



Installation instructions

single crystal silicon dual remote differential 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.

Unboxing

- 🔧 a) After unpacking, check whether the documents and attachments are complete according to the packing list. Packing documents: One copy of installation instructions. One product qualification certificate. One warranty card.
- 🔧 b) When receiving the product, please check if the packaging is intact and verify the transmitter type Does the number and specifications match the product you have selected.
- 🔧 c) Observe if there is any damage to the transmitter due to transportation, in order to ensure proper handling Be good at handling.
- d) Please keep the "warranty card" properly and do not lose it, otherwise it cannot be returned to the factory Free maintenance!

ID

Pressure transmitter

model:

Rated range:

output:

power supply:

accuracy:

accuracy:

protect:

protect:

Explosion proof parameters (only for explosion-proof types)

Firing diagram

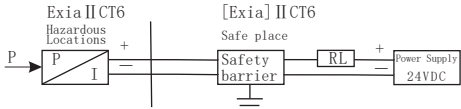
Product number

Set range

Precautions for use on explosion-proof sites

- ⚠ danger Non explosion-proof products, when used in explosion-proof areas, can cause serious personal injury and significant material damage. Please note if the model category is an explosion-proof product.
- ⚠ Warning! The transmitter shall be installed strictly in accordance with the relevant provisions of GB3836.15-2017 Electrical Equipment for Explosive Gas Atmospheres Part 15: Electrical Installation in Hazardous Areas (Except for Coal Mines).
- ⚠ danger The transmitter casing must be effectively grounded.
- ⚠ danger The product casing is made of aluminum alloy material, and it is necessary to prevent ignition hazards caused by impact or friction!
- ⚠ Warning! When the internal components of the transmitter are damaged and need to be repaired or replaced, they need to be returned to the factory for replacement or repair.
- ⚠ danger To avoid the risk of explosion, the following rules must be followed:
 - When there is a risk of explosion, it is prohibited to operate the transmitter in the powered state. Except for cases where the transmitter is connected through an intrinsic safety circuit.
 - Ensure that the entire circuit is in an equipotential protection state, regardless of whether it is in an explosion hazard area or not.
 - If there is a possibility of lightning or overvoltage damage, lightning protection measures must be taken to prevent overvoltage.

- It is necessary to avoid excessive deposition of dust on the surface of the transmitter (exceeding 5mm) or complete coverage by dust.
- It is necessary to form an intrinsic safety explosion-proof system together with associated equipment that has passed explosion-proof certification before it can be used in explosion-proof gas environments. The system wiring must comply with the user manual requirements of both the transmitter and the associated equipment, and the wiring terminals must not be connected incorrectly.
- Maintenance can only be carried out after confirming that there are no combustible gases present on the installation site.
- The connecting cable between this product and its associated equipment should be a shielded cable with insulation sheath, and its shielding layer should be grounded in a safe place.
- ⚠ danger When using explosion-proof, dust isolated, and dust intrinsic safety transmitters in hazardous areas, the casing cover of the transmitter must be tightened. To ensure safe use, safety regulations should be strictly followed, and it is absolutely not allowed to open the transmitter cover when powered on. When installing the transmitter, ensure that the cable outlet is well sealed.
- ⚠ danger Intrinsically Safe and Dust Intrinsically Safe Transmitters
 - Safety barriers must be used in hazardous areas with explosive mixtures. The safety barrier should comply with the provisions of GB3836.4-2010 Electrical Equipment for Explosive Gas Atmospheres Part 4: Intrinsic Safety Type "i", and undergo explosion-proof testing by relevant explosion-proof departments and obtain an explosion-proof certificate. Installation should be carried out according to the requirements of its user manual. The system wiring is shown in the diagram.



- Ensure that the connections between each intrinsic safety transmitter comply with intrinsic safety requirements. The operator must ensure the intrinsic safety of the entire system (installation of each intrinsic safety component).
- For safety reasons, intrinsic safety circuits and non intrinsic safety circuits should be distinguished, and the wiring of intrinsic safety circuits should be separated from the wiring of other electrical circuits. The power transformer supplying power to the safety barrier should comply with the requirements of Article 8.1 of GB3836.4-2010 standard.
- ⚠ Warning! Please follow the relevant national regulations for the parts that are not mentioned and the instructions for the use of explosion-proof transmitters are incomplete.

Explosion proof instructions

Explosion proof type

Complies with standards GB/T3836.1-2021、GB/T3836.2-2021
Explosion proof sign: Ex db IIC T6 Gb
Explosion proof certificate number: CLEx26.1083

Explosion proof dust type

Complies with standards GB/T 3836.1-2021、GB/T 3836.2-2021、GB/T 3836.31-2021
Explosion proof sign: Ex tb IIIC T80 °C Db
Explosion proof certificate number: CLEx26.1083

Intrinsic safety type

Complies with standards GB/T 3836.1-2021 and GB/T 3836.4-2021
Explosion proof sign: Ex ia IIC T6 Ga
Intrinsic safety parameters: Ui: 28V, Ii: 93mA, Ci: 10nF, Li: 0mH, Pi: 0.65W
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 and Lc are distribution parameters for connecting cables.
Explosion proof certificate number: CMExC23.4181XG

Dust intrinsic safety type

Complies with standards GB/T 3836.1-2021 and GB/T 3836.4-2021
Explosion proof mark: Ex ia III C T20080 °C Da
Intrinsic safety parameters: Ui: 28V, Ii: 93mA, Ci: 10nF, Li: 0mH, Pi: 0.65W
Associated device parameters: Uo ≤ Ui Io ≤ Ii Po ≤ Pi Co=Cc+Ci Lo=Lc+Li Uo
Io, Po, Co, and Lo are safety barrier parameters, while Cc and Lc are distribution parameters for connecting cables.
Explosion proof certificate number: CMExC23.4181XG

Precautions for use

- ⚠ danger Determine the type of filling fluid, only fluorine oil can measure oxygen. Improper use of other filling liquids can cause explosion accidents. To ensure safety, it is strictly prohibited to measure oxygen.
- ⚠ Warning! It is prohibited to measure media that are incompatible with the material in contact with the transmitter.
! Handle with care and do not throw it casually. Do not use brute force when installing this transmitter.
- 🔧 When measuring steam or other high-temperature media, be careful not to let the medium temperature exceed the upper limit of the transmitter's operating temperature. If necessary, cooling devices should be installed.
- ! This product belongs to weak current equipment and must be laid separately from strong current cables during wiring. It should comply with relevant national wiring standards (GB/T50312-2016) for wiring.
- 🔧 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;
- 🔧 During the pressure measurement process, pressure should be slowly applied and released to avoid instantaneously increasing to high pressure or decreasing to low pressure;
- 🔧 Users are advised not to disassemble the product by themselves and should not touch the membrane to avoid product damage.

Installation precautions

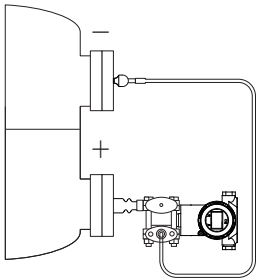
- 🔧 Try to install it in situations with small temperature gradient changes, while avoiding vibration and impact.
- 🔧 It is recommended to install a pressure shut-off valve before the pressure measurement point to facilitate the maintenance and disassembly of the transmitter. In addition, during the initial installation of pressure measurement, it can reduce pressure impact. After waiting for the pressure in the pipeline to stabilize, slowly open the shut-off valve to start measuring.
- ⚠ Warning! Equipment installation must be carried out without pressure or power supply.
- 🔧 If the transmitter is installed in a harsh environment and may encounter dangerous damage such as lightning strikes or overvoltage, we recommend that users install lightning protection and overvoltage protection between the distribution box or power supply and the transmitter.

In order to prevent liquid from flowing along the cable, causing accumulation of liquid at the waterproof joint or entering the junction box, a U-shaped ring should be configured between the junction box and the pressure transmitter as shown in the diagram, with the U-shaped bottom lower than the pressure transmitter. Sufficient length of cables should be reserved for maintenance and replacement.

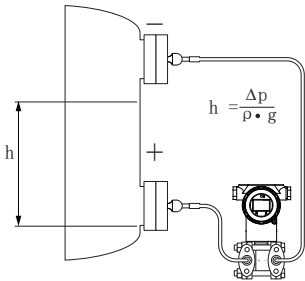


Measure

When measuring the liquid level, volume, density, and differential pressure of liquids, gases, or vapors, the high-pressure and low-pressure ends are connected simultaneously as shown in the following figure. The pressure pipe can be connected using hard metal pipes or flexible hoses.



Single capillary tube



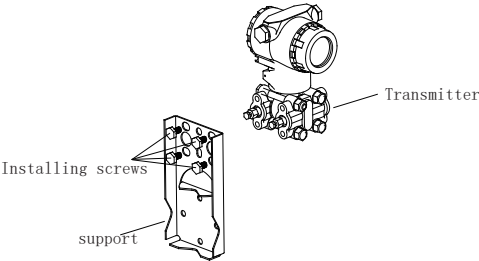
Double capillary

- A Level measurement
- Δp Differential pressure
- B Level measurement
- ρ Medium density
- h Height (liquid level)
- g Gravitational constant

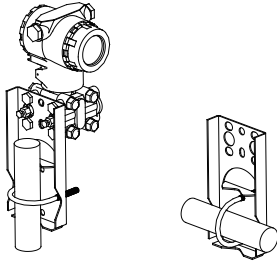
Install

Installation steps for pipe mounted flat brackets

First, connect the transmitter to the bracket and tighten the installation screws, as shown in the following figure.



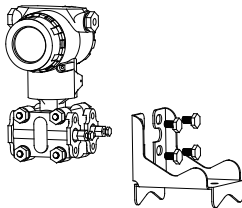
Install the bracket and tube again, and install the U-shaped locking screws, as shown in the following figure.



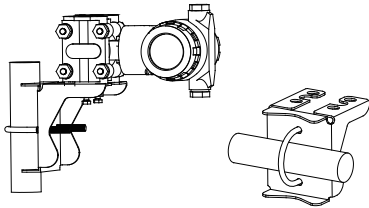
Vertical installation of pipes Horizontal installation of pipes

Pipe bending bracket pipe installation steps

First, connect the transmitter to the bracket and tighten the installation screws, as shown in the following figure.



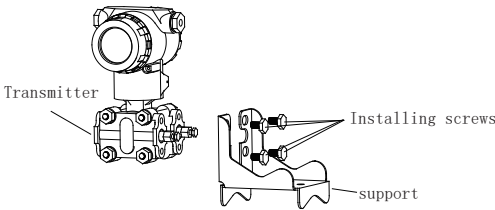
Install the bracket and tube again, and install the U-shaped locking screws, as shown in the following figure.



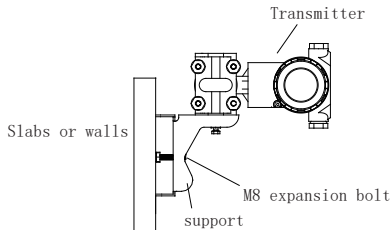
Vertical installation of pipes Horizontal installation of pipes

Installation steps for pipe bending bracket, plate installation, and wall installation

First, connect the transmitter to the bracket and tighten the installation screws, as shown in the following figure.

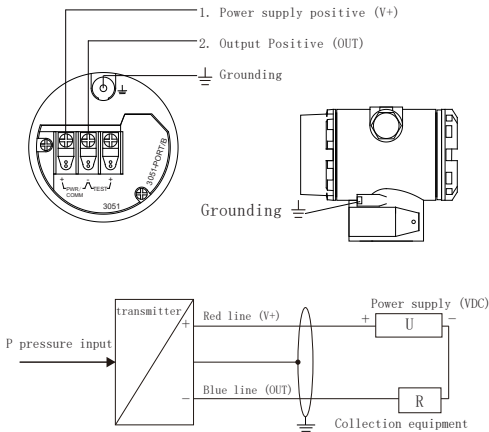


Then install the bracket onto the board or wall and connect it with an M8 expansion bolt (to be prepared) as shown in the following figure.



Wiring diagram

Current output wiring diagram (two wire system)



TEST is used to connect indicator instruments or for testing purposes. The power supply is sent to the transmitter through a signal line and does not require additional wires. Be careful not to connect the power signal line to the testing end, otherwise it may burn out the diode. If it is burnt out, in order to ensure the normal operation of the transmitter, the two test terminals can be short circuited. Due to the fact that the transmitter is grounded with a capacitor, a high-voltage megohmmeter cannot be used to check the insulation resistance. Only voltage not exceeding 100V is allowed for circuit inspection.

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 ℃.
- d) The relative humidity shall not be greater than 90% (no condensation).
- e) The environment does not contain corrosive gases.