

Installation instructions

Cyyz36a mud pressure transmitter

Summary

Safety guidance

These installation instructions contain important information on how to use the transmitter correctly. The transmitter installer shall carefully read the installation instructions before operating the transmitter. In case of further understanding or special problems, which are not described in detail in this operation manual, please contact our company to obtain necessary information. Please pay attention to the warning signs on the instructions! Operators must strictly follow the safety instructions in the installation instructions. In addition, occupational safety rules, accident prevention guidelines, national installation standards and engineering specifications must be observed. Please keep this instruction properly and store it in a convenient place near the transmitter. The copyright of these installation instructions is protected. The installation instructions of this version are written according to the functions that can be realized by the corresponding product during printing, and describe the product functions and operation steps as detailed and complete as possible. If you find mistakes, you are welcome to criticize and correct them. The company is not responsible for the possible wrong description and possible consequences.

- reserve the right to modify the technical parameters -

Icon description

- Danger! - A dangerous situation that could result in death or serious injury.
- Warning! - A potentially hazardous situation that could result in death or serious injury.
- Be careful! - A potentially hazardous situation that may result in minor injury.
- Reminder! - A potentially hazardous situation that may cause personal injury.
- Tips! - Tips and information to ensure trouble free operation of the equipment.

User

- Warning! These installation instructions are for technicians.

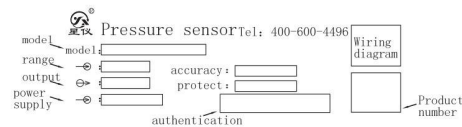
Limitation of liability

If the transmitter is damaged due to non-compliance with the operation and installation instructions, improper use, self modification and destruction, the company will not be liable for compensation and will not provide warranty service.

Unpack

- After unpacking, check whether the documents and accessories are complete according to the packing list. Packing documents: one copy of installation instructions. One product certificate. A warranty card.
- When receiving the product, please check whether the package is intact and check the transmitter type. Whether the number and specification are consistent with the products you choose.
- Observe whether the transmitter is damaged due to transportation for proper use good at handling.
 - The user is expected to keep the "warranty card" properly and do not lose it, otherwise it cannot be returned to the factory free maintenance!

Identification

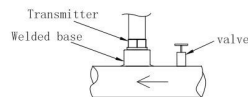


Precautions for use

- DANGER! This product is not explosion-proof, and its use in explosion-proof area will cause serious personal injury and material loss.
- Warning! It is forbidden to measure media with incompatible materials in contact with the transmitter.
 - ! No modifications or changes can be made on the equipment.
 - ! Handle with care and do not throw it at will. Please do not use brute force when installing the transmitter.
- When measuring steam or other high-temperature medium, be careful not to let the medium temperature exceed the working temperature of the transmitter. If necessary, a cooling device shall be installed.
 - ! This product belongs to weak current equipment, which must be laid separately from strong current cables, and shall be wired in accordance with relevant national wiring standards (GB / t50312-2016).
- Ensure that the power supply voltage meets the power supply requirements of the transmitter. Ensure that the high pressure of the pressure source is within the range of the transmitter.
- In the process of pressure measurement, pressurize and relieve the pressure slowly to avoid instantaneous increase to high pressure or decrease to low pressure;

Installation precautions

- Try to install it in the place with small temperature gradient change.
- It is recommended to install a pressure stop valve before the pressure measuring point to facilitate the maintenance and disassembly of the transmitter. In addition, during the initial installation of pressure measurement, it can reduce the pressure impact.
- After the pressure in the pipeline stabilizes, slowly open the stop valve to start measurement.



- Warning! The equipment must be installed without pressurization and power supply.

- If the transmitter is installed in a harsh site and will encounter dangerous damage such as lightning stroke or overvoltage, we recommend that the user carry out lightning stroke and overvoltage protection between the distribution box or power supply and the transmitter.
- In order to avoid liquid flowing along the cable, causing liquid accumulation at the waterproof joint or entering the junction box, a U-shaped ring shall be configured between the threading box and the pressure transmitter as shown in the figure, and the bottom of the U-shaped shall be lower than the pressure transmitter. It is considered that sufficient length of electric cable shall be reserved for maintenance and replacement.



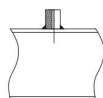
Install

Opening



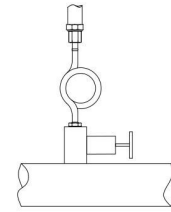
Select the opening position according to the medium, with gas at the top and liquid and steam at the side or bottom.

base



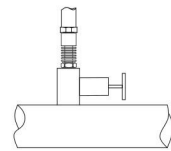
It is forbidden to weld the transmitter and the base together! The deformation of the base caused by welding shall be avoided, and the waste slag shall be cleaned to avoid scratching the measuring diaphragm. (accessories need to be purchased separately)

High temperature gas measurement



For high-temperature steam measurement, it is recommended to install a flexible buffer pipe (zb02), and more than half of the pipe cooling water (gas-liquid temperature isolation) should be injected into the cooling pipe in advance. To ensure that the temperature of the pressure measuring point is controllable Within the scope. (accessories need to be purchased separately)

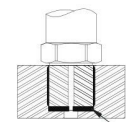
High temperature medium measurement



For the measurement of high-temperature medium, a heat transfer device, such as heat sink adapter zb03, shall be installed between the measuring pipe and the measuring point to ensure that the temperature of the pressure measuring point is within the controllable range. (accessories need to be purchased separately)

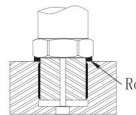
Installation steps for threaded connection of pressure interface

- Select appropriate sealing accessories and sealing positions according to the measured medium and input pressure



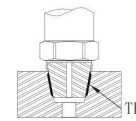
Face seal

The thread length of the pressure transmitter must be greater than the thread depth of the base to ensure the effective sealing of the end gasket.



Root seal

The thread length of the pressure transmitter must be less than the thread depth of the base to ensure the effective sealing of the root gasket.



Thread seal

Raw tape or sealant is used. After locking, there is a small surplus in the thread of the pressure transmitter.

- Ensure that the sealing surface connected with the equipment is smooth and flat

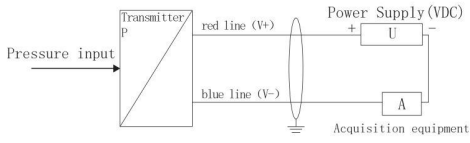
- Use a wrench to tighten the transmitter through the hexagonal nut at the bottom of the transmitter to avoid directly turning the upper part of the equipment and causing the disconnection of the connecting line. The recommended installation torque is as follows:

Installation torque			
Interface type	Recommended installation torque (Nm)	Interface type	Recommended installation torque (Nm)
M27*2	55~60	G1/4	30~35
M20*1.5	40~45	G1/2	45~50
M14*1.5	30~35	7/16UNF	16~20
M12*1.5	20~30	1/2NPT	2~3TFFT
M10*1.0	15~16	1/4NPT	2~3TFFT
		1/8NPT	2~3TFFT

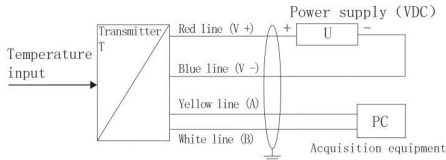
Note: tfft is the number of turns the tool is tightened after hand tightening

接线示意

Current output wiring diagram (two-wire system)



RS485 (digital signal) output wiring diagram (four wire system)



☞ Represents shielded wire, and all marked grounding points must be effectively grounded. It is recommended to select shielded twisted pair signal cable for the best effect. In order to avoid grounding loop, the shielding layer adopts single end grounding, insulated floating grounding at the transmitter end and grounding at the control cabinet end.

☞ The transmitter shell is grounded by default, so the field equipment shall be effectively grounded. If the field equipment cannot be grounded, the marked grounding point shall be effectively grounded.

Protocol description (limited to RS485 signal output, the address is 01 by default, and the data is hexadecimal)

Basic technical parameters of transmitter

(this protocol complies with the Modbus communication protocol and adopts the centralized RTU in the Modbus protocol Mode RS485 (half duplex operation mode))

- a) Output signal: RS485 (the distance can be up to 1000m. 32 channels at most)
- b) Standard Modbus RTU protocol (03 function reads data, 06 function writes setting data)
- c) Data format: 9600, N, 8, 1 (9600bps, no verification, 8 data bits, 1 stop bit)
- d) Measuring range: 0-x (MPa, kPa...)
- e) Resolution: 0.05%
- f) Output data: 0... 2000 (customized for other ranges)
- g) Response frequency: \leq 5Hz
- h) Response speed: \geq 10ms

Modbus RTU read data 03 command description

Protocol format description					
	Device address	Function code	Data address	Number of read data	Hex code (low front high rear)
Host command	Address	03	00 00	CN	CRC0 CRC1
Return from machine	Device address	Function code	Data byte	Sensor data	Hex code (low front high rear)
Address	03	02*CN	S ₁ H ₁ ...S ₁ L ₁		CRC0 CRC1

Communication examples (read a sensor signal):

The address of 0-10mpa sensor communication equipment is set to 01, i.e. [address] = 01 (address range 01-254); At this time, crc0 = 84 and crc1 = 0A. Then the sending and returning data are as follows:

Send: 01 03 00 01 84 0A

Return: 01 03 02 AC B9 59

02ac is hexadecimal and converted to decimal 684;

Data output: 0-2000 corresponds to 0-10mpa, so the current pressure is $p = 10 * 684 / 2000 = 3.42\text{mpa}$

Calculation formula: $(\text{upper range} - \text{lower range}) \div 2000 * \text{current data} + \text{lower range} = \text{Current pressure value}$

Query example (reading the current device address can only be completed independently by a single offline sensor)

Send out FF 03 00 0F 00 01 A1 D7

Return FF 03 02 00 01 50 50

Then: the device address is 01 (hexadecimal)

Detailed description of Modbus RTU write 06 command

Protocol format description					
	Device address	Function code	Data address	new address	Hex code (low front high rear)
Host command	Address	06	00 0F	H L	CRC0 CRC1
Return from machine	Device address	Function code	Data address	new address	Hex code (low front high rear)
Address	06	00 0F	H L		CRC0 CRC1

Modification example

If the 01 address is changed to 09 address:

Send 01 06 00 0F 00 09 79 CF

Return to 01 06 00 0F 00 09 79 CF

The original address 01 is successfully modified to 09. The modified address can be modified offline or online.

After completion, it can work directly without power on again.

Precautions for use

☞ a) A single RS485 bus must adopt a "hand in hand" bus structure, and do not use star connection and bifurcation connection. The address code is set from near to far, that is, the management computer is connected to No. 1 controller, No. 2 is connected to No. 1, No. 3 is connected to No. 2, and so on

Warning!

b) The AC and chassis supplied by the equipment must be truly grounded and well grounded. Many places have triangular sockets on the surface, but they are not grounded at all. Be careful. When the grounding is good, it can ensure that the equipment is impacted by lightning surge. When static electricity is accumulated, it can cooperate with the lightning protection design of the equipment to better release energy and protect RS485 bus equipment and related chips from damage. If the grounding is not well connected or not connected, do not use RS485 bus to avoid equipment burning and casualties.

☞ c) The wire must use multi strand shielded twisted pair wire with a wire diameter of more than 0.3 mm² (multi strand is for standby). PVC pipe shall be applied separately to avoid walking together with strong current to avoid interference of strong current.

☞ d) 485 (a) and 485 (b) must be twisted pair, because 485 communication adopts the principle of differential mode communication, and the twisted pair has good anti-interference. It is wrong not to use twisted pair, and other types of cables must be avoided.

☞ e) Connect the reference GND (power supply negative) of the RS485 converter and all access controllers in series, and use the remaining one or all of the multi strand twisted pair network cables for the series GND; The reference ground is not well connected, which also affects the communication. The common mode effect is mainly caused by the high-frequency radiation from the distributed capacitance and inductance.

☞ f) The shielding layer of the network communication line is connected to the earth. Pay attention to grounding, otherwise there is a potential unknown danger of the bus.

☞ g) If multiple slaves or connecting wires are too long and communication is not smooth, 120 ohm matching resistance shall be added between 485 (a) and 485 (b) of one slave at the head and end of 485 bus to improve communication quality (must be twisted pair)

☞ h) Reasonable arrangement of transmission rate, number of load nodes and transmission distance, so as to achieve the principle of remote low-speed few nodes and short-range high-speed multi nodes.

i) Data communication must be verified to protect transmission correctness. Generally, Modbus RTU is verified with CRC-16 verification mode, and the error rate is less than 1 / 1 billion.

j) If necessary, select the isolation 485 of our company, and the general price is more expensive.

EMC statement

Applicable Directive: electromagnetic compatibility Equipment Directive 2014 / 35 / EU.

CE marking indicates that the product meets the requirements of applicable EU standards.

The user must ensure that the whole equipment meets all use standards.

first start-up

Warning!

a) Before startup, the user must check whether the transmitter is installed correctly and whether there is obvious damage.

Warning!

b) The transmitter must be started and operated by professional technicians who read and understand this operation manual.

Warning!

c) The transmitter is only applicable to the working conditions that meet the technical requirements!

Common fault analysis and troubleshooting

Fault phenomenon	Cause analysis	Exclusion method
• The transmitter has no output signal	• Transmitter not powered • Wiring error	• Correct power supply and wiring as required
• The output jumps irregularly when the pressure is constant	• The transmitter is not grounded • Strong RF interference on site • Shielded cable not used	• Use shielded cables and the shielding layer is grounded • The transmitter is reliably connected with the earth
• When the transmitter is not connected to the pressure, the corresponding output value is incorrect	• The transmitter is not operating in its required environment	• Move the transmitter to the specified environment or take measures to make the environment meet the requirements
• The transmitter output is inconsistent with the measured pressure	• Incorrect supply voltage • Excessive external load	• Whether it meets the power supply scope • Adjust external load

If the fault phenomenon does not fall within the above scope, please contact our after-sales service at 400-600-4496

Disassembly and after sales

During the warranty period, the products are detected by our technicians as quality problems, and the company shall bear all maintenance costs;

Warning!

Please clean up the residual media before returning, especially the substances harmful to human health, such as corrosive, toxic, carcinogenic or radioactive substances;

Please keep the warranty card and certificate, and return with the product during maintenance;

If the transmitter fails, please contact our after-sales service. After confirming the problem, you need to send the transmitter back to our company. Please attach the following information during maintenance:

Description of site environment;

Fault phenomenon;

Receiving address and contact information.

Adjustment

Zero and full scale drift may occur during the servicelife of the transmitter. If the above phenomena occur after long-term use, it is recommended to send the transmitter back to our company for calibration to ensure high accuracy.

Maintenance and cleaning

maintain

This pressure transmitter requires no maintenance.

Maintenance can only be carried out by the manufacturer.

clean

Wrong detergent

-Using the wrong detergent will damage the label of the product.

-Do not use irritant cleaners.

-Do not use harmful or sharp sanitary ware.

-Do not use abrasive rags or sponges.

Correct detergent

-Clear water

-Traditional detergent

Cleaning products

Before cleaning, the pressure transmitter needs to be relieved and powered off.

Wipe the transmitter surface with a soft damp cloth.

Transportation, storage and transportation

The transmitter shall be packed in a strong carton (wooden case is required for large instruments). It is not allowed to move freely in the carton. It shall be handled with care and rough loading and unloading is not allowed. The storage location shall meet the following conditions:

a) Rain proof and moisture-proof.

b) Free from mechanical vibration or impact.

c) Temperature range - 30 ~ 70 °C.

d) The relative humidity shall not be greater than 90% (no condensation).

e) The environment does not contain corrosive gases.

Please scan the code for more information
Go to the official website to get