use to prevent damage.

AGREEMENT DESCRIPTION

Basic technical parameters of the transmitter

This protocol complies with the Modbus communication standard, utilizing the RTU method from its subset. It operates in RS485 half-duplex mode.

① Output signal: RS485 (operating distance up to 1000 meters, supporting 32 channels in total)

②Standard Modbus-RTU protocol (Function 03: Read data; Function 06: Write configuration data)

③Data format: 9600, N, 8, 1 (9600bps, no parity, 8-bit data, 1-bit stop bit)

④Test range: 0-X (MPa, kPa...).

⑤ Resolution: 0.05%

⑥Output data: 0 · · ·2000 (customizable range)

⑦ Response frequency: ≤5Hz

⑧ Response time: ≥10ms

Modbus-RTU Read Data 03 Command Description (All data are hexadecimal)

A.Read command format:

Address	Fc	Data start (h)	Data start (l)	Data start (h)	Data start (l)	Crc16(l)	Crc16(h)
0X01	0X01	0X00	0X00	0X00	0X01	0X84	OXOA

B.Return the read data format: example

Address	Fc	Dl	Data （h）	Data （l）	Crc16(l)	Crc16(h)
0X01	0X03	0X02	0X00	0X00	0X79	0X84

Example of communication (reading a sensor signal)

Set the address of the sensor communication device (0~500KPa) to 01 (address range: 01-255). In this case, the CRC check is set to C5 CB. The transmitted and returned data are as follows:

Send: 01 03 00 04 0 01C5 CB

Return: 01 03 02 09 C4 BF 87

09C4 is hexadecimal, converted to decimal is 2500 (one decimal place)

Data output: 250.0KPa

Modbus-RTU Write 06 Command Specification (All data are hexadecimal)

A.Read command format:

Address	Fc	Data start (h)	Data start (l)	Data start (h)	Data start (l)	Crc16(l)	Crc16(h)
0x01	0x06	0x00	0x00	0x00	0x02	0x08	Ox0b

B.Return the read data format: example

Address	Fc	Data start (h)	Data start (l)	Data start (h)	Data start (l)	Crc16(l)	Crc16(h)
0X01	0X06	0X00	0X00	0X00	0X02	0X08	0X0B

Modify example

Change address 01 to 02

Send 01 06 00 00 00 02 08 0B

Return 01 06 00 00 00 02 08 0B

The original address 01 has been successfully updated to 02. You can modify the address offline or online. The system will resume operation immediately after completion without requiring a power cycle.

Exception response return

Address	Fc	Exception code	(l)	(h)
Ox01	0x80+ function code	0x01 (invalid instruction) 0x02 (invalid address)		

Usage Notes

①The RS485 bus must adopt a "hand-in-hand" structure, avoiding star or fork connections. Addresses should be assigned from nearest to farthest: the management computer connects to controller 1, controller 2 to controller 1, and so on...

warn ！

② The AC power supply and chassis of the equipment must be properly grounded. Many devices appear to have triangular sockets but lack proper grounding – this is a red flag. A well-grounded system ensures effective energy dissipation when lightning surges or static electricity accumulate, protecting RS485 bus devices and related chips from damage. Never use an RS485 bus if the grounding is faulty or absent – this could cause equipment failure and even personal injury.

③The wire must be a multi-strand shielded twisted pair network cable with a diameter of at least 0.3 square millimeters (the extra strands are for backup). Use a separate PVC conduit to avoid interference from strong electrical currents.

④485 (A) and 485 (B) must be twisted pairs, as 485 communication operates on differential mode principle, and twisted pairs provide superior anti-interference capability. Using non-twisted pairs is incorrect, and other cable types should be avoided.

⑤ Connect the RS485 converter in series with the reference ground (GND, negative power) of

all access controllers, and use one or all remaining twisted-pair network cables for GND connection. Improper reference ground connection also causes communication failure, primarily due to high-frequency radiation from distributed capacitance and inductance, which generates common-mode interference.

⑥The shielding layer of the grid communication line must be connected to the ground. Ensure proper grounding to prevent potential hazards in the bus system.

⑦When communication becomes unstable due to multiple slave devices or excessive cable length, a slave device at either the start or end of the 485 bus must be

Add a 120Ω matching resistor between 485 (A) and 485 (B) to improve communication quality. (Must be a twisted pair)

⑧ Transmission rate, load node number and transmission distance are arranged reasonably, to achieve the principle of low speed and few nodes for long distance, high speed and many nodes for short distance.

⑨ Data communication requires checksums to ensure transmission accuracy. Typically, Modbus-RTUs employ CRC-16 checksums, with an error rate below 1 in a billion.

⑩ If necessary, our company's isolation 485 can be used, though it is generally more expensive.

16CRC check

CRC (Cyclic Redundancy Check) is a standard error-checking method used in the Modbus protocol. While detailed specifications and implementation procedures are typically provided, this section will not elaborate on them.

ORDERING INSTRUCTION

warn ！

When ordering transmitter, users should pay attention to the selection of appropriate specifications according to the medium, temperature, protection level and environmental conditions.

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