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User Manual of

Submersible pressure

level transmitter

1. Function and application

The anti-corrosion submersible level transmitter uses a high-performance ceramic pressure sensor to accurately measure hydrostatic pressure proportional to liquid depth. The measured pressure is converted into standard current, voltage, or RS485 signals through a signal conditioning circuit, establishing a linear relationship between the output signal and liquid depth for precise depth measurement. Made of PTFE anti-corrosion material, the transmitter offers excellent resistance to corrosive media, making it ideal for level measurement in acidic, alkaline, and other corrosive environments in chemical plants.

2. Features

- High-performance ceramic pressure sensor
- Submersible probe design for easy and convenient installation
- Robust multi-layer protective structure with high durability
- Various models to meet diverse industrial requirements
- PTFE construction suitable for a wide range of applications
- Corrosion-resistant with excellent sealing performance

3. Parameters

Measurement Variable	Level
Pressure Type	Gauge Pressure
Range	0~1m...200m H_2O
Accuracy	Class 1, Class 0.5 (for ranges ≥ 5m)
Output and Power Supply	(4~20) mA output (10~32) V
	(0~10) V output (12~32) V
	RS485 output (8~32) V
Compensation Temperature	0~70°C

Medium Temperature	-40~125°C
Storage Temperature	-40~85°C
Temperature Drift	±3% FS
Overload Pressure	200% FS
Long-Term Stability	±0.5% FS/year
Response Time	Current/Voltage output: ≤10 ms (to 90% FS)
	RS485 output: ≤100 ms (to 90% FS)
Insulation Resistance	20 MΩ/250 VDC
Protection Rating	IP68

4. Dimension
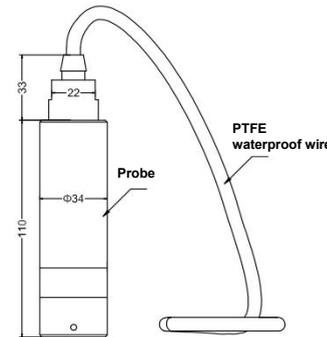
5. Wiring

Current output:

Red	Blue
24V +	Current output +

Voltage output:

Red	Blue	White
24V +	24V -	Voltage output +

RS485 output:

Red	Blue	White	Black
24V +	24V -	485A	485B

Current output, 2-wire
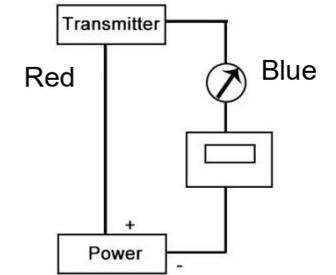
Voltage output, 3-wire
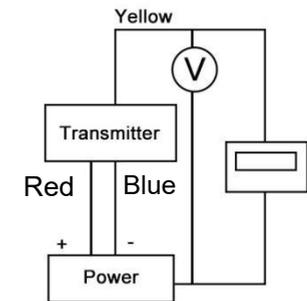
RS485 output
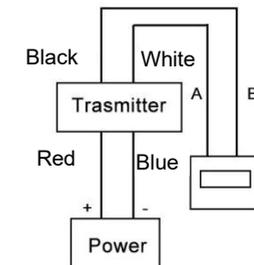
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# 6. Installation method and precautions for use and safety

- Read the wiring diagram carefully before installation.
- Turn off the power and the value of the tested medium during installation and disassembling, the pressure is reduced to atmosphere pressure to avoid accidents caused by medium ejection.
- Choose a place that is easy for operation and installation
- Make sure the transmitter is firmly connected and grounding properly during installation; avoid vibration, heat source, and strong EMI environment. Need good grounding when outdoor installation, lightning protection measures should be taken to prevent lightning from damaging products.
- The metal probe on the bottom of the container during submersible level meter installation
- If the customer needs additional wires, must take waterproof measures (such as a closed junction box, etc.).If it is not available or relatively simple, the wire can be bent downward and installed to prevent water inflow and avoid failure.
- The level probe is dropped into the water, preferably fixed and away from the inlet.
- To ensure the accuracy of measurement, the fluidity of the medium is needed.
- It prohibited inserting hard objects into the pressure hole to prevent damage to the sensor diaphragm.
- Please strictly follow the wiring method for the electrical connection, wrong wiring may cause damage to the amplifying circuit.
- Prevent the cable damage so that fluid could enter the damaged signal wire joint into the transmitter cavity, which will damage the product.
- Do not use cable to lift heavy objects other than the product.
- Regularly desilt the level probe to avoid blocking the inlet.
- The conductor is a special waterproof cable; Wear, puncture, and scratch should be avoided in the process of installation and use. If any of the above problems exist on site, protective measures should be taken for the conductor. If such problems cause faults, the manufacturer will charge for maintenance.
- Ensure the right product selection and operation correctly to prevent serious personal injury and damage.
- Please contact our company if you encounter any problems in the installation and use. When the product is abnormal, please do not open it for repair without authorization.

7. Communication

The communication protocol of this instrument complies with the MODBUS-RTU communication protocol, with 1 start bit, 8 data bits, and one stop bit.

The following command definition assumes that the instrument parameters are: the instrument address is set to 1, the communication baud rate is 9600, the invalid check digit, the decimal point is 1 digit, the unit is MPa, and the instrument display value is 500.0MPa. The address and data in the read command and write command are all high byte first and low byte last; CRC checks low byte first, and high byte last.

【Read pressure value】
Command: 01 03 00 04 00 01 C5 CB
Instruction Description: 01 (meter address) 03 (read command) 00 04 (pressure value register address) 00 01 (read a parameter) C5 CB (CRC16 verification code)
Response: 01 03 02 13 88 B5 12
Instruction Description: 01 (meter address) 03 (read command) 02 (number of bytes read, 1 parameter is 2, 2 parameters are 4....) 13 88 (13 88 is the hexadecimal number 13 is The high byte 88 is the low byte converted to decimal, which is exactly 5000) B5 12 (CRC16 verification code)

【Zero drift adjustment】
Command: 01 06 00 05 00 01 58 0B
Instruction Description: 01 (meter address) 06 (write command) 00 05 (meter communication address) 00 01 (Zero drift adjustment code) 58 0B (CRC16 verification code)
Response: 01 06 00 05 00 01 58 0B
Instruction Description: 01 (meter address) 06 (write command) 00 05 (meter communication address) 00 01 (Zero drift adjustment code) 58 0B (CRC16 verification code)

【Read parameter value】
Command: 01 03 XX XX 00 01 CRC1 CRC2
Instruction Description: 01 (meter address) 03 (read command) XX XX (parameter address: see Table 2) 00 01 (read a parameter) CRC1 CRC2 (CRC16 verification code: low byte first, high byte last)
Response: 01 03 02 XX XX CRC1 CRC2
Instruction Description: 01 (meter address) 03 (read command) 02 (number of bytes read, 1 parameter is 2, 2 parameters are 4....) XX XX (returned parameter value: high order first, Low order after) CRC1 CRC2 (CRC16 verification code: low byte first, high byte after)

【Write parameter value】
Command: 01 06 XX XX data1 data2 CRC1 CRC2
Instruction Description: 01 (meter address) 06 (read command) XX XX (parameter address: see Table 3) data1 data2 (written parameters: high byte first, low byte last. See Table 3) CRC1 CRC2 (CRC16 verification code: low byte first, high byte after)
Response: 01 06 XX XX data1 data2 CRC1 CRC2
Instruction Description: 01 (meter address) 06 (read command) XX XX (parameter address) data1 data2 (Writing parameters: high byte first, low byte last. See Table 7) CRC1 CRC2 (CRC16 verification code: low byte first, high byte last)

Details	Function code	Address (Hex)	Data (data1, data2)
Transmitter board address	03H 06H	00 00	1~255
Transmitter board baud rate	03H 06H	00 01	1-2400 2-4800 3-9600 4-19200
Units	03H 06H	00 02	0-M 1-kPa 2-MPa 3-℃ 4-L 5-bar 6-psi 7-Pa
Number of decimal places	03H 06H	00 03	Range: 0-4
Measurement output value	03H	00 04	-32768~ 32767
Check digit	03H	00 06	0-None 1-Odd 2--Even

Note:
（1）The unit of measurement and the number of decimal places only represent symbols, and there is no automatic conversion and conversion function. If necessary, please contact us to return to the factory for debugging.
（2）The check digit can be modified through the client software by contacting our technical staff.