

Installation instructions **SIL** **SGS** **ISO** **CE**
CYYZ501C ceramic capacitive 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

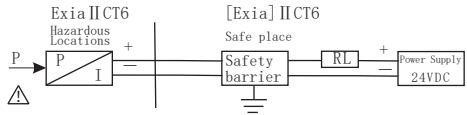
If the transmitter is damaged due to non-compliance with the operation and installation instructions, improper use, self modification and destruction, the company will not be liable for compensation and will not provide warranty service.

Unpack

- 🔧 a) 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.
- 🔧 b) 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.
- 🔧 c) Observe whether the transmitter is damaged due to transportation for proper use good at handling.
- d) 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!

Precautions for use on explosion-proof site

- ⚠ Warning!
The transmitter shall be installed in strict accordance with the relevant provisions of GB3836.15-2017 Electrical Equipment for Explosive Gas Atmospheres Part 15: Electrical Installation in Hazardous Locations (Except Coal Mines).
- ⚠ danger
The transmitter housing must be effectively grounded.
- ⚠ danger
The shell of the product is made of aluminum alloy, and the ignition hazard caused by impact or friction must be prevented!
- ⚠ Warning!
If the internal components of the transmitter are damaged and need to be repaired or replaced, they should be returned to the factory for replacement or repair.
- ⚠ danger
To avoid the risk of explosion, the following rules must be observed:
-It is prohibited to operate the transmitter under power supply when explosion hazard exists. Except when the transmitter is connected through an intrinsically safe circuit.
-Whether it is in the explosion hazard area or not, ensure that the overall circuit is in the equipotential protection state.
-If there is the possibility of lightning stroke or overvoltage damage, lightning protection and overvoltage protection measures must be taken.
-Avoid excessive deposition of dust (more than 5mm) or complete coverage of dust on the transmitter surface.
-The intrinsically safe explosion-proof system must be combined with the associated equipment that has passed the explosion-proof certification before it can be used in the explosion-proof gas environment. The system wiring must comply with the requirements of the operating instructions of the transmitter and the associated equipment, and the wiring terminals must not be connected incorrectly.
-The maintenance can be carried out only after the installation site confirms that there is no combustible gas.
-The connecting cable between the product and associated equipment shall be a shielded cable with insulating sheath, and its shielding layer shall be grounded in a safe place.
- ⚠ danger
When the flameproof, intrinsically safe and dust intrinsically safe transmitters are used in dangerous places, the transmitter cover must be tightened. To ensure safe use, the safety regulations should be strictly followed. It is absolutely not allowed to open the transmitter cover when power is on. When installing the transmitter, ensure that the outlet of the cable is well sealed.
- ⚠ danger
Intrinsically safe and dust intrinsically safe transmitters
-The safety barrier must be equipped for use in hazardous areas with explosive mixtures. The safety barrier shall comply with GB3836.4-2010 Electrical Equipment for Explosive Gas Atmospheres - Part 4: Intrinsically Safe "i", and shall be subject to explosion-proof test by relevant explosion-proof department and obtain explosion-proof certificate. The installation shall be carried out according to the requirements of the user manual. The system wiring is shown in the figure.



- Ensure that the connection between each intrinsically safe transmitter complies with the intrinsically safe requirements at the same time. The operator must ensure the intrinsic safety of the entire system (installation of each intrinsically safe component).
- For the sake of safety, intrinsically safe circuits and non intrinsically safe circuits shall be distinguished, and the wiring of intrinsically safe circuits shall be separated from that of other electrical circuits. The power transformer supplying power to the safety barrier shall meet the requirements of Article 8.1 of GB3836.4-2010 standard.
- ⚠ Warning!
Please follow the relevant national regulations for the parts not mentioned in the precautions for use of explosion-proof transmitter and the parts with incomplete instructions.

Explosion proof description

Flameproof type

Conforming to standards GB/T 3836.1-2021, GB/T 3836.2-2021, GB/T 3836.31-2021, GB/T 4208-2017
Explosion proof sign: Ex db IIC T6 Gb
Explosion proof certificate number: CCRI 22.1623X

Explosion proof dust type

Conforming to standards GB/T 3836.1-2021, GB/T 3836.2-2021, GB/T 3836.31-2021, GB/T 4208-2017
Explosion proof sign: Ex tb IIIC T80 °C Db
Explosion proof certificate number: CCRI 22.1623X

Intrinsically safe (limited to 4-20mA/4-20mA HART output)

Complies with standards GB3836.1-2010 and GB3836.4-2010
Explosion proof sign: Ex ia II C T6 Ga
Intrinsic safety parameters: Ui: 28V, Ii: 93mA, Ci: 0nF, Li: 0uH
Associated equipment parameters: Uo ≤ Ui Io ≤ Ii Po ≤ Pi Co=Cc+Ci
Lo=Lc+LiUo, Io, Po, Co, Lo are safety barrier parameters, and Cc, Lc are distribution parameters of connecting cables.
Explosion proof certificate number: CLEx22.3302

Dust Intrinsically Safe (limited to 4-20mA/4-20mA HART output)

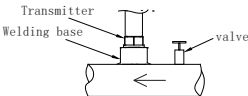
Complies with standards GB3836.1-2010, GB3836.4-2010, GB12476.1-2013, GB12476.4-2010
Explosion proof sign: Ex iaD 20 T80 °C
Intrinsic safety parameters: Ui: 28V, Ii: 93mA, Ci: 0nF, Li: 0uH
Associated device parameters: Uo ≤ Ui Io ≤ Ii Po ≤ Pi Co=Cc+Ci Lo=Lc+Li, Uo, Io, Po, Co, Lo are safety barrier parameters, and Cc, Lc are distribution parameters of the connecting cable.
Explosion proof certificate number: CLEx22.3302

Precautions for use

- ⚠ danger
The transmitter adopts diffusion silicon oil filled core, which will cause explosion accident if not used properly. To ensure safety, oxygen measurement is strictly prohibited.
- ⚠ Warning!
It is prohibited to measure the medium that is incompatible with the transmitter contact material.
- ! No modifications or changes can be made on the equipment.
! Handle with care and do not throw it at will. Please do not use power.
- 🔧 When measuring steam or other high temperature medium, be careful not to let the medium temperature exceed the upper limit of 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 when wiring, and shall comply with relevant national wiring standards (GB/T50312-2016).
- 🔧 Ensure that the power supply voltage meets the transmitter power supply requirements. Ensure that the high pressure of the pressure source is within the range of the transmitter;
- 🔧 In the process of pressure measurement, the pressure shall be slowly pressurized and released to avoid instantaneous high pressure or low pressure;
- 🔧 Please do not disassemble the product by yourself or touch the diaphragm to avoid product damage.

Installation precautions

- 🔧 Try to install it in the place where the temperature gradient changes little.
- 🔧 The range range is less than 0.03MPa, which is installed vertically (except for gas), so as not to affect the measurement accuracy. Others can be installed at any angle on the measuring point.
- 🔧 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, it can reduce the pressure impact during the initial installation and pressure measurement. After the pressure in the pipeline is stable, slowly open the stop valve to start measuring.



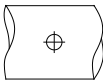
- ⚠ Warning!
The equipment must be installed without pressurization and power supply.
- 🔧 In the hydraulic system, the pressure interface of the equipment should be installed upward (for the convenience of Gaseous emissions).

- 🔧 If the pressure interface is upward or lateral when the transmitter is installed, ensure that no liquid flows outside the transmitter shell, otherwise moisture and dirt will block the atmospheric port near the electrical connection and even cause equipment failure. Ensure that the threaded connection edge of electrical connection is free of dust and dirt residue.
- 🔧 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.



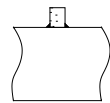
Install

Opening

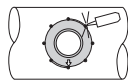


Select the opening position according to the medium, with gas at the top and liquid and steam at the side or bottom.

Base

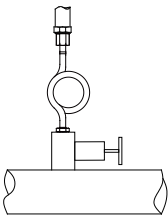


It is forbidden to weld the transmitter with the base! The base deformation caused by welding shall be avoided, and the waste slag shall be cleaned to avoid scratching the measuring diaphragm. (Accessories need to be purchased separately)



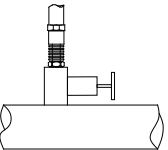
Fix the adapter with sufficient adhesion through multiple points; The fixing points are positioned relative to each other at the same distance. Weld between opposite fixing points. Ensure that there is sufficient space between the individual sections (avoid heating/bending of the adapter due to overheating during the cooling phase).

High-Temperature Gas Measurement



For high temperature steam measurement, it is recommended to install union buffer pipe (ZB02), and inject more than half of the pipe cooling water (gas-liquid temperature insulation) into the cooling pipe in advance. To ensure that the temperature of the pressure measuring point is within the controllable range. (Accessories need to be purchased separately)

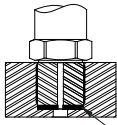
Measurement of High-Temperature Media



For high temperature medium measurement, an adapter radiator, 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)

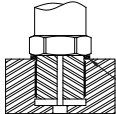
Installation steps for threaded connection of pressure interface

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



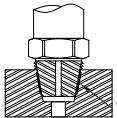
Face seal

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 from 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

Installation steps of pressure interface for chuck or KF connection

- Select appropriate sealing accessories according to the measured medium and input pressure
- Put the seal into the installation position of the corresponding connection
- Place the chuck connection or KF connection in the center with sealing device
- Then lock the hoop

Installation steps for flange connection of pressure interface

- Select appropriate sealing accessories according to the measured medium and input pressure(e.g. gasket)
- Place the seal between the equipment flange and the counter flange
- Install the equipment on the corresponding flange connection through 4-8 groups of bolts (according to the flange model)

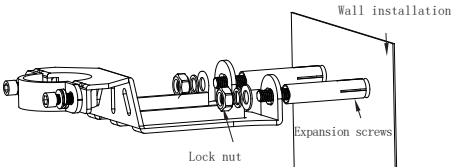
The pressure interface is the installation steps for the connection of pagoda nozzle or quick interface

- Check whether the size of air pipe and interface match
- After the air pipe is directly inserted into the interface, pull it slightly by hand to check the reliability, that is, the connection is completed

Support installation

-Wall installation

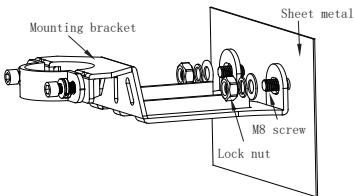
It can be directly installed on the wall. It is recommended to use M8 expansion bolts. The installation method is shown in the following figure:



- Note 1: The mounting bracket (ZJ03) shall be purchased separately.
- Note 2: The expansion bolts shall be purchased by yourself.

-Metal plate installation

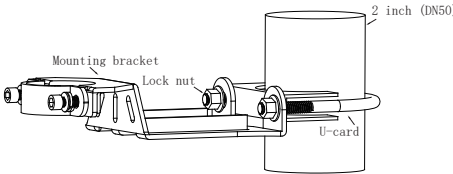
It can be directly installed on the metal plate. It is recommended to use M8 screws for installation, as shown in the following figure:



- Note 1: The mounting bracket (ZJ03) shall be purchased separately.
- Note 2: M8 screws need to be purchased by yourself.

-Pipe installation

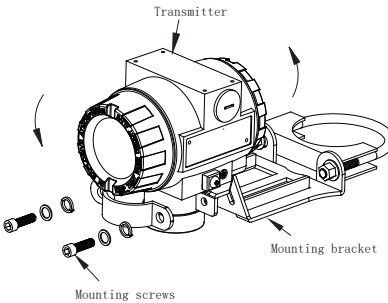
It can be directly installed on a 2-inch (DN50) metal pipe, as shown in the following figure:



- Note 1: The mounting bracket (ZJ03) and U-shaped card (ZJU01) shall be purchased separately.

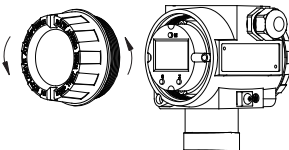
-Transmitter installation

Install the transmitter to the corresponding position and lock the mounting screws (attached to the mounting bracket). The installation direction can be adjusted by itself, as shown in the figure below:

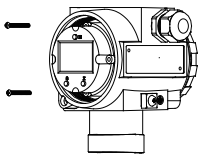


Change display direction

- ① Unscrew the front cover of the sensor

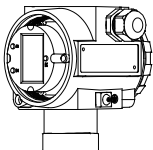


② Remove the display fixing screws

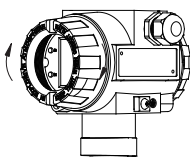


③ Adjust the display direction (up, down, left, right) according to the site needs, and lock the fixing screws

Note: HART display can only be left and right, and jumper pin needs to be adjusted

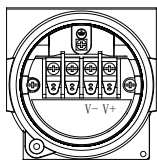


④ Replace the front cover of the sensor

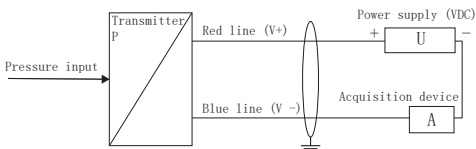


Wiring diagram

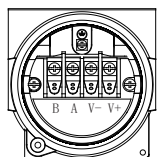
Current output wiring diagram (two-wire system)



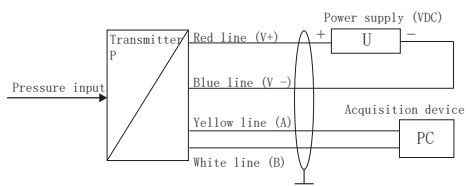
V+: power supply positive
V -: power supply negative



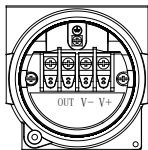
RS485 (digital signal) output wiring diagram (four wire system)



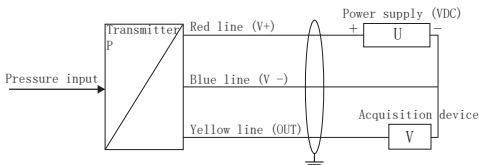
V+: power supply positive
V -: power supply negative
A : RS485A
B : RS485B



Voltage output wiring diagram (three wire system)



V+: power supply positive
V -: power supply negative
OUT: output positive



Represents shield wire, and all marked grounding points must be effectively grounded. Suggested It is best to use shielded twisted pair signal cable. In order to avoid grounding circuit, the shielding layer adopts single end grounding, insulated floating grounding at the pressure transmitter end, and grounding at the control cabinet end.

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

EMC Statement

Applicable directives: EMC Equipment Directive 2014/35/EU.

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

The user must ensure that the entire equipment complies with all standards for use.

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	Solution
• The transmitter has no output signal	• Transmitter not powered • Wiring error	• Power the transmitter correctly according to the wiring diagram
• When the pressure is constant, the output jumps irregularly	• 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	• When the transmitter is not connected to the pressure, the corresponding output value is incorrect, and the transmitter does not work in its required environment	• Observe the humidity allowed by the environment and temperature
• The transmitter output is inconsistent with the measured pressure	• Incorrect supply voltage • Excessive external load • Mechanical overload caused by overvoltage	• Compliance with power supply scope • Adjust external load

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.