启电 sensor QDW90A-7 Pressure Transmitter

I. Product Definition

The QDW90A-7 High-Precision Diffused Silicon Pressure Transmitter is an industrial-grade pressure measurement and transmission device developed by Anhui Qidian Automation Technology Co., Ltd. It is specifically designed for complex industrial environments. Its core functions and features are as follows:

1. Precise Pressure Measurement: Utilizing diffused silicon piezoresistive sensor technology, it enables high-precision, high-stability detection of pressure in media such as gases and liquids. The measurement range covers standard industrial pressure ranges and is suitable for the vast majority of applications involving water, oil, and mildly corrosive fluids.

2. Standard Signal Transmission Output: The detected pressure signal is linearly converted into industrial standard electrical signals (such as 4-20mA, 0-10V, etc.), enabling direct integration with industrial control devices such as PLCs, DCS systems, and digital displays to facilitate remote transmission and centralized monitoring of pressure data.

3. Wide Range of Applications: Featuring a fully stainless steel sealed structure and HARTING electrical connectors with an IP65 or higher protection rating, the device supports long-term, stable operation in harsh industrial environments and is suitable for use in water treatment, hydraulics and pneumatics, industrial automation, HVAC, and other industries.

4. High Reliability and Interference Resistance: Equipped with built-in temperature compensation circuits and electromagnetic interference (EMI) protection design, it effectively suppresses temperature drift, power fluctuations, and electromagnetic interference in industrial environments, ensuring the accuracy and stability of measurement data.

5. Easy Installation and Maintenance: Equipped with standard external threaded mounting interfaces and HARTING quick-connect electrical connectors, installation, wiring, and commissioning require no complex tools, reducing on-site operation and maintenance costs.

6. Multi-Medium Compatibility: Wetted parts are made of stainless steel, suitable for non-corrosive media such as water, oil, and air. Special wetted materials can be customized upon request to meet measurement requirements for mildly corrosive media.

II. Working Principle

The operating process of the QDW90A-7 high-precision diffused silicon pressure transmitter can be divided into the following four core stages, explained in layman's terms as follows:

1. Pressure Sensing Stage: The pressure of the measured medium (such as water pressure or oil pressure in a pipeline) acts on the stainless steel wetted diaphragm at the front end of the transmitter. The pressure is transmitted through the diaphragm to the internal diffused silicon pressure-sensitive element.

2. Signal Conversion Stage: At the core of the diffused silicon sensing element is a Wheatstone bridge. When pressure is applied, the silicon diaphragm undergoes slight deformation, causing a change in the resistance of the bridge arms. This disrupts the bridge's balance, resulting in the output of a weak voltage signal proportional to the pressure.

3. Signal Conditioning Stage: The internal signal conditioning circuit amplifies, filters, and temperature-compensates the weak voltage signal, eliminating errors caused by temperature changes and power supply fluctuations. It also corrects non-linear signals to produce a linear output, ensuring measurement accuracy.

4. Standard Transmitter Output Stage: The conditioned signal is converted into an industry-standard electrical signal (such as a 4–20 mA current signal) and transmitted via an HART electrical connector to control devices such as PLCs and DCS systems, enabling the acquisition, monitoring, and control of pressure data.

III. Core Value and Solutions to Pain Points

3.1 Overview of Core Value

The QDW90A-7 high-precision diffused silicon pressure transmitter centers its core value around three key dimensions: "Accuracy, Stability, and Peace of Mind," addressing the core pain points industrial users face in pressure measurement scenarios, as detailed below:

1. Accurate Measurement, Eliminating Data Errors: High-precision sensing technology and temperature compensation design prevent measurement deviations caused by temperature changes and environmental interference, ensuring precise control of process parameters.

2. Stable Operation, Reduced Risk of Failure: A fully stainless steel sealed structure, anti-interference circuitry, and industrial-grade protection design ensure compatibility with harsh field environments, minimizing the likelihood of equipment failure and downtime.

3. Universal Compatibility, Reducing Selection Costs: Standard signal output and universal mounting interfaces ensure compatibility with the vast majority of industrial control devices and piping systems, eliminating the need for custom accessories.

4. Convenient Operation and Maintenance, Improving On-Site Efficiency: Quick-connect fittings and maintenance-free design allow for installation, commissioning, and replacement without complex procedures, reducing on-site operational and maintenance time and labor costs.

3.2 Key Challenges and Solutions

1. Challenge: Significant temperature fluctuations in industrial environments cause severe drift in pressure measurement data, affecting process control accuracy.

Q: Due to large fluctuations in ambient temperature, many pressure transmitters experience data drift, making it impossible to precisely control process parameters. What can be done?

A: The QDW90A-7 features a built-in high-precision temperature compensation circuit that automatically corrects measurement errors caused by temperature changes across a wide temperature range. Additionally, it utilizes an imported diffused silicon sensing element with minimal temperature drift, ensuring measurement accuracy throughout the entire operating temperature range and completely resolving data drift issues caused by temperature fluctuations.

2. Pain Point: Strong electromagnetic interference at the site leads to unstable pressure signal transmission, resulting in frequent data fluctuations at the PLC end

Q: The workshop contains numerous devices such as variable frequency drives and motors, resulting in severe electromagnetic interference. The pressure signal output by the transmitter frequently fluctuates, making it impossible to collect data stably. How can this be resolved?

A: The QDW90A-7 features an electromagnetic interference (EMI) resistant design with built-in filtering circuits and a shielded structure. This effectively suppresses electromagnetic interference in industrial environments, ensuring stable signal transmission, preventing data fluctuations at the PLC end, and meeting the reliable data acquisition requirements of automation systems.

3. Pain Point: The field environment is humid and dusty; standard transmitters are prone to water ingress and damage, and frequent replacements are costly.

Q: In applications such as water treatment and outdoor piping, where conditions are humid and dusty, standard transmitters fail due to water ingress after a short time, and frequent replacements are costly. Is there a durable solution?

A: The QDW90A-7 features a fully stainless steel sealed structure paired with HARTING connectors rated IP65 or higher, effectively blocking the ingress of dust and moisture. It supports long-term, stable operation in harsh environments such as humid, dusty, and outdoor settings, significantly reducing equipment replacement frequency and maintenance costs.

4. Pain Point: Signal interfaces vary across different devices, and transmitter output signals cannot be directly adapted to PLC/DCS systems

Q: On-site PLCs and digital displays come in different models with

varying signal input requirements. Many transmitters' output signals are incompatible, requiring additional conversion modules and increasing costs. What can be done?
A: The QDW90A-7 supports multiple industrial standard signal outputs, including 4-20mA, 0-10V, and 0-5V. It can be directly connected to the vast majority of control devices such as PLCs, DCS systems, and digital displays without the need for additional signal conversion modules, thereby reducing system setup costs and wiring complexity.

5. Pain Point: Limited installation space, cumbersome on-site wiring and commissioning, and delays in construction progress
Q: Pipe installation space is cramped, and wiring and commissioning the transmitter take a lot of time, delaying construction progress. Is there a product that offers convenient installation?
A: The QDW90A-7 features a standard external threaded mounting interface that can be directly screwed into the pipe. Combined with HARTING quick-connect electrical connectors, wiring requires no tools and is plug-and-play. The installation and commissioning process takes only a few minutes, significantly improving on-site construction efficiency and shortening the project timeline.

6. Pain Point: The medium is mildly corrosive, and the wetted parts of standard transmitters are prone to corrosion, leading to leaks or measurement failures
Q: The medium on-site is mildly corrosive. Over time, the wetted parts of standard transmitters corrode, causing leaks or inaccurate measurements. How can this be resolved?
A: The QDW90A-7 features wetted parts made of 304/316L stainless steel, suitable for the vast majority of mildly corrosive fluid media. It also supports customization of special wetted materials, providing corrosion-resistant solutions tailored to the characteristics of the user's media to prevent equipment failures and safety hazards caused by media corrosion.

IV. Key Product Parameters & Specifications

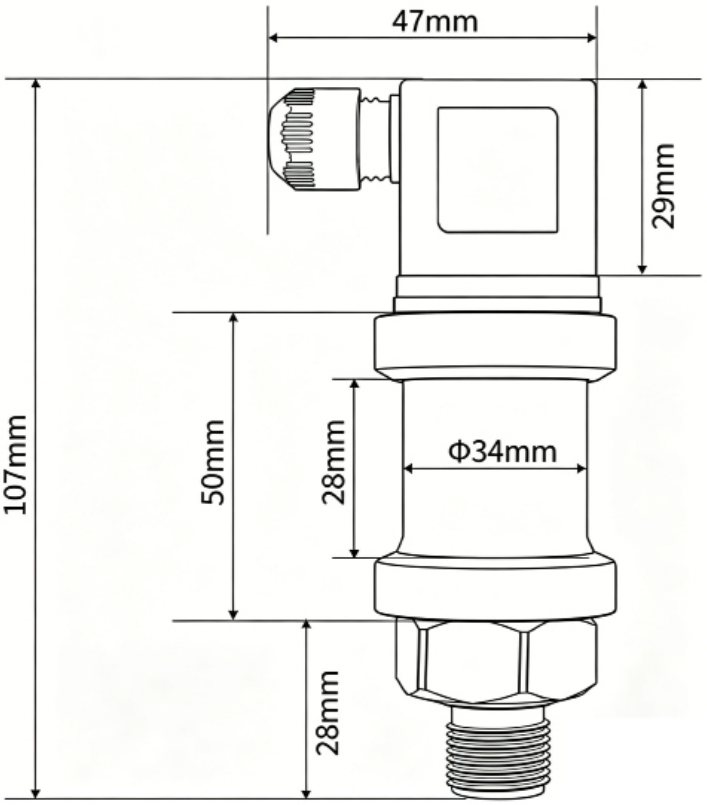
4.1 Basic Electrical Parameters
Measured Medium:Liquids, gases, and steam compatible with 304/316L stainless steel (non-corrosive)
Pressure Type:Gauge pressure, absolute pressure, vacuum (Vacuum)
Measurement Range:Gauge Pressure: 0–0.01 MPa to 0–250 MPa; Absolute Pressure: 0–0.1 MPa to 0–250 MPa; Vacuum: 0–−0.1 MPa
Accuracy Class:0.1% FS (High-Precision Model), 0.25% FS, 0.5% FS (Optional)
Long-term stability:≤±0.1% FS/year
Zero temperature coefficient: ±0.01% FS/°C
Full-scale temperature coefficient: ±0.02% FS/°C
Output Signal:Standard: 4–20 mA DC (2-wire); Optional: 0–10 V, 0–5 V, 1–5 V DC (3-wire)
Load Resistance:4–20 mA: ≤600 Ω (24 VDC power supply); Voltage Output: ≥10 kΩ
Response Time:≤5 ms (up to 90% FS)
Zero / Span Adjustment:Zero: ±8% FS; Span: ±20% FS

4.2, Isolation Performance Parameters
Isolation Diaphragm Material:316L stainless steel (standard); optional: Hastelloy, tantalum, titanium, Monel, etc.
Isolation Structure:Fully sealed oil-filled chamber (silicone oil-filled); isolation medium and sensing chip
Insulation Resistance: ≥100 MΩ (at 500 V DC, between housing and circuitry)
Isolation Withstand Voltage:AC 1500 V/1 min (no breakdown, no flashover)
Overload Capacity:1.5 times full-scale pressure or 110 MPa (whichever is lower)
Shock Resistance:100 g, 11 ms (mechanical shock)
Vibration Resistance:10g, 20Hz–2000Hz (any axis)

4.3 Power Supply & Power Consumption Parameters
Supply Voltage: Standard: 24V DC (±10%); Universal Range: 9–36V DC (2-wire/3-wire compatible)
Full-Load Power Consumption: ≤1.2W (24V DC supply, 4-20mA output)
Power Distribution Output:None (loop-powered, no additional power distribution required)
Reverse Polarity Protection:Supports positive and negative reverse polarity protection to prevent damage from reversed power connections
Overvoltage Protection:Built-in overvoltage suppression circuit, withstands 36V DC transient overvoltage

4.4 Environmental Adaptation Parameters
Operating Temperature:-20°C to +70°C (standard); optional low-temperature version: -40°C to +70°C; high-temperature version: -20°C to +125°C
Compensation Temperature:-10°C to +50°C (precision temperature compensation range)
Media Temperature:-30°C to +85°C (standard), customizable up to 150°C
Storage Temperature: -40°C to +85°C
Relative Humidity:0–95% RH (non-condensing, at 40°C)
Protection Rating:IP65 (Hirschmann connector), optional IP67/IP68 (custom waterproof sealing)
Explosion-Proof Rating:Intrinsically Safe: Ex ia II CT4-6; Flameproof: Ex d II BT4 (optional)
Compatible Safety Barriers:Intrinsically safe models are compatible with safety barriers for associated equipment such as LB802 and MTL5042

4.5, Physical Parameters
Mounting Method:Standard external thread direct mounting (pipe/equipment interface); optional flange, clamp, sanitary quick-connect, etc.
Pressure Connections:Standard: G1/2″ male thread; Optional: M20×1.5, G1/4″, NPT 1/4″/1/2″
Dimensions:Total length approx. 107 mm, housing diameter 34 mm, threaded connection length 28 mm, electrical connector width 29 mm, height 47 mm



Weight:Approx. 0.8 kg (excluding cable)
Housing Material:304 stainless steel (standard), optional 316L stainless steel (highly corrosive environments)
Wetted Parts Material:316L stainless steel (diaphragm + ports), O-ring: Fluorocarbon rubber (FKM, standard), optional nitrile rubber or silicone rubber
Electrical Connector:Hirschmann quick-connect, IP65 protection, 4-pin terminal block (Power +, Signal -, Ground, Neutral)
Cable Specifications: Compatible with φ6–φ8 mm shielded cables; crimp-sealed connector design for pull-out protection and water resistance

V. Application-Specific Selection Guide

5.1 Key Selection Criteria

1. Signal Type: Prioritize matching the signal input specifications of downstream control devices. When interfacing with PLC/DCS systems, prioritize 4–20 mA two-wire signals (industry standard with strong noise immunity) ; when interfacing with digital displays or analog acquisition modules, select a 0-10V, 0-5V, or 1-5V three-wire signal based on the module's input requirements; if long-distance transmission (over 100 meters) is required, a 4-20mA current signal must be selected to avoid data errors caused by voltage signal attenuation.

2. Power Supply Method: In standard industrial applications, prioritize models powered by a standard 24V DC loop, which is compatible with the vast majority of on-site power sources; if on-site voltage fluctuates significantly (9–36V DC wide-voltage conditions), select a wide-voltage version to prevent equipment reboots or damage caused by voltage fluctuations; for intrinsically safe explosion-proof applications, select a dedicated intrinsically safe power supply circuit and use it in conjunction with a safety barrier.

3. Explosion-proof requirements: For general non-explosive environments (no flammable or explosive media, no risk of dust explosions), standard models may be selected; In hazardous areas such as chemical plants, oil and gas facilities, and coal mines, intrinsically safe or flameproof explosion-proof models must be selected, along with safety barriers of the corresponding rating; the explosion-proof rating must strictly match the on-site hazardous area classification (e.g., Zone 0 / Zone 1 / Zone 2). Intrinsically safe models are suitable for Zone 0 and Zone 1, while flameproof models are suitable for Zone 1 and Zone 2.

4. Installation Environment: For dry, ambient-temperature, dust-free indoor environments, standard IP65-rated models may be selected; for humid, dusty, or outdoor open-air environments, upgrade to IP67/IP68 high-protection-rated versions to prevent moisture and dust ingress; in environments with strong electromagnetic interference (e.g., workshops with a high density of variable frequency drives and motors), select reinforced anti-EMI versions and install shielding and grounding.

5. Medium Characteristics: For non-corrosive media such as water, oil, and air, 316L stainless steel wetted parts are sufficient; for weakly corrosive media (e.g., weak acid or weak alkali solutions), upgrade to a 316L stainless steel + fluororubber seal configuration; for highly corrosive media (e.g., strong acids or strong alkalis), custom wetted parts made of special materials such as Hastelloy or tantalum are required.

6. Measurement Range and Accuracy: Allow a safety margin of 1.5–2 times the measurement range to prevent equipment fatigue caused by long-term full-scale operation; for standard monitoring applications, 0.5% FS accuracy is sufficient; for high-precision process control applications (e.g., pharmaceuticals, semiconductors), the 0.1% FS high-precision version is mandatory; if negative pressure measurement is required, select a model with absolute pressure or negative pressure measurement capabilities.

7. Installation Interface: For standard piping applications, prioritize the G1/2″ male thread standard interface; for installations in confined spaces, select the G1/4″ small interface; for sanitary applications (food, pharmaceutical), custom clamp or quick-connect sanitary interfaces are required; for large-diameter piping or tank applications, flanged installation interfaces are recommended.

5.2. Industry-Specific Selection Recommendations

1. Chemical Industry Applications: For pressure monitoring requirements in chemical pipelines, reactors, and storage tanks, the QDW90A-7 intrinsically safe explosion-proof model is highly recommended. It features 316L stainless steel wetted parts and fluororubber seals, with a 4-20mA two-wire signal output. When used with a safety barrier, it is suitable for weakly corrosive media and flammable/explosive hazardous areas, while also supporting a wide operating temperature range to meet the stable measurement demands of chemical processes.

2. Power Generation Industry Scenarios: For pressure monitoring of boilers, steam turbines, and water supply pipelines in thermal power plants, we recommend the QDW90A-7 model with wide-range power supply and enhanced electromagnetic interference (EMI) resistance. It features a standard G1/2″ male threaded connection and 4-20mA signal output, making it suitable for power plant environments with strong electromagnetic interference and wide voltage fluctuations. It also supports an IP65 protection rating to withstand humid and dusty on-site conditions.

3. Metallurgy Industry Applications: For monitoring hydraulic systems, cooling water pipelines, and blast furnace air supply pressure during metallurgical processes, we recommend the QDW90A-7 high-temperature-resistant + vibration-resistant reinforced model. This model offers a customizable version with a medium temperature resistance of up to 150°C, 4-20mA signal output, and 316L stainless steel wetted parts. It is designed to withstand the harsh conditions of metallurgical sites—including high temperatures, intense vibrations, and high dust levels—ensuring long-term stable operation.

4. Pharmaceutical Industry Applications: For sanitary-grade pressure monitoring in pharmaceutical process piping, purified water systems, and reaction vessels, we recommend the QDW90A-7 sanitary-grade custom model. This model features upgraded 316L stainless steel sanitary-grade wetted parts, optional clamp or quick-connect sanitary-grade interfaces, an IP67 protection rating, and 4-20mA signal output. Its dead-space-free wetted design meets the pharmaceutical industry's requirements for sanitary cleaning and zero cross-contamination.

5. Smart Manufacturing Scenarios: For pressure monitoring in automated production lines, hydraulic and pneumatic systems, and smart warehousing, we recommend the QDW90A-7 general-purpose standard model. It features a 4-20mA two-wire signal, standard 24V DC power supply, and a G1/2″ male threaded connection, allowing direct integration with PLC/DCS systems. It also supports zero-point and span fine-tuning to meet the precise control requirements of automated production lines.

6. Water Treatment Industry Applications: For pressure monitoring in water supply and drainage pipelines and wastewater treatment plants, we recommend the QDW90A-7 high-protection-rating model. This IP67/IP68-rated version features 316L stainless steel wetted parts and 4–20 mA signal output, making it suitable for humid, dusty outdoor or semi-outdoor installation environments. It also supports long-term submersion (IP68 version).

7. HVAC Industry Applications: For pressure monitoring in central air conditioning systems, heating pipelines, and refrigeration systems, we recommend the QDW90A-7 economy model. It offers 0.5% FS accuracy, optional 0-10V/4-20mA signal output, a standard G1/2″ male threaded connection, and 24V DC power supply. This model meets the standard monitoring requirements of the HVAC industry while balancing cost and stability.

5.3 Common Selection Pitfalls

Pitfall 1: Ignoring isolation rating, leading to equipment corrosion and damage

Many users focus solely on measurement range and accuracy during selection, neglecting the impact of medium corrosiveness on the isolation diaphragm. Using standard 316L stainless steel models to measure weakly corrosive media results in diaphragm corrosion, leaks, and measurement failure within a short period, potentially causing safety hazards.

Misconception 2: Selecting the wrong signal range, leading to data distortion or equipment overload

Some users fail to allow for a safety margin, choosing a range that exactly matches the actual operating pressure. Long-term full-scale operation causes equipment fatigue and increased drift; alternatively, selecting a range that is too large results in insufficient measurement accuracy at low pressures, failing to meet process control requirements.

Misconception 3: Neglecting load matching, resulting in unstable signal transmission

When using 4–20 mA signal output, failure to account for the input impedance of the PLC/DCS system and the transmitter's maximum load capacity can cause the total loop resistance to exceed the transmitter's load limit, resulting in nonlinear signal distortion or transmission failure. Additionally, neglecting signal attenuation during long-distance voltage

transmission leads to excessive data deviation at the receiving end.

Misconception 4: Selecting general-purpose models for explosion-proof environments, creating safety risks
Using general-purpose, non-explosion-proof models in hazardous areas such as chemical and oil & gas facilities, or selecting an explosion-proof rating that does not match the site's hazardous zone classification, fails to meet explosion-proof safety requirements. This poses a risk of safety incidents caused by equipment explosions or media leaks.

Misconception 5: Neglecting the installation environment's protection rating, leading to water ingress and equipment damage
Using models with an IP65 protection rating in humid, outdoor, or dusty environments allows moisture and dust to penetrate the equipment over time, causing circuit short-circuits and equipment failure. Frequent replacements increase operational and maintenance costs.

Misconception 6: Failure to account for temperature drift, resulting in measurement errors under wide-temperature conditions
In wide-temperature environments, failure to select models with temperature compensation or to consider zero-point/full-scale temperature coefficients can cause significant measurement drift as temperatures fluctuate, compromising the precise control of process parameters.

5.4 Customization Recommendations
1. Custom Signal Solutions: To meet specific control system requirements, non-standard signal outputs can be customized, such as RS485 digital signals (Modbus protocol), HART protocol signals, and frequency signals. Support for combined signal outputs is available, such as simultaneous 4–20 mA current and RS485 digital signals, to meet dual-system monitoring needs.

2. Custom Solutions for Non-Standard Operating Conditions: For special media conditions, we can customize specific wetted materials (Hastelloy, tantalum, titanium), versions suitable for high-temperature/low-temperature media (media temperature range up to 150°C and down to -40°C), and high-pressure/ultra-high-pressure measurement ranges (supporting up to 250 MPa). For limited installation spaces, we offer custom non-standard mounting interfaces (such as NPT threads, flanges, and sanitary quick-connect fittings), as well as extended-stem and angled-stem mounting options.

3. Multi-channel integrated customization solutions: To meet the needs of centralized monitoring across multiple measurement points, we offer customizable multi-channel pressure transmitter integration modules. These modules support simultaneous acquisition of pressure signals from multiple measurement points, which are uniformly transmitted to the control platform via RS485/Modbus protocol; they also support multi-range combination customization, allowing a single module to accommodate pressure measurement points with different ranges, thereby reducing the number of devices and installation costs.

4. Special Protection Customization Solutions: For highly corrosive, high-vibration, or high-impact operating conditions, we offer customizable options including anti-corrosion coatings, vibration-resistant reinforced structures, and fully sealed IP68 waterproof versions. For the food and pharmaceutical industries, we provide 3A-certified sanitary-grade wetted materials and dead-space-free designs, supporting in-place cleaning (CIP/SIP).

5. Explosion-Proof Customization Solutions: For high-level explosion-proof environments, we offer customizable versions with various explosion-proof ratings—including intrinsically safe, flameproof, and increased safety types—to suit Zone 0, Zone 1, and Zone 2 hazardous areas. We also provide corresponding safety barriers and explosion-proof certification documents to meet on-site safety acceptance requirements.

6. Low-Power Customization: For battery-powered wireless monitoring applications, low-power versions are available with static power consumption ≤0.5W. These are compatible with solar- or battery-powered wireless pressure monitoring terminals, extending device battery life.

VI. Installation and Commissioning Specifications
6.1 Pre-installation Preparation
1. Verification of Accessories
Upon receipt of the equipment, first verify that the following accessories are complete and in good condition:
Main unit: 1 (including HART electrical connector)
Matching installation seal: 1 (fluorocarbon rubber, standard configuration)
Certificate of Conformity and Factory Calibration Report: 1 copy
Optional Accessories: Custom installation connectors, safety barriers, dedicated cables (as per order specifications)
Key Inspection Points:
Check the equipment housing and threaded connections for dents or deformation; ensure the liquid-contacting diaphragm is free of scratches or dents.
Verify that the model, range, accuracy class, and output signal match the order specifications.
For explosion-proof models, confirm that explosion-proof markings and certification documents are complete, with no alterations or damage.

2. Environmental Inspection
Confirm that the medium temperature and ambient temperature at the installation site are within the device's permissible range (Standard model: -20°C to +70°C; Medium: -30°C to +85°C)
Check the on-site humidity and dust levels; avoid prolonged exposure of IP65 models to continuous water spray or immersion.
Confirm that the installation location is free of strong electromagnetic interference sources (e.g., high-power variable frequency drives, high-frequency motors); plan shielding and grounding paths in advance if necessary.
For explosion-proof applications, verify that the on-site hazardous area classification matches the device's explosion-proof rating and complies with explosion-proof installation standards.

3. Tool List
Prepare the following basic tools to ensure a smooth installation:
Adjustable wrench / pipe wrench (compatible with G1/2″ threaded connections)
Multimeter (for testing voltage and current signals)
Wire strippers, crimping pliers (for handling shielded cables)
Insulation tape, cable ties (for cable management)
Spirit level (optional, for calibrating vertical installation)
Explosion-proof tools for hazardous environments (spark-proof tool set)

4. Safety Precautions
Before installation, the pressure in the pipeline/equipment must be shut off to ensure that the installation interface is free of media and residual pressure, thereby preventing injury from high-pressure media ejection.
Installation in explosion-proof environments must be performed with the power disconnected. It is strictly prohibited to plug or unplug electrical connectors while the system is energized. The accompanying safety barrier must be grounded in accordance with explosion-proof regulations.
Do not touch the liquid-contacting diaphragm directly with your hands. Do not scrape or strike it with hard objects to prevent deformation that could affect measurement accuracy.
Cable routing must avoid high-temperature and highly corrosive areas; avoid routing in the same conduit as power cables to minimize electromagnetic interference.
When installing at heights, wear safety equipment and implement fall protection measures.

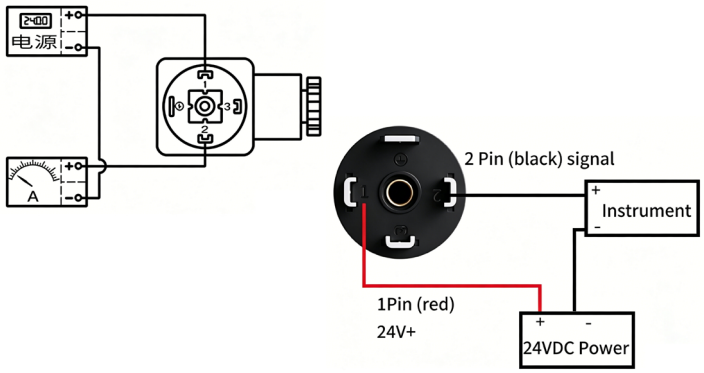
6.2 Standard Installation Steps
1. Mounting and Securing the Device
Align the device's threaded connection with the pipe or equipment connection using a wrench. Wrap an appropriate amount of PTFE tape around the threads (taking care to avoid the end of the threads to prevent the tape from entering the liquid-contacting chamber). After hand-tightening, use a wrench to secure the connection, applying a torque of 25–35 N·m. Avoid over-tightening, which could damage the threads or the diaphragm.
Installation Orientation: Vertical upward installation is recommended to facilitate gas venting and prevent impurities in the medium from settling on the diaphragm. If installing horizontally, ensure the diaphragm is not subjected to additional stress and that the installation position is below the liquid level of the medium to prevent air pockets from remaining.

After installation, gently shake the device to confirm there is no looseness and that the connections are leak-free (a low-pressure leak test may be performed first).

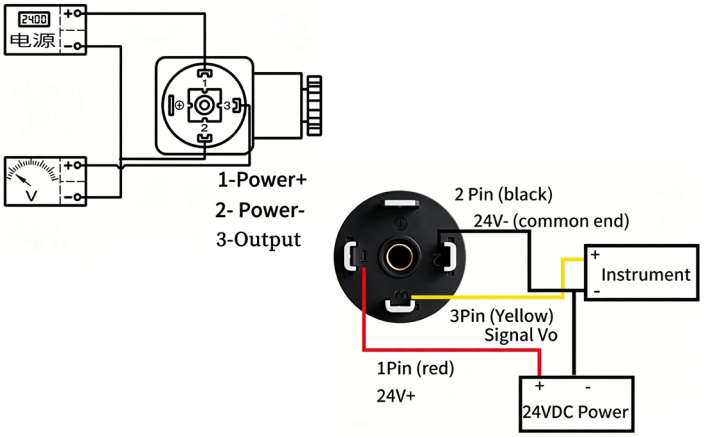
2. Wiring Specifications (Terminal Identification)
The HARTIE connector features a built-in 4-pin terminal block, defined as follows:
Terminal 1: Power Positive (DC+, connect to power positive when using 24V)
Terminal 2: Signal Negative / Power Negative (DC-, serves as the signal output in a two-wire system and as the power negative in a three-wire system)
Terminal 3: Ground (PE, dedicated ground for shielded cables)
Terminal 4: Reserved (undefined; do not connect)
General Wiring Requirements:
Keep the stripped length between 5–7 mm to ensure the wire core is fully inserted into the terminal with no exposed copper strands, preventing short circuits.
Shielding Handling: Ground the shield only at the control cabinet or PLC end; leave the shield floating at the transmitter end to avoid ground loops that could interfere with the signal.
Cable Securing: Thread the cable through the compression nut of the HARTING connector, tighten the nut to secure the cable, and ensure the connector is sealed to prevent moisture and dust ingress
Explosion-Proof Applications: Use explosion-proof sealed connectors; ensure the cable outer diameter matches the connector seal to guarantee explosion-proof clearances comply with specifications

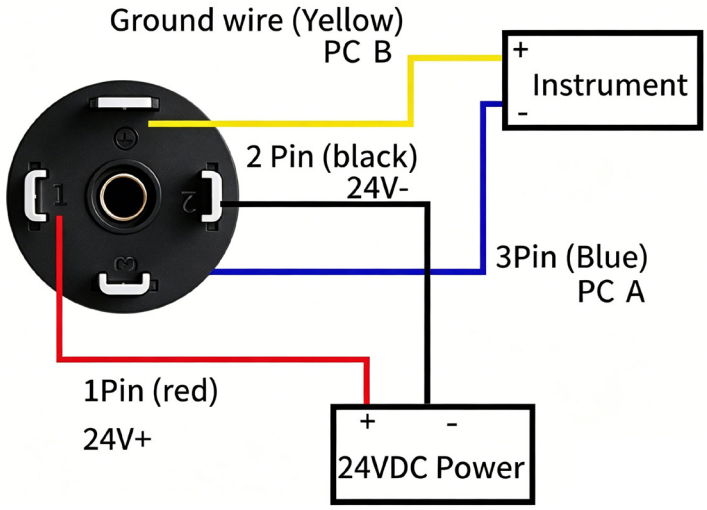
3. Grounding Requirements
Equipment Enclosure Grounding: Mount the equipment on a metal pipe or structure, ensuring the mounting location has a good ground connection with a grounding resistance ≤4Ω.
Signal Grounding: Connect the shielded cable to the grounding busbar only at the PLC or control cabinet end; do not ground the transmitter end to prevent loop interference caused by multiple grounding points.
Grounding in Explosion-Proof Environments: A separate explosion-proof grounding busbar must be installed with a grounding resistance ≤ 1 Ω. Use yellow-green dual-color grounding cables with a cross-sectional area of at least 2.5 mm².

6.3 Wiring Diagrams and Correct/Incorrect Comparisons
1. Standard 2-Wire 4-20 mA Wiring (General-Purpose)



2. Three-wire voltage signal wiring (0–10 V/0–5 V)





3. Wiring Specifications for Explosion-Proof Models (Intrinsically Safe)
Transmitter-side wiring: Terminals 1, 2, 3, and 4 are wired according to the non-explosion-proof model; intrinsically safe shielded cable must be used.
Safety barrier-side wiring: Transmitter-side terminals 1 and 2 are connected to the intrinsically safe outputs of the safety barrier, respectively; the non-intrinsically safe side of the safety barrier is connected to the PLC or power supply.
Grounding: Connect both the safety barrier's grounding terminal and the equipment housing's grounding terminal to the explosion-proof grounding busbar to ensure reliable grounding.
Never run cables from intrinsically safe circuits and non-intrinsically safe circuits in the same cable tray; they must be isolated by running them through separate conduits.

4. Comparison of Common Correct and Incorrect Wiring Practices
☒ Correct: Shielded cable is grounded at only one end; no exposed conductors; connectors are sealed and crimped tightly
☒ Incorrect: Shielding grounded at both ends, causing ground loop interference
☒ Incorrect: Excessively long exposed conductor in contact with the metal housing, causing a short circuit
☒ Incorrect: Terminals reversed; power supply polarity reversed (some models have reverse connection protection, but long-term reverse connection should still be avoided)
☒ Incorrect: Non-explosion-proof sealing connectors used in explosion-proof environments; cables not secured

6.4 Power-On Commissioning Procedure
1. No-Load Test (No Medium Pressure)
After confirming correct wiring, slowly apply power (24V DC). If the device has no indicator light (some models lack an indicator light), use a multimeter to measure the voltage between Terminal 1 and Terminal 2 to verify normal power supply (24V ±10%).
Measure the no-load signal: When the device is not under pressure, the output signal should be the zero-point value (4 mA for 4–20 mA signals, 0 V for 0–10 V signals), with a deviation not exceeding ±0.1% FS. If the deviation is too large, calibrate using the device's zero-point fine-tuning potentiometer.

2. Signal Calibration (With Medium Pressure)
Slowly open the pipeline valve to introduce medium pressure, gradually increasing it to 50% and 100% of the rated working pressure, and record the output signal at different pressure points.
Compare the standard pressure values with the transmitter's output signal; the deviation should be within the device's accuracy class (e.g., for a 0.1% FS model, the deviation ≤ 0.1% FS).
If the deviation exceeds the range, calibrate using the zero/span adjustment potentiometers: first calibrate the zero point (no pressure), then calibrate the full scale (rated pressure), and repeat the adjustment until the deviation meets the requirements.

3. Accuracy Calibration Method
Calibration Tools: Standard pressure calibrator (accuracy class 2 levels higher than the transmitter), multimeter

Calibration Steps:
Connect the calibrator to the transmitter and apply five pressure points: 0% FS, 25% FS, 50% FS, 75% FS, and 100% FS.
Record the output signal at each pressure point and plot a pressure-signal curve.
If the linear deviation exceeds the specified range, first adjust the zero potentiometer to correct the zero-point deviation, then adjust the span potentiometer to correct the full-scale deviation, ensuring that the full-scale linearity meets the requirements.
After calibration, record the calibration data, file it in the equipment records, and perform periodic re-calibration (recommended every 12 months)

4. Power-On Inspection
Models without indicator lights: Use a multimeter to measure the output signal. Under no-load conditions, the 4–20 mA signal should be approximately 4 mA, and the voltage signal should be approximately 0 V; under load, the signal should vary linearly with pressure, with no jumps or dead zones
Troubleshooting Signal Jumps: If signal jumps occur, check whether the shielding wire is properly grounded, whether the cable is subject to interference, and whether the power supply is stable. Install a signal isolator if necessary.

6.5 Installation Contraindications and Protective Measures
1. Overvoltage Power Supply / Overvoltage Operation Strictly Prohibited
The supply voltage must not exceed 36 V DC; otherwise, the internal circuitry will be damaged. Prolonged overvoltage supply will cause component aging and shorten the device's service life
The medium pressure must not exceed 1.5 times the device's rated range to prevent diaphragm deformation or rupture, which could cause medium leakage
During pipeline purging or pressure testing, the device must be removed or a bypass protection installed to prevent instantaneous high-pressure surges from damaging the diaphragm

2. Preventing Electrical Interference and Signal Distortion
Transmitter cables must not be routed in the same conduit as power cables or variable frequency drive output cables; maintain a minimum distance of 30 cm, and use metal conduit shielding if necessary.
When cable length exceeds 100 meters, use a 4–20 mA current signal and ensure the total loop resistance does not exceed the transmitter's maximum load (≤600 Ω @ 24 V DC).
In environments with strong electromagnetic interference, install a signal isolator between the transmitter and the PLC to block interference signals

3. Protection Measures for Humid/Harsh Environments
Standard IP65 models must not be submerged in water for extended periods. During installation, ensure the connector faces downward to prevent rainwater or condensation from entering the connector
For outdoor installation, install a rain cover to prevent direct sunlight and rain exposure, and ensure the cables are properly waterproofed.
In humid or dusty environments, regularly inspect the connector seals for aging or loosening, and replace them as necessary.
In environments with corrosive media, regularly inspect the liquid-contacting diaphragm for corrosion. Replace the device immediately if leakage or increased measurement deviation is detected.

4. Other Installation Prohibitions
Welding or cutting on the equipment is strictly prohibited to prevent high temperatures from damaging internal circuits and diaphragms.
Striking or impacting the equipment is strictly prohibited, especially in the area of the liquid-contacting diaphragm, as even slight deformation can affect measurement accuracy.
After installation, do not disassemble the equipment arbitrarily, especially the internal oil-filled chamber, as disassembly will damage the sealing structure and cause the equipment to fail.
In explosion-proof environments, do not arbitrarily modify the equipment structure or replace non-explosion-proof components, as this will result in the loss of explosion-proof certification.

VII. Recommendations for Daily Use & Operation and Maintenance
7.1 Key Points for Daily Inspections
1. Inspection of Equipment Appearance and Installation Status
Inspect the equipment housing and threaded connections daily for signs of impact damage, corrosion, or leakage, and confirm that the installation points are secure and free of media leakage.
Check that the HART electrical connector is properly sealed, the clamping nut is tight, and there is no water accumulation or condensation inside the connector to prevent moisture ingress that could cause circuit failure.
Inspect the process diaphragm (threaded connection end face) for scratches, deformation, media crystallization, or contaminant buildup. Diaphragm deformation will directly affect measurement accuracy.

2. Signal Stability Monitoring
Monitor the output signal in real time via a PLC/DCS or digital display to verify that the pressure data is stable, with no sudden jumps or step-like fluctuations. Data changes should be synchronized and linear with changes in the medium pressure.
Compare the actual on-site pressure with the transmitter's output signal. If a persistent deviation (exceeding the accuracy grade range) occurs, promptly investigate the cause of the fault.
Record signal values under no-load and full-load conditions. Under no-load conditions, the 4–20 mA signal should stabilize at 4 mA ±0.1 mA, and the voltage signal should stabilize at the corresponding zero-point value ±0.1% FS, with no drift.

3. Temperature, Humidity, and Environmental Monitoring
Check the ambient temperature at the equipment installation location to ensure it remains within the device's permissible operating temperature range (standard model: -20°C to +70°C). Avoid direct sunlight and proximity to high-temperature heat sources.
In humid or outdoor environments, check for standing water or condensation around the equipment. Verify that the protection rating is suitable for the environment and that there are no signs of water ingress at the connectors.
In environments with strong electromagnetic interference, periodically verify that the device is properly grounded and that shielded cables are intact, with no damage or breaks.

4. Early Warning for Abnormal Operating Conditions
If any of the following phenomena occur—such as no signal output, data fluctuations, continuously increasing deviations, or overheating of connectors—immediately shut down the equipment for troubleshooting to prevent the fault from escalating and affecting system operation.
In explosion-proof environments, additionally inspect whether explosion-proof sealed connectors are intact, cables are undamaged, and there are no non-compliant wiring connections to ensure effective explosion-proof performance.

7.2. Regular Maintenance Plan
1. Equipment Cleaning Schedule and Methods
Routine Cleaning (Weekly / Monthly): Wipe the equipment housing with a dry, soft cloth to remove surface dust and oil residue, and prevent the accumulation of corrosive media; do not rinse the equipment directly with water to prevent moisture from entering the connectors.
Deep Cleaning (Quarterly / Semi-annually): For parts in contact with the fluid, while the system is shut down and depressurized, wipe threaded connections and diaphragms with a neutral, non-corrosive cleaner to remove media crystallization and impurities. Do not scrape the diaphragm surface with hard objects.
Precautions: Under no circumstances should the equipment's sealing structure be disassembled during cleaning. Maintenance of explosion-proof models must be performed by personnel with explosion-proof operation qualifications to avoid compromising explosion-proof performance.

2. Wiring and Grounding Fastening Inspection
Monthly Inspection: Check whether the terminal blocks inside the HARTING connectors are loose and ensure the wire cores show no signs of oxidation or discoloration. Retighten the clamping nuts to ensure the cables are properly sealed.
Quarterly Inspection: Verify that the equipment grounding and shield grounding are secure; ensure grounding terminals are free of looseness or corrosion, and that grounding resistance is ≤4Ω. In explosion-proof

environments, grounding resistance must be ≤1Ω; retest using specialized tools.
Annual Inspection: Replace aged seals (e.g., connector O-rings) to prevent moisture and dust ingress caused by seal failure.

3. Recommendations for Accuracy Retesting and Calibration
Normal operating conditions (every 12 months): Use a standard pressure calibrator (with an accuracy class two levels higher than the transmitter) to retest accuracy across the full range. Calibrate at five pressure points: 0%, 25%, 50%, 75%, and 100% FS, and record the deviation data.
Harsh operating conditions (every 6 months): In environments with high temperatures, severe corrosion, or intense vibration, shorten the retest cycle to 6 months to promptly detect issues such as diaphragm corrosion or circuit drift.
Calibration Method: If the deviation exceeds the accuracy class range, calibrate using the zero/span fine-tuning potentiometers. First, calibrate the zero point (under no-pressure conditions), then calibrate the full scale (under rated pressure conditions). Repeat adjustments until the deviation meets requirements, and retain the calibration report after calibration.
Precautions: Calibration must be performed within the equipment's rated operating temperature range to avoid temperature-induced effects on calibration accuracy; After calibration, do not adjust the potentiometers arbitrarily to prevent human-induced errors.

4. Component Wear Inspection and Replacement
Regularly inspect the aging condition of O-rings and joint seals. If hardening, cracking, or deformation occurs, promptly replace them with parts of the same specification to ensure the protection rating remains compliant.
If the wetted diaphragm shows signs of corrosion, scratches, or dents, replace the device immediately to prevent media leakage or measurement failure.
If cables show signs of damage or aging, replace them with shielded cables and re-establish proper shield grounding.

7.3 Long-Term Maintenance Tips
1. Optimizing Dust and Moisture Protection
When installing standard IP65 models, ensure the HARTING connector faces downward to prevent rainwater or condensation from entering the connector; for outdoor installations, install a rain cover to protect against direct sunlight and rain.
In humid or dusty environments, periodically inspect the connector seals and apply a small amount of silicone grease to enhance sealing performance. For equipment that will be out of service for an extended period, seal threaded ports and electrical connectors with dust plugs and store the unit in a dry, well-ventilated environment.
If condensation forms inside the equipment, shut down the system and allow it to dry; if necessary, replace it with a model featuring a higher protection rating (IP67/IP68).

2. Optimization of Anti-Interference Performance
Transmitter cables must be routed separately from power cables and variable frequency drive (VFD) cables, maintaining a distance of at least 30 cm, or routed through metal shielded conduits to reduce electromagnetic interference.
Ground the shielded cable at only the control cabinet/PLC end; leave the shield floating at the transmitter end to prevent ground loop interference signals. Regularly check ground resistance to ensure a reliable ground connection.
In high-interference environments, install a signal isolator between the transmitter and the PLC to block the transmission of interference signals and ensure data stability.

3. Protection Techniques for Extreme Environments
High-Temperature Environments: Avoid placing equipment near high-temperature heat sources. Install heat sinks or heat-dissipating bends to reduce the temperature of the medium and the equipment. For high-temperature medium applications, select custom high-temperature versions to prevent diaphragm failure due to aging caused by high temperatures.
Low-Temperature Environments: In environments below -10°C, use low-temperature transmitters to prevent diaphragm damage caused by the freezing of internal silicone oil. If necessary, install insulation sleeves to prevent condensation and ice formation on the equipment.
High-Vibration Environments: Install anti-vibration mounts or cushioning pads during installation to prevent long-term vibration from causing threaded connections to loosen or diaphragm fatigue; regularly check installation torque to prevent loosening.
Corrosive Environments: For weakly corrosive media, regularly inspect the diaphragm for corrosion; for highly corrosive media, select special wetted materials such as Hastelloy or tantalum to prevent corrosion-induced leaks.

4. Maintenance for Long-Term Shutdown and Restart
Before long-term shutdown, drain the medium from the piping, clean the wetted parts, seal the connections with dust plugs, and store the equipment in a dry, room-temperature, non-corrosive environment.
Before restarting, inspect the equipment's exterior, wiring, and grounding to ensure they are intact. Perform a no-load power-on test to verify normal signal output, then introduce the medium and gradually increase the pressure to the rated working pressure to avoid damaging the diaphragm due to sudden high-pressure surges.

VIII. Troubleshooting & Emergency Response
8.1 List of Common Faults
No output signal (4–20 mA signal remains at 0 mA / voltage signal remains at 0 V)
Persistent signal drift (signal deviation exceeds the accuracy grade range under no-load or full-load conditions)
Output signal full-scale offset (4–20 mA signal remains at 20 mA / voltage signal remains at full-scale value)
Signal Jitter / Distortion (Frequent, erratic fluctuations or step-like changes in data)
Safety barrier alarm triggered in explosion-proof environments
Leaks at connection points; condensation or water ingress into the device housing
Loose mounting components; leaks at threaded connections

8.2. Analysis of Fault Causes and Step-by-Step Troubleshooting Methods
1. No Output Signal Fault
Possible Causes:
Abnormal power supply (insufficient voltage, power disconnected, reversed polarity)
Loose terminal connections, oxidized or detached wire cores
Damaged, shorted, or broken cables
Damaged internal circuitry, burned-out chip
Load resistance exceeds the transmitter's maximum tolerance range
Step-by-Step Troubleshooting Methods:
Use a multimeter to measure the voltage between terminals 1 and 2 of the transmitter to confirm the supply voltage is 24V DC ±10%. If no voltage is present, check the power circuit, circuit breaker, and fuses for normal operation.
After powering down, open the HART connector to inspect whether the terminal connections are secure and the wire cores are free of oxidation or discoloration; retighten the terminal screws. Confirm that the shielded cable is free of damage or short circuits.
Inspect the cable routing path for damage, crushing, or breaks; replace the shielded cable if necessary.
Verify the load resistance: For 4–20 mA signal output, the total loop resistance must be ≤600 Ω. Exceeding this range will prevent signal transmission; reduce the load or replace the signal acquisition device with a lower-impedance model.
If all the above checks are normal but the signal output remains 0 during a no-load power-on test, this indicates an internal circuit failure. Immediately stop using the device and contact after-sales service to report the issue.

2. Persistent Signal Drift
Possible Causes:
Significant fluctuations in ambient temperature exceeding the device's temperature compensation range
Corrosion, deformation, or contamination of the liquid-contacting diaphragm, causing abnormal pressure sensing
Zero point/range not calibrated, or temperature drift/zero drift occurring after prolonged use
Poor grounding or incorrect shield grounding, resulting in ground loop interference
Prolonged operation beyond the measurement range, causing fatigue of

internal sensing components
tep-by-Step Troubleshooting:
Check the operating environment temperature to ensure it falls within the standard range of -20°C to +70°C. If outside this range, replace with a wide-temperature model.
Shut down the system and relieve pressure. Inspect the wetted diaphragm for scratches, corrosion, or media crystallization. Clean the diaphragm surface with a neutral detergent; do not scrape with hard objects.
Perform zero and span calibration: Under no-load conditions, adjust the zero potentiometer to stabilize the signal at 4 mA (for 4–20 mA) or 0 V (for voltage signals); apply rated pressure and adjust the span potentiometer to reach the corresponding full-scale value; repeat the calibration 2–3 times.
Check the grounding method: The shielding wire is grounded at only one end (the control cabinet side), while the transmitter end is left floating. Re-measure the ground resistance; it should be ≤4Ω (or ≤1Ω in explosion-proof environments), and reinforce the grounding terminal.
If drift persists after calibration and the device is operating beyond its rated range, this indicates fatigue failure of the sensing element, and the device must be replaced.

3. Full-Scale Output Signal Fault
Possible Causes:
The medium pressure exceeds the device's rated range, causing the transmitter to be in an overloaded state.
The wetted diaphragm has ruptured or the internal oil-filled chamber is leaking, resulting in abnormal signal output.
Wiring error: the signal terminals are short-circuited with the power terminals.
Internal circuit failure: the output module is damaged.
Step-by-Step Troubleshooting:
Immediately reduce the pipeline pressure and confirm that the medium pressure is within the device's range; do not allow prolonged overpressure operation.
Shut down the system and relieve pressure; inspect threaded connections for media leaks and check the diaphragm for damage. If leaks are found, do not power the device back on to prevent media from entering the circuitry and causing a short circuit.
With the power off, inspect the wiring to ensure there are no short circuits or incorrect connections between Terminal 1 (Power +), Terminal 2 (Signal -), and Terminal 3 (Ground), then reconnect the wires according to specifications.
If the above checks are normal but the signal remains fully offset, determine that the internal circuitry of the device is damaged. Take the device out of service and contact after-sales support to report the issue.

4. Signal Jumping / Distortion Fault
Possible Causes:
Strong electromagnetic interference (from devices such as variable frequency drives, motors, or welders)
Damaged shielded cables, poor grounding, or multiple grounding points
Excessive power supply voltage fluctuations exceeding the device's operating range
Cables routed in the same conduit as power cables, causing interference
Excessive on-site vibration, leading to loose terminal connections or poor contact between internal components
Step-by-Step Troubleshooting:
Check for high-power interference sources near the device. Route the transmitter cables through metal shielding tubes, maintaining a distance of at least 30 cm from power cables to avoid routing them in the same conduit.
Re-terminate the shielded cable: Ground the shield only at the control cabinet end; leave the shield floating at the transmitter end. Retest the ground resistance to ensure it is ≤4Ω to ensure reliable grounding.
Use a multimeter to monitor the power supply voltage and confirm it remains within the 9–36 V DC range. If fluctuations are excessive, install a power filter or voltage regulator module.
After powering down, retighten the terminal blocks and secure the cable clamping nuts; in high-vibration environments, install anti-vibration mounts to reduce equipment vibration.
If interference is severe, install a signal isolator between the transmitter and the PLC to block the transmission of interference signals.

5. Safety barrier alarm triggered in explosion-proof environments
Possible causes:
Damage, short circuit, or ground fault in the intrinsically safe loop cable
Incorrect safety barrier selection, mismatched with the transmitter's explosion-proof rating
Poor grounding of the transmitter or safety barrier, resulting in ground loop current in the circuit
Abnormal process medium pressure causing the transmitter output to exceed the safety barrier's range
Step-by-Step Troubleshooting:
Immediately disconnect power from the intrinsically safe circuit, inspect cables for damage or short circuits, replace faulty cables, and ensure isolation between the intrinsically safe and non-intrinsically safe circuits.
Verify that the safety barrier model matches the transmitter's explosion-proof rating (e.g., intrinsically safe models compatible with LB802, MTL5042, etc.). If there is a mismatch, replace the safety barrier with the appropriate model.
Re-measure the explosion-proof grounding resistance to ensure it is ≤1Ω. Reinforce the grounding terminals of the safety barrier and transmitter to eliminate ground loop interference.
Check whether the medium pressure exceeds the transmitter's measurement range; adjust the pressure to within the rated range to eliminate signal over-range alarms caused by abnormal pressure.
If the alarm persists after troubleshooting, personnel with explosion-proof operation qualifications must inspect the transmitter's explosion-proof performance and replace the equipment if necessary.

6. Faults Caused by Connector Leaks or Water Ingress
Possible Causes:
Aged or deformed HART connector seals; loose clamping nuts
Damaged threaded connection O-rings, or leaks caused by improper Teflon tape application
Insufficient protection rating, with the equipment exposed to prolonged water spray or immersion
Explosion-proof sealed connectors not installed according to specifications, resulting in failure of the explosion-proof gap
Step-by-Step Solutions:
Shut down the power and stop the equipment. Check if the HART connector clamping nut is loose and retighten it; replace aged seals to ensure the connector maintains an effective IP65/IP67 protection rating.
Check if the threaded connection seal is intact; replace it with a new fluorocarbon rubber seal and wrap the PTFE tape according to specifications, ensuring no tape enters the fluid chamber.
If water has entered the equipment, immediately cease operation and purge the interior with dry nitrogen, or replace the unit with a model featuring a higher protection rating (IP67/IP68). Never power on equipment that has been exposed to water to prevent circuit short-circuits and damage.
Reinstallation in Explosion-Proof Environments: Reinstall the explosion-proof sealing connector, ensuring the cable outer diameter matches the seal and the explosion-proof clearance complies with specifications to restore explosion-proof performance.

8.3 Emergency Workarounds
Short-Term Shutdown Workaround: If a single transmitter fails, switch to a backup measurement point or manual monitoring mode. Remove the faulty device for repair to avoid disrupting overall system operation.
Temporary Signal Handling: If there is minor signal drift and no backup equipment is available, temporarily correct the deviation values via the PLC program to maintain basic system operation. Replace the equipment during a scheduled shutdown for maintenance.
Temporary Protective Measures: For outdoor equipment failures caused by water ingress, temporarily wrap the connector area with waterproof tape and install a rain cover to prevent further moisture intrusion. Replace the equipment as soon as possible.
Emergency Response in Explosion-Proof Environments: In the event of a failure in explosion-proof equipment, disassembly and repair within hazardous areas are strictly prohibited. The system must be switched to safe mode, and the faulty equipment must be replaced with backup explosion-proof equipment. The faulty equipment should then be returned to the manufacturer for inspection and repair.

8.4 After-Sales Repair Guidelines
1. Criteria for Determining a Failure (Circumstances Requiring Repair)
Failures such as no output, full-scale deviation, or signal fluctuations that cannot be resolved through on-site troubleshooting are deemed to be

caused by damage to the internal circuitry or sensing components.
Physical damage such as rupture of the liquid-contacting diaphragm, water ingress, or leakage that cannot be restored to operational condition through on-site repair.
Damage to the explosion-proof marking or failure of explosion-proof performance on explosion-proof models, rendering the equipment unable to meet on-site safety requirements.
Abnormal conditions such as smoke, strange odors, or overheating occurring during equipment operation; the equipment must be immediately shut down and reported for repair.

2. Repair Reporting Procedure
Immediately shut down the faulty equipment, disconnect the power supply, and ensure on-site safety precautions (especially in explosion-proof environments).
Record the equipment model, serial number, installation location, fault symptoms, and on-site operating conditions (temperature, pressure, medium), and take photos of the fault scene for documentation.
Contact the after-sales service team at Anhui Qidian Automation Technology Co., Ltd., provide the equipment information and fault details, and submit a repair request.
Return the faulty equipment according to after-sales instructions (explosion-proof models must be packaged in accordance with explosion-proof transportation regulations), or schedule an on-site repair service.
After the equipment has been inspected and repaired, install and commission it according to after-sales instructions to resume system operation.

3. Warranty Coverage
The equipment warranty period is 12 months from the date of manufacture. During the warranty period, free repair or replacement services will be provided for failures not caused by human damage or improper operation.
The following situations are not covered by the warranty:
Failures resulting from disassembly or modification of the equipment by unauthorized personnel
Equipment damage caused by overpressure, overheating, or improper power supply
Physical damage caused by corrosive media, external impact, or water ingress
Failures resulting from repairs or replacement of parts by personnel not authorized by Qidian
Equipment damage caused by force majeure (fire, flood, earthquake, etc.)

4. Contact Information
After-sales Service Hotline: 19715617532
Technical Support Email: sales008@qd-zdk.com
Official Website: www.qidian-zdk.com