QDY30A Series: 5 Models of Dedicated Level Sensors

I. Product Overview

1.1 Core Operating Principle

The QDY30A series submersible level transmitters are based on the principle of liquid static pressure detection. Utilizing high-precision diffused silicon pressure-sensitive elements, they convert the static pressure generated by the liquid level into a standard electrical signal. After undergoing built-in temperature compensation, linear calibration, and anti-interference filtering, the transmitters output a stable 4–20 mA standard industrial signal that can be directly connected to PLCs, recorders, industrial control systems, and digital displays to enable real-time liquid level monitoring, automatic control, and data transmission. The device features an IP68 waterproof design, allowing it to operate continuously at the bottom of liquid tanks. It offers easy installation, maintenance-free operation, and exceptional stability.

1.2 General Core Advantages of the Series

--- High Stability: Equipped with a built-in high-precision temperature compensation chip, it exhibits minimal zero-point and span drift in both high and low-temperature environments, ensuring accurate and stable measurement data

- -- Waterproof and Durable: The entire unit features IP68-rated deep-water protection, allowing for long-term submersion. It is resistant to moisture, water ingress, and corrosion

--- Wide Compatibility: Suitable for various scenarios including fresh water, seawater, turbid and silt-laden water, underground conditions, and outdoor thunderstorm environments

--- Easy Installation: Submersible design requires no drilling or complex setup; simply suspend or deploy for immediate use, compatible with various tanks, deep wells, and reservoirs

--- Strong Anti-Interference: Industrial-grade electromagnetic interference (EMI) protection design, suitable for complex electrical environments in factories, mines, and outdoor settings

--- Standardized Output: Universal 4-20mA signal, compatible with 99% of industrial control equipment on the market, no adapter modules required

1.3 Full Series Model List

This manual covers five specialized models, precisely tailored to specific operating conditions:

1. QDY30A-D: Silt-resistant level transmitter (designed for sewage, rivers, and turbid water containing silt)

2. QDY30A-316: 316L stainless steel seawater aquaculture level transmitter (designed for seawater and mildly corrosive water bodies)

3. QDY30A: Submersible Level Transmitter for Deep Wells (designed for deep well water extraction and deep groundwater monitoring)

4. QDY30A-FB: Explosion-Proof Cable-Type Level Transmitter for Mining (designed for underground mining and explosion-proof industrial environments)

5. QDY30A-B-FL: Outdoor Lightning-Protected Level Sensor Transmitter (designed for outdoor equipment and environments prone to thunderstorms)

II. General Technical Specifications for the QDY30A Series Submersible Level Transmitters

The following specifications cover the five main models—QDY30A-D, 316, Standard, FB, and B-FL—and provide authoritative and comprehensive technical guidance for product design, selection, installation, and operation and maintenance.

2.1 Core Measurement Parameters

Measurement Principle: Hydrostatic ($P=\rho gh$), diffused silicon piezoresistive sensing element, with built-in atmospheric compensation venting channel.

Measurement Range: 0–0.5 m to 0–500 m H_2O (customizable; default standard ranges: 5/10/20/50/100 m).

Measured Media: Clean water, wastewater, turbid water containing silt, seawater, and mildly corrosive liquids (compatible with 304/316L stainless steel).

Accuracy Grade: Standard ±0.2% FS; High Precision ±0.1% FS; Economy ±0.5% FS.

Long-term Stability: ±0.2% FS/year (typical value ±0.1% FS/year).

Response time: ≤8 ms (rising to 90% FS, typical value ≤1 ms).

Overload capacity: 200% FS (sustainable without damage).

2.2 Temperature Characteristics

Medium temperature: -25°C to +60°C (standard); custom -40°C to +85°C.

Ambient temperature: -40°C to +60°C (storage: -40°C to +125°C).

Temperature drift:

Zero drift: ±0.2% FS/°C.

Sensitivity drift: ±0.2% FS/°C.

Temperature compensation range: -10°C to +60°C (factory calibrated).

2.3 Electrical Specifications

Supply Voltage: DC 12–32 V (default 24 V DC, two-wire system).

Output Signal (Optional):

Standard: 4–20 mA DC (two-wire system, load ≤ 500 Ω).

Optional: 0–5 V, 1–5 V, 0–10 V (3-wire), RS485 (Modbus-RTU).

Insulation resistance: ≥100 MΩ @ 250 V DC (probe to housing).

Reverse polarity protection: Built-in, prevents damage from reversed power supply polarity.

Current limiting protection: Automatic current limiting ≤35 mA in case of output short circuit.

2.4, Construction and Materials

Probe housing: 304 stainless steel (Standard / FB/B-FL); 316L stainless steel (Model 316).

Diaphragm: 316L stainless steel (universal across the entire series, corrosion-resistant, clog-resistant).

Seals: Nitrile rubber (Standard); Fluorocarbon rubber (Custom, acid and alkali resistant).

Cable: Polyurethane (PU) gas-permeable cable (oil-resistant, aging-resistant, tensile-resistant).

Cable Length: Standard 5 m; Customizable 10/20/50/100 m (cut to length upon request).

Protection Rating: IP68 (suitable for long-term immersion in water; dustproof, waterproof, and moisture-resistant).

Process Connection: Submersible (directly immersed in liquid; no flange required).

Electrical Interface: Waterproof cable gland with reliable sealing.

2.5. Mechanical Properties

Vibration Resistance: 20g (20–5000 Hz, sine wave).

Shock Resistance: 100g (11 ms, half-sine wave).

Weight: Approx. 0.5 kg (excluding cable).

Dimensions: Diameter Φ25 mm, Length 150 mm (probe).

2.6 Environmental Adaptability

Explosion-proof rating (FB type): Ex ib II CT4 (mining explosion-proof, compliant with GB3836).

Surge Protection (B-FL Type): Built-in surge protection module, common-mode/differential-mode surge protection ≥20 kV.

Anti-clogging Design (D Type): Wide-bore pressure port, resistant to silt and entanglement.

Corrosion Resistance (316 Type): 316L stainless steel in contact with fluid, resistant to seawater and weak acids/alkalis.

2.7 Reliability and Service Life

Mean Time Between Failures (MTBF): ≥80,000 hours.

Service Life: ≥5 years (under normal operating conditions, without severe corrosion or wear).

Sealing Process: Triple laser welding, helium leak testing, zero leakage.

III. Detailed Specifications, Features, and Applications for Each Model

3.1 QDY30A-D Silt-Resistant Level Transmitter

3.1.1 Product Overview

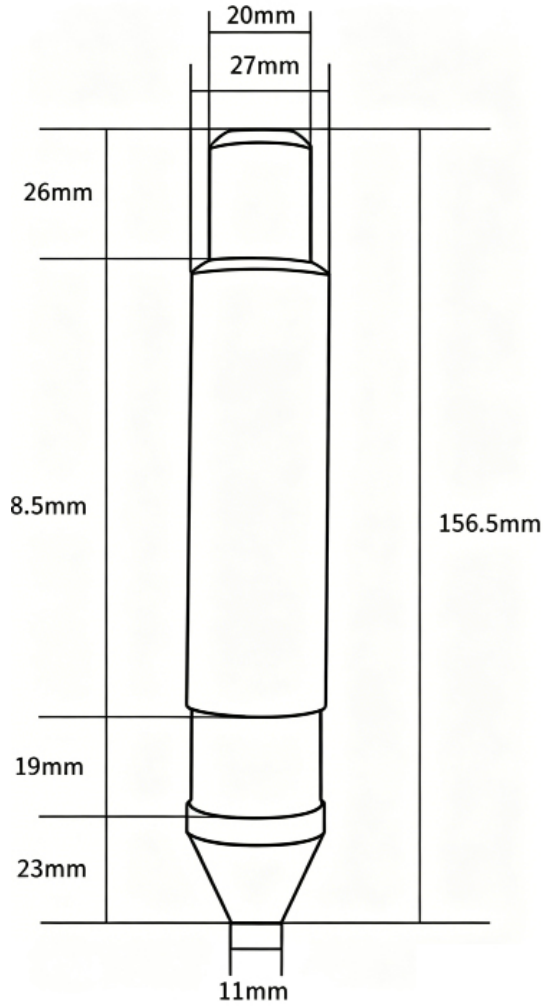
Specifically designed for turbid water containing high levels of silt, suspended solids, and impurities, this model addresses the issues of probe clogging, data drift, and short service life common in standard level transmitters. It serves as a dedicated monitoring device for wastewater treatment plants, rivers, construction site wastewater, and sedimentation tanks.

3.1.2 Unique Core Features

- Innovative anti-clogging filter probe structure with dual-layer stainless steel mesh protection to prevent silt, flocculent matter, and impurities from enveloping the sensor
- Probe features a dead-angle-free flow-guiding design that allows water impurities to slide off automatically, minimizing sediment buildup and clogging, and eliminating the need for frequent cleaning
- Enhanced anti-sedimentation and anti-contamination performance, suitable for highly turbid water bodies, ensuring long-term measurement without drift
- Wear-resistant and corrosion-resistant housing, suitable for harsh outdoor conditions; withstands sewage corrosion and water flow impact

3.1.3 Specific Application Scenarios

Municipal sewage networks, wastewater treatment tanks, river water level monitoring, construction site slurry and wastewater, stormwater sedimentation basins, reservoir sediment-laden water bodies, industrial turbid wastewater tanks, and other clog-prone environments.



3.2 QDY30A-316 Submersible Level Transmitter for Seawater Aquaculture

3.2.1 Product Positioning

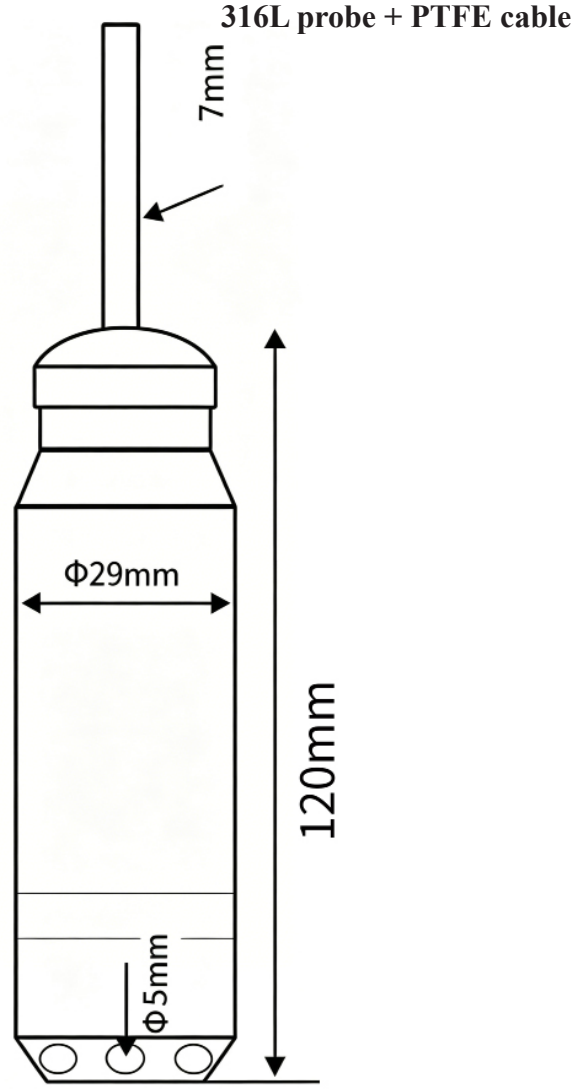
Custom-built from 316L stainless steel, this device was developed specifically for environments subject to seawater salt fog and chloride ion corrosion. It is a high-precision level monitoring device designed for seawater aquaculture, marine waters, and saline bodies of water.

3.2.2 Key Features

- Entire unit constructed from 316L stainless steel, offering superior resistance to chloride ion corrosion and salt fog oxidation, preventing probe rust and failure
- Upgraded waterproof sealing technology, suitable for high-humidity, high-salinity marine environments, with no water ingress even after long-term immersion
- Anti-biofouling design reduces the adhesion of seaweed and plankton, ensuring measurement accuracy
- Stable data output, unaffected by tidal fluctuations or minor water surface disturbances

3.2.3 Specific Application Scenarios

Seawater aquaculture ponds, sea cucumber/abalone farming tanks, coastal water level monitoring, marine test sites, industrial recirculating saltwater systems, coastal wastewater treatment facilities, and all other seawater and mildly corrosive saline water environments.



3.3 QDY30A Submersible Level Transmitter for Deep Wells

3.3.1 Product Positioning

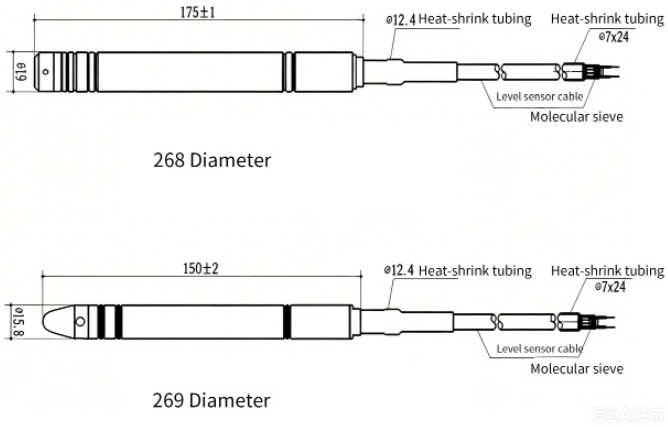
Designed for monitoring deep groundwater in the confined spaces of deep wells, this device features a slim-diameter probe and an extra-long cable to address industry challenges such as difficulty in deployment, insufficient measurement depth, and cables that are not resistant to tension.

3.3.2 Key Features

- Compact, slim-profile probe design fits narrow deep well openings, ensuring smooth and jam-free deployment and retrieval
- Custom high-strength, tensile-resistant cable with excellent tensile strength and fracture resistance, suitable for depth measurement in wells up to 100 meters deep
- Designed to withstand deep-well water pressure, offering strong high-pressure stability and precise, error-free depth measurement
- Moisture-proof and anti-condensation structure, suitable for low-temperature, humid, and enclosed environments in deep wells, eliminating internal condensation failures

3.3.3 Specific Application Scenarios

Deep wells for agricultural irrigation, deep wells for drinking water, deep wells for geological exploration, groundwater monitoring wells, deep industrial and mining water wells, and deep-water level monitoring scenarios at depths of 100 meters or more.



3.4 QDY30A-FB Mine-Grade Explosion-Proof Cable-Type Submersible Level Transmitter

3.4.1 Product Positioning

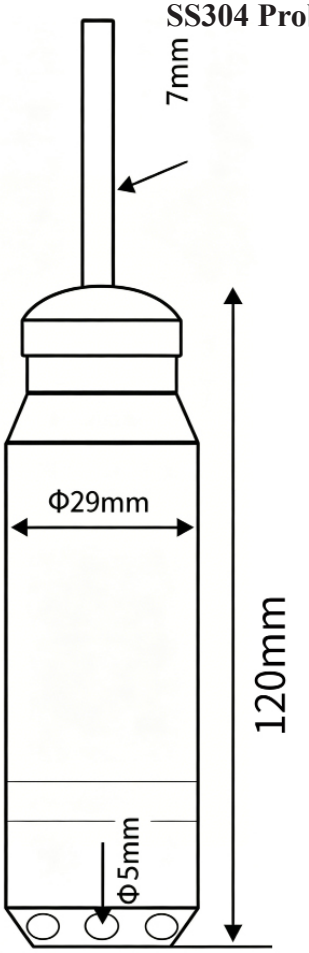
Industrial explosion-proof equipment designed to meet mine safety standards. Featuring explosion-proof and flame-retardant cables and a fully explosion-proof sealed design, it is suitable for level monitoring in flammable, explosive, and high-risk industrial and mining environments.

3.4.2 Key Features

- Specialized explosion-proof and flame-retardant cables that are heat-resistant, flame-retardant, and resistant to aging, eliminating the risk of electrical sparks
- Fully explosion-proof sealed structure, completely isolating internal circuits from flammable and explosive gases in the external environment
- Impact- and pressure-resistant housing, suitable for harsh underground mining conditions characterized by vibration, humidity, and high dust levels
- Intrinsically safe explosion-proof design with a high safety rating, enabling long-term continuous operation underground

3.4.3 Specific Application Scenarios

All high-risk environments requiring explosion-proof certification, including underground coal mines, underground metal mines, explosion-proof chemical workshops, flammable and explosive liquid storage tanks, underground water accumulation monitoring, and hazardous chemical storage tanks.



3.5 QDY30A-B-FL Lightning-Protected Submersible Level Sensor Transmitter

3.5.1 Product Positioning

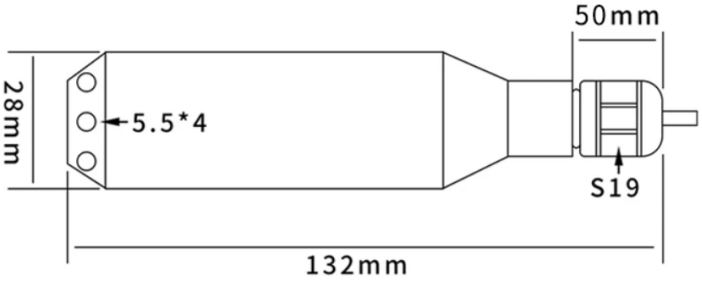
A dedicated outdoor integrated lightning protection module designed for regions prone to thunderstorms and for outdoor equipment, effectively preventing damage to equipment and industrial control systems caused by lightning strikes and surge voltages.

3.5.2 Key Features

- Built-in two-stage lightning protection module capable of withstanding lightning surges and instantaneous high-voltage impacts
- Resistant to surges and electrostatic interference; equipment remains operational without rebooting, damage, or data interruption during outdoor thunderstorms
- Enhanced outdoor weather resistance, including UV resistance, anti-aging properties, and tolerance to high and low temperatures, suitable for long-term outdoor operation
- Protects downstream industrial control equipment and PLC instruments, reducing the risk of lightning-induced failures across the entire system

3.5.3 Specific Application Scenarios

Open-air reservoirs, outdoor water storage tanks, river water level stations in remote areas, water tanks for photovoltaic systems, remote unmanned monitoring stations, and various open-air liquid level monitoring scenarios in regions prone to thunderstorms.



IV. Selection Guide

4.1. QDY30A Standard Submersible Level Transmitter for Deep Wells: Selection Guide

This model is the basic, general-purpose version in the series, specifically designed for deep well water extraction and monitoring of clean deep groundwater. It is suitable for standard clean water applications without silt accumulation, corrosion, or special requirements for explosion-proof or lightning protection. It is the preferred basic model for civilian water extraction, municipal deep wells, and general water resource monitoring.

1. Core Selection Criteria (Buyer Self-Check Standards)

--- Signal Type: The standard configuration features a 4-20mA analog current signal, compatible with 99% of PLCs, industrial control instruments, and secondary display instruments on the market. For applications without special networking requirements, the standard current signal is sufficient. For remote IoT data upload or multi-device networking, the RS485 Modbus digital signal is recommended. For compatibility with legacy equipment, 0-5V or 0-10V voltage signals are available.

--- Number of Channels: Suitable for single-well or single-water-intake-point independent monitoring; pair with a single-channel data acquisition device. For centralized monitoring of multiple deep wells within a facility, pair with a multi-channel data acquisition module to achieve unified data collection and display across multiple devices.

--- Power Supply: Supports industrial-grade wide-voltage DC 12V–32V power supply; standard operating conditions use DC 24V. For outdoor solar-powered deep well applications, it is compatible with low-voltage DC power systems and requires no additional power conversion equipment.

--- Explosion-proof requirements: This model is a non-explosion-proof general-purpose version, suitable only for ordinary environments free of flammable or explosive gases and dust explosion risks; its use in explosion-proof conditions is strictly prohibited.

--- Installation Environment: Suitable only for environments with clear water quality—such as deep groundwater, deep well purified water, and clean water storage tanks—that are free of silt and corrosion, and located indoors or in ordinary outdoor settings without severe thunderstorms or flammable/explosive risks.

2. Recommended Industry-Specific Applications
Power Industry: Suitable for deep well water extraction at power plants and level monitoring of underground purified water storage tanks;
Municipal Water Industry: Suitable for routine monitoring of deep wells in rural centralized water supply systems and urban groundwater extraction wells;
Smart Manufacturing Industry: Suitable for level monitoring of clean process water tanks and pure water storage tanks in factories;
Pharmaceutical Industry: Suitable for monitoring pure water sources and sterile clean water tanks in pharmaceutical production areas;
Metallurgy and Chemical Industries: Suitable only for clean water extraction wells within plant premises; strictly prohibited for use in sewage, corrosive water bodies, or explosion-proof workshops.
Using this standard model in explosion-proof workshops or hazardous underground environments violates safety regulations, poses significant safety risks, and will result in failure to pass inspection.

3. Customization Recommendations
--- Custom Signal Configuration: For legacy water extraction control cabinets and specialized monitoring equipment, we can customize dedicated voltage signals and special current output signals to ensure seamless integration with legacy systems.
--- Customization for Non-Standard Conditions: For monitoring ultra-deep wells or over long distances, we can provide extended, high-tensile-strength cables; for low-temperature deep wells or special underground water bodies requiring constant temperature, we offer versions designed to withstand extreme temperatures.
--- Multi-Channel Integration Customization: For centralized water extraction monitoring projects involving multiple well sites, we can configure multiple devices paired with a multi-channel data acquisition host to enable centralized data aggregation, remote monitoring, and unified management.

4.2. QDY30A-D Silt-Resistant Level Transmitter Selection Guide
This model is specifically designed for applications involving sediment accumulation. It features an optimized anti-clogging pressure-transmitting structure and is engineered for wastewater, rivers, construction site turbid water, and other turbid water bodies containing suspended sediment. It addresses the core issues of ordinary level transmitters—such as clogging, malfunction, and short service life—making it a specialized model for monitoring turbid water bodies.

1. Key Selection Criteria (Buyer's Self-Assessment Standards)
--- Signal Type: Standard 4-20mA industrial analog signal, compatible with conventional industrial control systems in wastewater treatment plants and water conservancy projects; for remote river monitoring and smart water management networking scenarios, the RS485 digital signal is recommended for stable long-distance transmission.
--- Number of Channels: Select a single-channel model for single-point monitoring of a single river, sewage tank, or sedimentation tank; for segmented monitoring of multiple sewage tanks or river sections within a facility, pair with a multi-channel integrated system for unified management.
--- Power Supply: Standard 24V DC industrial power supply; for outdoor river locations without mains power, compatible with 12V DC solar energy storage systems, offering strong wide-voltage adaptability.
--- Explosion-proof requirements: Non-explosion-proof model, suitable for standard sewage and river conditions; prohibited for use in chemical explosion-proof sewage tanks or flammable and explosive industrial site sewage scenarios.
--- Installation Environment: Specifically designed for turbid, silt-prone, and easily clogged water environments such as natural waterways, municipal sewage tanks, construction site sedimentation tanks, tailings turbidity tanks, and industrial wastewater containing silt and sand. Not suitable for clean pure water, highly corrosive seawater, or explosion-proof environments.

2. Recommended Industry-Specific Applications
Municipal Environmental Protection Industry: Suitable for urban sewage networks, sedimentation tanks at wastewater treatment plants, and water level monitoring in urban rivers;
Power Industry: Suitable for wastewater sedimentation tanks at power plants and circulating turbid water tanks;
Metallurgical Industry: Suitable for tailings wastewater ponds on plant premises and industrial wastewater ponds with severe silt accumulation;
Smart Manufacturing Industry: Suitable for monitoring wastewater ponds and circulating turbid water bodies in factory production;
Chemical Industry: Suitable only for ordinary sludge-containing wastewater tanks without flammable or explosive gases or strong corrosion; strictly prohibited for use in explosion-proof workshops or highly corrosive environments.

3. Avoiding Common Selection Pitfalls
--- Pitfall 1: Ignoring anti-clogging isolation ratings and substituting standard level transmitters for anti-clogging models. This can quickly lead to blocked pressure ports, data resets, and equipment failure.
--- Misconception 2: Selecting the wrong signal range. During flood seasons, river water levels fluctuate significantly; choosing a fixed, narrow range leads to measurement overrange, making it impossible to monitor high-water-level conditions.
--- Misconception 3: Neglecting load matching. Failure to match line loads for long-distance outdoor cabling causes signal attenuation and data drift.
--- Misconception 4: Inflame-proof chemical wastewater applications: Incorrectly selecting this non-flame-proof, anti-clogging level sensor instead of a flame-proof model violates safety standards and poses safety risks.

4. Customization Recommendations
--- Custom Signal Protocols: Dedicated integration with smart water management platforms; customizable Modbus protocols and IoT-specific digital signals to support cloud data uploads.
--- Customization for Non-Standard Conditions: For water bodies with high viscosity or severe silt accumulation, we can customize wider anti-clogging protective covers and large-diameter pressure-taking structures; for monitoring extremely long river sections, we can customize extended wear-resistant cables.
--- Multi-Channel Integration Customization: For segmented monitoring of urban waterways or centralized management of multiple wastewater tanks within industrial sites, we can customize complete multi-channel monitoring systems to enable zoned monitoring and unified dispatch.

4.3. QDY30A-316 316L Stainless Steel Seawater Aquaculture Level Transmitter Selection Guide
This model features a fully corrosion-resistant 316L stainless steel construction, specifically designed for seawater, saline, and weakly acidic or alkaline corrosive environments. It addresses the issues of corrosion, rust, and measurement failure associated with standard stainless steel probes, making it a specialized model for seawater aquaculture and monitoring in coastal corrosive environments.
1. Key Selection Criteria (Buyer's Self-Assessment Standards)
--- Signal Type: Standard 4-20mA analog signal, compatible with aquaculture equipment and conventional industrial instruments; for remote monitoring of smart coastal aquaculture and multi-pond networking, an optional RS485 digital signal is available, supporting remote data viewing via the cloud.
--- Number of Channels: Single-channel models are suitable for single-pond aquaculture or single-point monitoring in coastal water bodies; for large-scale multi-pond aquaculture or multi-point coastal monitoring, they can be paired with multi-channel data loggers for centralized management.
--- Power Supply: Wide-voltage DC 12V–32V power supply, compatible with both outdoor solar power systems in coastal areas and standard industrial 24V power sources, making it suitable for unattended outdoor operations.
-- - Explosion-proof requirements: Non-explosion-proof model; suitable for open coastal and aquaculture environments; prohibited for use in enclosed, flammable, explosive, or corrosive conditions.
--- Installation environment: Specifically designed for mildly corrosive environments such as seawater aquaculture ponds, coastal tidal flats, saline industrial wastewater, weakly acidic or alkaline corrosive water bodies, and coastal landscape ponds; not suitable for highly acidic or alkaline environments with severe corrosion, explosion-proof requirements, or high sediment accumulation.

2. Recommended Industry-Specific Applications

Aquaculture industry: Suitable for water level monitoring in seawater aquaculture ponds, shrimp and crab farming ponds, and coastal hatchery pools;
Chemical industry: Suitable for monitoring slightly saline wastewater ponds and mildly corrosive process water bodies in coastal chemical industrial parks;
Power industry: Suitable for conditions in coastal power plant recirculation water tanks and saline cooling water tanks;
Smart manufacturing industry: Suitable for monitoring corrosion-resistant storage tanks and mildly corrosive production wastewater in coastal factories;
Municipal sector: Suitable for monitoring coastal urban landscape seawater pools and coastal flood control water bodies.

3. Avoiding Common Selection Pitfalls
--- Pitfall 1: Ignoring corrosion resistance and isolation ratings, substituting standard 304 stainless steel models for 316L corrosion-resistant models, resulting in probe rust, corrosion, damage, and failure within a short period.
--- Misconception 2: Selecting the wrong signal range. Choosing an excessively high range for shallow aquaculture ponds results in insufficient monitoring accuracy, affecting water level control.
--- Misconception 3: Neglecting load matching. In high-humidity coastal environments, wiring degrades over time; failing to allow for load margin leads to unstable signals.
--- Misconception 4: Selecting this general-purpose corrosion-resistant model for explosion-proof and corrosive environments, which lacks explosion-proof functionality, poses serious safety hazards.

4. Customization Recommendations
--- Custom Signal Solutions: Designed for seamless integration with smart aquaculture systems, we offer customizable IoT wireless transmission signals compatible with intelligent aquaculture management platforms.
--- Customization for Non-Standard Conditions: For extreme coastal environments with high salt fog and strong sea winds, we offer customized solutions featuring thickened 316L fully corrosion-resistant structures and specialized anti-salt-fog cables; for water bodies with mild acidity or alkalinity, we provide reinforced corrosion-resistant diaphragms.
--- Multi-Channel Integration Customization: For large-scale marine aquaculture bases with multiple ponds, we offer customized multi-channel integrated systems to enable unified water level monitoring and anomaly alerts across all ponds.

4.4. QDY30A-FB Mine-Grade Explosion-Proof Cable-Type Level Transmitter Selection Guide
This model is a custom-designed explosion-proof version with official explosion-proof certification. It is specifically engineered for underground mining and other flammable and explosive industrial environments to prevent safety incidents caused by electrical sparks, making it the only compliant choice for high-risk explosion-proof applications.

1. Core Selection Criteria (Buyer Self-Assessment Standards)
--- Signal Type: Standard intrinsically safe 4-20mA explosion-proof signal, compatible with underground explosion-proof industrial control systems and mining-specific monitoring instruments; for underground networked centralized monitoring, an explosion-proof RS485 digital signal can be selected. All signals are explosion-proof certified to eliminate safety risks.
--- Number of Channels: A single channel is sufficient for monitoring a single pump room or a single water accumulation point underground; for multi-area water accumulation monitoring underground, it can be paired with multi-channel explosion-proof data acquisition devices designed for mining applications.
--- Power Supply: Compatible with the mining industry standard 24V DC explosion-proof power supply, strictly adhering to underground explosion-proof power supply regulations; the use of non-explosion-proof power sources is strictly prohibited.
--- Explosion-Proof Requirements: The core advantage of this model is its mining-grade explosion-proof design. It must be selected for all underground mining environments, as well as conditions involving flammable and explosive dust or combustible gases; the use of other standard models is strictly prohibited.
--- Installation Environment: Specifically designed for underground mining, explosion-proof chemical workshops, enclosed flammable and explosive tanks, and high-risk industrial explosion-proof scenarios. Suitable for monitoring underground water accumulation and mine water containing silt and sand; can be used in explosion-proof environments without special requirements for lightning protection or corrosion resistance.

2. Recommended Industry-Specific Applications (Copy-only)
Mining Industry: Suitable for water accumulation monitoring in pump rooms and liquid level monitoring in underground tunnels of various coal and metal mines;
Chemical Industry: Suitable for liquid level monitoring in explosion-proof workshops, enclosed wastewater ponds in flammable gas facilities, and explosion-proof storage tanks;
Metallurgical Industry: Suitable for water accumulation monitoring in underground metallurgical work areas and explosion-proof dust workshops;
Power Industry: Suitable for water level monitoring in explosion-proof power distribution rooms and high-risk fuel workshops at power plants;
Smart Manufacturing Industry: Suitable for water monitoring in explosion-proof smart workshops and flammable/explosive storage areas.

3. Avoiding Common Selection Pitfalls
--- Pitfall 1: Ignoring explosion-proof isolation ratings and substituting standard, clog-resistant, or corrosion-resistant models for explosion-proof models. This violates safety supervision standards, fails acceptance inspections, and poses a high risk of causing explosions.
--- Misconception 2: Selecting the wrong signal range. Water depth in underground environments fluctuates significantly; selecting a range that is too narrow causes monitoring failure, while a range that is too wide reduces the accuracy of safety monitoring.
--- Misconception 3: Neglecting load matching. Mismatched loads in underground explosion-proof circuits lead to signal abnormalities and false alarms, affecting underground safety management.
--- Misconception 4: Relying on luck—selecting general-purpose models for high-risk explosion-proof environments constitutes a serious violation of selection standards and poses significant safety hazards.

4. Customized Recommendations
--- Customized Signals: For aging mining explosion-proof equipment and dedicated underground monitoring systems, intrinsically safe custom signals can be developed to strictly comply with mining explosion-proof standards.
--- Customization for Non-Standard Conditions: For extreme underground conditions with high silt content and high humidity, we can customize integrated explosion-proof and anti-clogging structures; for ultra-deep underground monitoring, we can provide custom explosion-proof extended cables.
--- Multi-Channel Integration Customization: For multi-area safety monitoring projects underground, we can customize complete explosion-proof multi-channel monitoring systems to achieve centralized monitoring of underground liquid levels and exceedance alarms.

4.5. QDY30A-B-FL Outdoor Lightning-Protected Level Sensor Transmitter Selection Guide
This model features a built-in high-strength lightning protection module, specifically designed for open-air environments, areas prone to thunderstorms, and unattended outdoor scenarios. It effectively prevents equipment damage and signal interference caused by lightning surges, making it the ideal model for long-term unattended outdoor monitoring.
1. Core Selection Criteria (Buyer's Self-Assessment Standards)
--- Signal Type: Standard 4-20mA stable analog signal, compatible with conventional outdoor industrial control equipment; for long-distance wireless networking in remote areas and smart water management outdoor sites, RS485 digital signal is recommended for superior lightning protection and anti-interference capabilities.
--- Number of Channels: A single channel is sufficient for monitoring a single outdoor water body or a single elevated water tank; for monitoring multiple outdoor water bodies or multiple open-air sites within a facility, a multi-channel integrated system can be configured.
--- Power Supply: Wide-voltage DC 12V–32V power supply, perfectly suited for outdoor solar power, wind power, and off-grid conditions,

offering exceptional adaptability.
--- Explosion-proof requirements: Non-explosion-proof model; suitable for general outdoor use in areas without flammable or explosive gases. Prohibited for use in explosion-proof workshops or high-risk underground environments.
--- Installation Environment: Specifically designed for open-air elevated water tanks, wilderness reservoirs, mountainous water conservancy sites, areas prone to thunderstorms, and water bodies associated with unmanned outdoor equipment. Compatible with clear water and slightly turbid wastewater, with a focus on outdoor lightning protection and anti-interference capabilities.

2. Recommended Industry-Specific Applications (Copy-only)
Water conservancy industry: Suitable for level monitoring in areas prone to thunderstorms, such as outdoor reservoirs, mountain rivers, and open-air dams;
Power industry: Suitable for mountain power stations, outdoor cooling towers, and open-air water storage tanks;
Smart manufacturing industry: Suitable for unattended monitoring of outdoor elevated water tanks and open-air recirculating water tanks in factories;
Municipal sector: Suitable for level monitoring in urban open-air landscape ponds and outdoor fire protection reservoirs;
Metallurgy and chemical industries: Suitable for outdoor monitoring of wastewater and purified water tanks in non-explosion-proof areas of industrial sites.

3. Avoiding Common Selection Pitfalls
--- Pitfall 1: Ignoring lightning protection and isolation ratings. Using standard models in outdoor thunderstorm environments makes equipment highly susceptible to lightning strikes during the rainy season, leading to damage, circuit breakdowns, and signal interruptions.
--- Misconception 2: Selecting the wrong signal range. Water levels in outdoor reservoirs fluctuate significantly with the seasons; a narrow range cannot cover both high and low water levels, resulting in monitoring failure.
--- Misconception 3: Neglecting load matching. Failure to perform load adaptation for ultra-long-distance outdoor cabling leads to signal attenuation, data fluctuations, and unstable remote transmission.
--- Misconception 4: Selecting the wrong lightning protection model for outdoor explosion-proof zones. Without explosion-proof functionality, safety requirements for high-risk scenarios cannot be met.

4. Customized Recommendations
--- Specialized Signal Customization: For outdoor IoT remote monitoring and cloud platform integration, we offer customizable anti-interference digital signals tailored to complex electromagnetic environments in the field.
--- Customization for Non-Standard Conditions: For extreme mountainous regions with severe thunderstorms and high-altitude outdoor environments, reinforced dual-layer lightning protection structures can be customized; for outdoor environments with low or high temperatures, temperature-resistant versions can be customized.
--- Multi-Channel Integrated Customization: For unmanned, multi-point monitoring in outdoor campuses, complete multi-channel lightning protection monitoring systems can be customized to centrally manage data collection, lightning protection, and remote alarms.

V. General Pre-Installation Preparation Guidelines
These specifications apply to the entire series of submersible level transmitters: QDY30A (Standard Deep Well Type), QDY30A-D (Silt-Resistant Type), QDY30A-316 (Seawater-Resistant Type), QDY30A-FB (Mine-Safe Explosion-Proof Type), and QDY30A-B-FL (Outdoor Lightning-Protected Type). To standardize on-site construction practices, the following verification tasks must be completed prior to installation to prevent installation failures, measurement anomalies, equipment damage, and safety violations at the source.

5.1. General Accessories Verification
Before installation, all equipment accessories must be checked one by one to ensure there are no missing parts, damage, or manufacturing defects, and that the equipment meets the installation requirements:

1. Inspect the overall appearance of the level transmitter probe. The housing must be free of dents, deformation, or scratches, and the measuring diaphragm must be flat, intact, free of dents, stains, or blockages.

2. Inspect the integrated gas-conducting cable to ensure the outer sheath is free of damage, cracks, or signs of crushing. Verify that the internal gas conduit is unobstructed, with no kinks, flattening, or blockages.

3. Verify that all mounting hardware, clips, lifting eyes, waterproof cable glands, sealing gaskets, and wiring accessories are complete and in good condition, with no signs of aging or missing parts.

4. Verify that the parameters, measurement range, and model on the product nameplate match the purchase order to prevent incorrect model installation or mismatched measurement ranges.

5. Ensure that the instruction manual, certificate of conformity, and factory calibration report (including the explosion-proof certification for explosion-proof models) are complete and valid.

5.2. Specific Verification of Model-Specific Accessories
1. QDY30A-D Sediment Anti-Clogging Model Specific Verification: Focus on inspecting the integrity of the front anti-clogging guard and large-diameter anti-clogging structure; ensure pressure-taking ports are unobstructed and free of residual impurities; verify that all anti-clogging protective accessories are complete.

2. QDY30A-316 Seawater Corrosion-Resistant Model Specific Inspection: Verify that the 316L stainless steel probe is free of rust and welding defects, that the salt-fog-resistant cable is intact, and that all corrosion-resistant sealing components are present.

3. QDY30A Deep Well Specialized Model Inspection: Verify that the extended deep well cable maintains proper tensile strength, the lifting ring mounting structure is secure, and the unit meets the requirements for deep well installation.

4. QDY30A-FB Mining Explosion-Proof Model Specific Inspection: Verify that the explosion-proof housing, seals, and gland heads are intact with no damage or missing parts; ensure explosion-proof markings are clear and certifications are complete; the use of components with failed seals is strictly prohibited.

5. QDY30A-B-FL Outdoor Lightning Protection Model Specific Inspection: Verify that the built-in lightning protection module is intact, the outdoor waterproof and weather-resistant cable is undamaged, and all lightning protection grounding accessories are complete.

5.3 General Environmental Inspection
1. Verify that on-site operating conditions match the selected model to prevent model mix-ups or misuse. Dedicated models must be used for explosion-proof, lightning-proof, corrosion-resistant, and clog-resistant applications.

2. Ensure the installation location has stable water flow, no violent surges or impacts, and no direct water scouring. Avoid locations near sewage outlets, water discharge points, areas with debris accumulation, and areas with strong interference from equipment.

3. The on-site power supply must be stable, free from high-voltage fluctuations and frequent tripping. Confirm that the supply voltage meets the DC 12–32 V wide-voltage standard and that there is no risk of accidental connection to AC 220 V.

4. The installation environment must be dry and safe. The wiring area must be free from standing water, severe moisture or water exposure, and dust accumulation to ensure safe wiring operations.

5.4. Model-Specific Environmental Checks
1. QDY30A-D Silt-Resistant Type: Confirm that the site is a river, sewage system, or turbid water body containing silt, characterized by sedimentation and high levels of suspended solids. Confirm that the operating conditions do not require explosion-proof or corrosion-resistant capabilities.

2. QDY30A-316 Seawater Corrosion-Resistant Type: Confirm that the site involves seawater, saline, or weakly corrosive water bodies, as well as coastal environments with high salt fog, and that there are no conditions involving severe corrosion from strong acids or alkalis.

3. QDY30A Deep Well Special Type: Confirmed for installation in deep wells or deep groundwater environments with clean water quality, no significant silt accumulation, and stable well walls with no risk of collapse or falling debris.

4. QDY30A-FB Mining Explosion-Proof Type: Confirmed for use in underground mines, explosion-proof workshops, and environments with flammable or explosive gases/dust. Ventilation must meet standards and gas detection must be qualified prior to installation, in compliance with explosion-proof construction regulations.

5. QDY30A-B-FL Outdoor Lightning Protection Model: Confirm that the site is an open-air, wilderness, mountainous, or unmanned environment prone to thunderstorms, where there is a risk of lightning-induced interference but no high-risk explosion-proof requirements.

5.5. General Installation Tool List
Basic Electrical Tools: Digital multimeter, wire crimping pliers, cable cutters, electrical tape, waterproof sealant, cable ties, expansion bolts, mounting brackets.

Safety Construction Tools: Insulated gloves, anti-slip gear, waterproof junction boxes, measuring tape, tape measure, grounding test tools (required for lightning protection models).

Explosion-Proof Scenarios: Explosion-proof tools, explosion-proof sealing compound, intrinsically safe testing instruments (for FB explosion-proof models only).

5.6 General Safety Precautions (Mandatory for All Models)
1. All wiring and cabling operations must be performed with the power completely disconnected. Live wiring or plugging/unplugging terminals while energized is strictly prohibited to prevent short circuits, equipment burnout, and electric shock accidents.

2. Signal cables must not be routed in the same conduit, channel, or in close proximity to high-voltage power lines, variable frequency drives, motors, or high-power equipment to avoid data drift or fluctuations caused by strong electromagnetic interference.

3. When working outdoors, near water, or underground, fall prevention, anti-slip, and waterproofing measures must be implemented to strictly prohibit unsafe construction practices at heights, in deep wells, or near water.

4. During rainy, foggy, or humid weather, open-air wiring work must be prohibited to prevent moisture-induced short circuits, electrical leakage, and signal abnormalities.

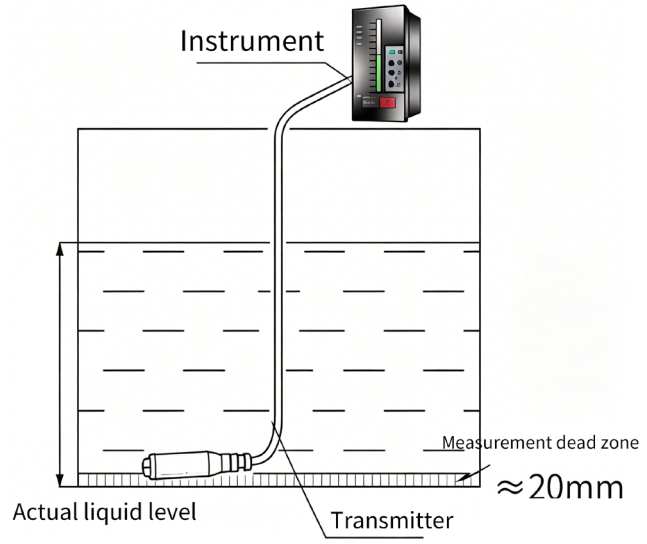
5. When laying cables, sharp kinks, squeezing, or crushing are strictly prohibited. Ensure the internal vent tubes remain unobstructed to guarantee normal atmospheric pressure compensation.

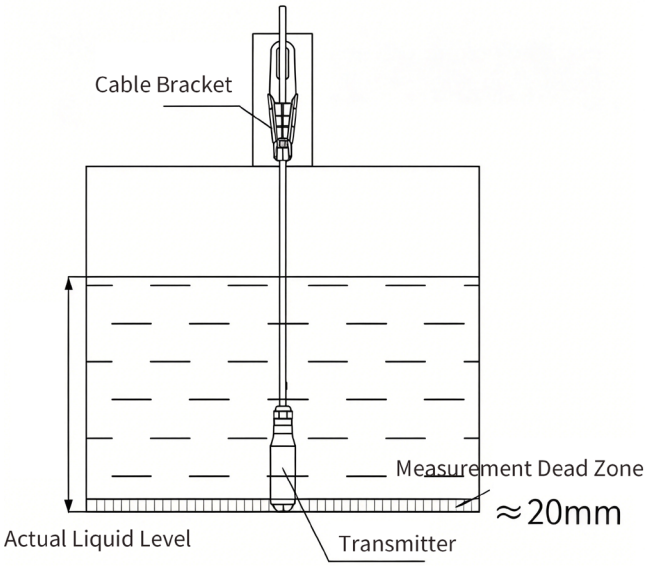
6. In all outdoor, damp, or underground environments, terminal blocks must be fully sealed and waterproof; exposure to moisture is strictly prohibited.

7. In explosion-proof zones, unauthorized modification of cables, damage to explosion-proof structures, or the use of non-explosion-proof equipment is strictly prohibited; explosion-proof safety regulations must be strictly adhered to.

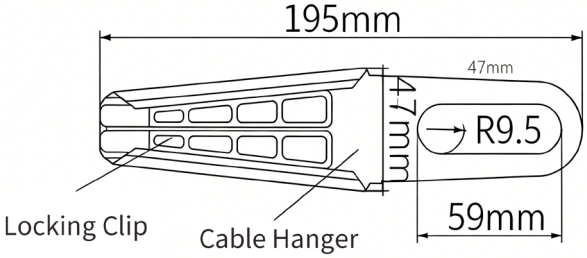
8. For lightning-protected equipment, grounding work must be completed first before powering on the equipment; operation without proper grounding is strictly prohibited.

Installation Method
All submersible level sensors in this series feature a suspended installation method that requires no drilling or fastening: simply lower the sensor probe vertically to the bottom of the liquid surface, allowing the cable to hang freely. Secure the upper end to the edge of the tank, well opening, or tank rim to ensure the probe does not come into contact with sediment or debris at the bottom of the tank, thereby preventing damage to the sensor caused by physical contact. Deep well models can be lowered directly to the specified depth, while explosion-proof and lightning-proof models must be installed in strict accordance with applicable safety regulations.





Cable Bracket Installation

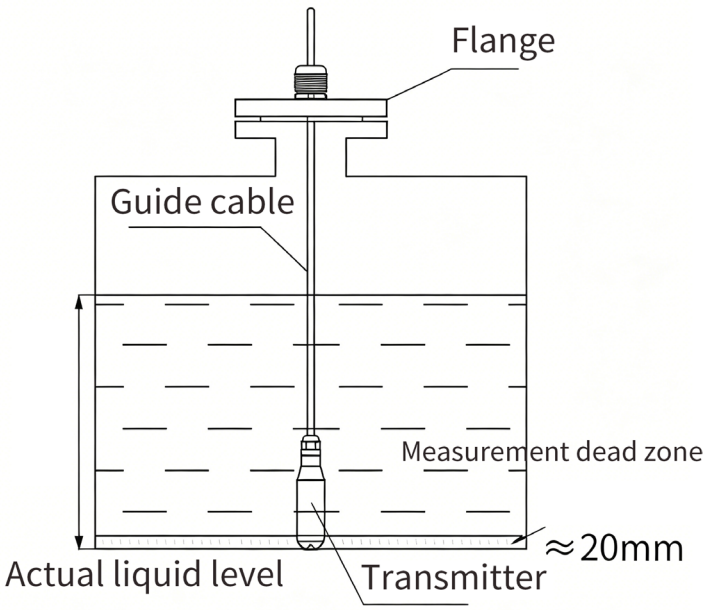


Locking Clip Material: Engineering Plastic

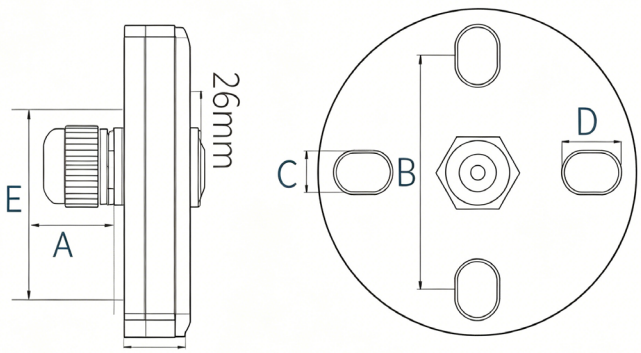
Cable Hanger Material: SS304

Weight: 110g

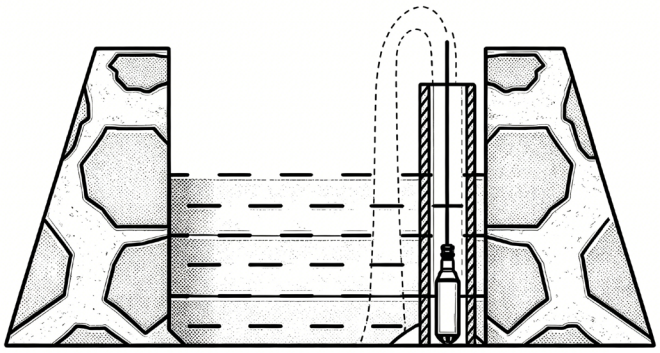
Cable Hanger Installation



Cable-mounted flange installation



Installation of Cable Clamping Flanges



Wiring Diagram and Wiring Precautions

1. General Wiring Instructions

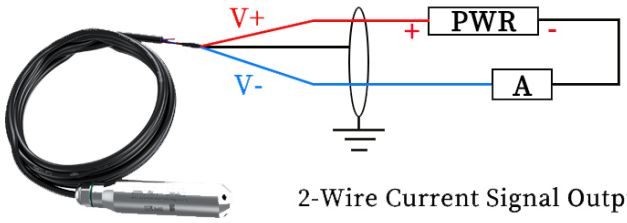
This series uses a standard two-wire 4–20 mA wiring configuration and is compatible with a wide-range DC power supply of 12–32 V. There are no complex multi-terminal distinctions, and the wiring logic is universal across the entire series.

The level transmitter has two signal wires: the power supply positive terminal and the power supply positive/signal common negative terminal. The standard power supply is 24 V DC; connect the positive terminal to the instrument's red wire and the negative terminal to the instrument's black wire. The secondary instruments and PLC analog input ports at the receiving end are connected in series within the same circuit.

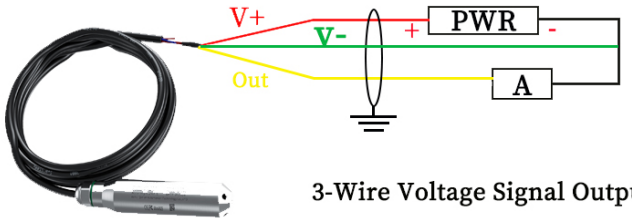
The cable contains an internal vent tube for atmospheric pressure compensation only; it is not part of the electrical wiring. Cutting, blocking, or crushing this tube is strictly prohibited.

The cable features a built-in shield and follows the single-point grounding principle: it is grounded on only one side inside the control cabinet, while the probe end remains floating (ungrounded).

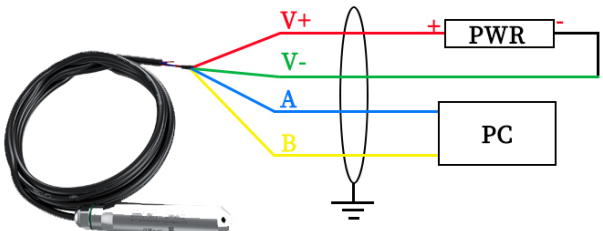
2. Text Annotations for General Wiring Diagram



2-Wire Current Signal Output



3-Wire Voltage Signal Output



4-Wire RS485 Modbus RTU Output

3. Model-Specific Wiring Specifications

1. QDY30A-D Sediment Anti-Blocking Type

Standard two-wire wiring is sufficient; in sewage and humid environments, all wiring connections must be waterproofed and potted with sealant. The shielded cable must be strictly grounded at a single end to prevent level value drift caused by on-site noise interference.

2. QDY30A-316 Corrosion-Resistant Model for Marine Aquaculture

In coastal environments with high salt fog and humidity, terminal blocks must be sealed to prevent corrosion and water ingress; exposed terminals must not be left exposed to salt fog for extended periods; shielding wires must be reliably grounded to suppress electromagnetic interference and salt fog leakage from the coastal environment.

3. QDY30A Deep Well Special Type
Intermediate splicing of extended deep well cables is strictly prohibited; if extension is required, specialized waterproof connectors must be used. The wellhead junction box must be fully sealed to prevent moisture from the well from entering the terminals via the cable. The vent pipe must remain vertical and unobstructed throughout its length; sharp bends are not permitted.

4. QDY30A-FB Mine-Use Explosion-Proof Type
Wiring must strictly comply with intrinsically safe two-wire system standards; only intrinsically safe power supplies and explosion-proof secondary instruments may be used. It is strictly prohibited to change cable specifications, extend the line without authorization, or damage explosion-proof sealed connectors. The interior of junction boxes in explosion-proof zones must be completely filled with sealing compound to prevent the ingress of flammable and explosive gases.

5. QDY30A-B-FL Outdoor Lightning Protection Type
In addition to standard two-wire wiring, the equipment bracket, junction box, and instrument housing must be independently and reliably grounded for lightning protection, with a grounding resistance ≤4Ω; shielded cables must be connected to the lightning protection grounding grid; it is strictly prohibited to power on the device without grounding to prevent circuit breakdown caused by lightning surges.

4. General Wiring Prohibitions & Precautions
1. Reversing positive and negative polarity is strictly prohibited, as is direct connection to 220V AC power; otherwise, the internal circuitry will be instantly destroyed.

2. Signal cables must not be routed in the same conduit or cable tray alongside high-voltage power lines, inverters, or motor power cables to avoid strong electromagnetic interference.

3. Never ground both ends of the shielded cable simultaneously, as this can cause loop current interference, resulting in fluctuating or unstable level data.

4. Do not cut, block, or crush the internal air tubes within the cables, as this will cause atmospheric pressure compensation to fail, resulting in severe measurement distortion.
In humid, outdoor, underground, or coastal environments, do not leave terminal blocks exposed or unsealed; they must be enclosed using a waterproof junction box and sealant.

5. For explosion-proof models, it is strictly prohibited to alter the wiring configuration, remove explosion-proof seals, or mix non-explosion-proof power supplies and instruments.

6. For lightning-protected models, grounding must be completed before wiring and power-up; long-term operation without grounding is prohibited.

7. After wiring is complete, power must be disconnected to verify the wiring sequence. Only after confirmation should no-load power-up testing be performed.

VI. Recommendations for Daily Use and Maintenance
This module addresses the five differentiated models in the QDY30A series of level transmitters. By considering each product's specific operating conditions—such as silt-laden turbid water, seawater corrosion, deep well monitoring, mining explosion-proof environments, and outdoor lightning protection—it provides customized daily inspection, periodic maintenance, and long-term care plans. These solutions are tailored to meet specific application needs, prevent operational failures caused by unsuitable conditions, extend equipment lifespan, and ensure the long-term accuracy and stable operation of level monitoring.
6.1 QDY30A-D Silt-Resistant Level Transmitter (Designed for Sewage, Rivers, and Turbid Water Containing Silt)
1. Key Points for Daily Inspections
Focus on monitoring signal stability. Turbid, silt-laden water can easily cause probe obstruction and data fluctuations. Monitor the level readings in the backend in real time to identify anomalies such as sudden jumps, drift, or loss of data.
Daily checks should be conducted on the temperature and humidity of the water environment where the equipment is located. For outdoor river and sewage tank applications, special attention must be paid to environmental changes during heavy rain and flood seasons to prevent sudden changes in water conditions from affecting equipment operation;
Inspect the condition of the probe's anti-clogging structure to verify that the external filter screen and protective components are not covered by large debris or floating waste, and conduct a preliminary assessment of potential blockage risks.

2. Regular Maintenance Plan
Cleaning Cycle: In standard sewage and river conditions, clean the probe and anti-clogging filter every 7–15 days. In flood seasons or sedimentation tanks with extremely high silt content, shorten the cleaning interval to every 3–5 days. Thoroughly remove silt, sand, and suspended impurities from the probe surface to prevent blockage of the pressure-taking port;
Wiring and Fastening Inspection: Inspect equipment cable joints and waterproof connections monthly to identify issues such as water ingress, loosening, or oxidation and discoloration. Tighten any loose connections to ensure waterproof sealing;
Accuracy Recalibration Recommendation: Perform level accuracy calibration every 3 months, comparing results with manual measurements to correct measurement deviations caused by silt accumulation. An additional recalibration is required after the flood season.

3. Long-Term Maintenance Tips
Dust and Moisture Protection: Maintain the integrity of the probe's protective housing at all times to prevent mud accumulation on exposed surfaces. When the equipment is not in use, remove the probe, dry it thoroughly, and store it in a dry, well-ventilated environment;
Interference Mitigation: Install the probe away from areas with strong currents or debris impact. Secure the probe's position to minimize signal interference caused by water movement or collisions with debris;
Protection Against Extreme Environments: During the flood season and heavy rain, inspect the equipment mounting brackets in advance and reinforce the cables to prevent equipment displacement or cable damage caused by water erosion. Regularly inspect the wear and tear of anti-clogging components and promptly replace any aged or deformed protective parts.

6.2. QDY30A-316 316L Stainless Steel Seawater Aquaculture Level Transmitter (Specifically Designed for Seawater and Slightly Corrosive Water Bodies)
1. Key Points for Routine Inspections
Regularly monitor the stability of equipment signal transmission. Observe whether the liquid level data for aquaculture ponds and adjacent seawater is continuous and stable to prevent data gaps or value deviations;
Monitor on-site temperature and humidity daily. Since marine aquaculture environments are typically characterized by high humidity and salt spray, focus on inspecting for condensation and moisture issues in the housing and at connection points;
Inspect the condition of the probe's stainless steel surface, checking for salt deposits, minor corrosion spots, or signs of marine biofouling to identify potential corrosion risks in advance.

2. Regular Maintenance Plan
Cleaning Cycle: Clean the probes every 15 days. Gently wipe the surface of the 316L stainless steel probes with clean water to remove seawater salt deposits, algae, and planktonic biofouling. Do not use strong acid or alkali cleaners to avoid damaging the stainless steel passivation layer;
Wiring and Fastening Inspection: Conduct a comprehensive monthly inspection of cable terminals and waterproof connectors. Salt fog environments can cause metal oxidation and loose connections. Tighten wiring promptly, remove oxidation layers, and ensure proper waterproof sealing;
Accuracy Retest Recommendations: Perform accuracy retests and calibration every 6 months. Changes in seawater salinity can slightly affect measurement accuracy; additional calibration may be required as needed following aquaculture cycle changes or water changes.

3. Long-Term Maintenance Tips
Dust and Moisture Protection: Ensure the equipment's junction boxes

and cable connectors remain fully sealed at all times. In high-salt-fog environments, install waterproof protective sleeves over connection points to prevent salt fog and moisture from entering the internal circuitry;
Interference Mitigation: Install the equipment away from aquaculture aeration and water circulation systems to avoid data interference caused by equipment vibration or water flow disturbances, ensuring the probe remains stationary for stable monitoring;
Protection Against Extreme Conditions: Before extreme weather events such as typhoons or high tides, reinforce the equipment's mounting fixtures to prevent damage from seawater impact or surges. Inspect the stainless steel probe for corrosion annually, and apply anti-corrosion treatment promptly if minor pitting is detected.

6.3. QDY30A Submersible Level Transmitter for Deep Wells (Specifically for deep well water extraction and deep groundwater monitoring)
1. Key Points for Routine Inspections
Focus on monitoring the stability of deep-well monitoring signals. Due to the enclosed nature of deep wells and the long cable lengths, daily checks are required to identify issues such as signal delay, data interruptions, and sudden value fluctuations;
Regularly monitor the temperature, humidity, and environmental conditions inside the deep well to identify potential equipment moisture risks caused by dampness or poor ventilation; inspect the cable suspension and probe mounting to prevent situations such as the probe hanging freely, shifting, or touching the well wall, which can affect monitoring accuracy.

2. Regular Maintenance Plan
Cleaning Schedule: Since the water quality in deep wells is relatively clean, remove and clean the probes every 3–6 months to remove trace scale and sediment from the probe surfaces, preventing long-term buildup from affecting sensing accuracy;
Wiring Tightness Inspection: Inspect the wellhead terminal blocks and long cable connection points quarterly, focusing on issues such as aging, loosening, or seal failure in deeply buried cables. Tighten connections and reapply waterproof seals;
Recommendations for Accuracy Recalibration: Perform accuracy recalibration every 6 months. Since deep well water pressure is stable and there are no significant operational changes, a six-month interval is sufficient. However, recalibration must be performed immediately following equipment relocation or cable maintenance.

3. Long-Term Maintenance Tips
Dust and Moisture Protection: Ensure the wellhead is properly sealed against dust and moisture to prevent surface dust, rainwater, and humidity from seeping into the equipment and connection ports via the cables;
Interference Mitigation: Organize and store long cables neatly to avoid tangling, crushing, or excessive bending, thereby reducing signal transmission loss and interference. Position the probe vertically and suspended, ensuring it does not touch the well wall or bottom;
Protection Against Extreme Environments: During cold winter periods, implement frost protection at the manhole opening to prevent cable freezing and cracking, as well as probe icing that could affect monitoring. During the rainy season, guard against sudden rises or drops in manhole water levels that could cause abnormal stress on the equipment.

6.4. QDY30A-FB Mine-Grade Explosion-Proof Cable-Type Level Transmitter (Designed for Underground Mining and Explosion-Proof Industrial Applications)
1. Key Points for Daily Inspections
Strictly monitor signal stability under explosion-proof operating conditions and verify liquid level monitoring data in real time to eliminate underground safety hazards caused by signal abnormalities or data failures;
Monitor underground environmental temperature, humidity, and dust concentration daily. High humidity, high dust levels, and confined environments underground can affect equipment circuits; therefore, prioritize inspections for moisture and dust accumulation; Inspect the integrity of explosion-proof cables and connectors, and verify that the explosion-proof sealing structures are intact, with no damage, cracks, or looseness.

2. Periodic Maintenance Plan
Cleaning Cycle: Dust and clean the probe, explosion-proof housing, and cable surfaces monthly to remove accumulated mine dust and slag. Ensure normal heat dissipation and ventilation of the equipment. Do not disassemble the explosion-proof structure without authorization;
Wiring Tightness Inspection: Conduct a dedicated inspection of explosion-proof terminal blocks and cable connectors every two weeks. Tighten wiring strictly in accordance with mining explosion-proof standards, identify potential hazards such as cable wear, fraying, or loosening, and eliminate the risk of electrical sparks;
Accuracy Retest Recommendations: Conduct accuracy retests and calibrations every three months. Given the complex and variable conditions underground, frequent calibration is necessary to ensure measurement accuracy. Coordinate these efforts with the mine's regular equipment maintenance schedule.

3. Long-Term Maintenance Tips
Dust and Moisture Protection: Maintain the integrity of the explosion-proof housing seals at all times; seal all unused ports to prevent underground dust and moisture from entering the equipment; regularly clean dust accumulation from the housing's ventilation holes;
Interference Mitigation: Route wiring away from mining electromechanical equipment and devices with strong magnetic fields to avoid industrial electromagnetic interference and ensure stable signal transmission;
Protection Against Extreme Environments: Strictly adhere to safety regulations for mining equipment. After extreme conditions such as increased water ingress or dust levels underground, conduct a comprehensive inspection of the equipment's explosion-proof performance and operational status. Replace aging explosion-proof components promptly, and strictly prohibit operation of faulty equipment.

6.5. QDY30A-B-FL Outdoor Lightning-Protected Level Sensor Transmitter (Designed for open-air equipment and environments prone to thunderstorms)
1. Key Points for Routine Inspections
Regularly monitor the signal stability of outdoor equipment. Given the large temperature fluctuations and unpredictable weather in open-air environments, focus on identifying data fluctuations and signal interruptions caused by wind and rain;
Monitor on-site temperature and humidity daily. Pay special attention to equipment operational status during high summer temperatures, low winter temperatures, and high humidity during the rainy season; Conduct specialized inspections of the lightning protection module and grounding system to ensure lightning protection components show no signs of damage, detachment, or failure, and that grounding connections are intact.

2. Regular Maintenance Plan
Cleaning Schedule: Clean sensors and equipment housings once a month to remove outdoor dust, fallen leaves, rain stains, and insect residue, ensuring the equipment's sensing surfaces remain clean and heat dissipation is unobstructed;
Wiring Tightness Inspection: Conduct a comprehensive monthly inspection of outdoor terminal blocks, cables, and grounding lines to identify issues such as loose connections or cable aging caused by weather erosion or thermal expansion and contraction. Tighten connections and ensure waterproof and insulated protection;
Accuracy Recalibration Recommendations: Perform accuracy recalibration every 4 months. Calibration must be completed once before and once after the thunderstorm season to mitigate the impact of lightning strikes and severe convective weather on equipment accuracy.

3. Long-Term Maintenance Tips
Dust and Moisture Protection: Keep the equipment housing and junction boxes completely sealed. In outdoor environments exposed to prolonged sunlight or rain, regularly inspect the condition of waterproof gaskets and seals, and promptly replace any aged components;
Interference Mitigation: Ensure proper grounding installation and verify that lightning protection grounding resistance meets standards to mitigate electromagnetic interference and surge impacts during thunderstorms, thereby stabilizing signal transmission;
Protection in Extreme Environments: Conduct comprehensive performance tests on lightning protection modules in advance during seasons with frequent thunderstorms. Provide shade and ensure proper heat dissipation for equipment during high temperatures, and implement

frost and crack prevention measures in winter. Secure equipment mounts and cables during strong winds and heavy rain to prevent damage from external forces.

VII. Troubleshooting & Emergency Response

This module addresses common faults in the entire QDY30A series of level transmitters. Taking into account the specific operating conditions of each product, it provides a list of faults, root cause analysis, step-by-step troubleshooting and repair methods, emergency workarounds, and standardized after-sales repair guidelines. This helps operations and maintenance personnel quickly identify issues, resolve faults independently, minimize equipment downtime, and reduce production losses.

7.1 QDY30A-D Silt-Resistant Level Transmitter (Designed for Sewage, Rivers, and Turbid Water Containing Silt)

1. List of Common Faults

The most frequently occurring faults include: no output signal, level signal drift, abnormal terminal indicator lights, false triggering of high/low level alarms, and signal interference or distortion caused by water flow and debris. These issues are primarily caused by silt accumulation, obstruction by debris, and fluctuations in the aquatic environment.

2. Analysis of Failure Causes

No output: Complete blockage of the probe's pressure port, cable damage due to prolonged submersion, oxidation or open circuit at the terminal block, unstable power supply voltage; Signal drift: Sediment accumulation on the filter screen, or sediment and debris covering the probe surface, leading to pressure sensing errors;

Abnormal indicator lights: Power supply overload, poor circuit contact, or short circuits caused by moisture in outdoor environments;

Alarm Triggering: Sediment accumulation causing a false rise in liquid level, leading to data misinterpretation;

Interference and Distortion: Water flow impact in the river channel, collisions with floating debris, or outdoor power frequency interference causing data fluctuations.

3. Step-by-Step Troubleshooting

Step 1: Basic Inspection First, confirm that the on-site power supply is normal and that the control cabinet switch is in the closed position. Observe the status of the equipment indicator lights to preliminarily determine whether the issue is a power supply failure or a fault with the device itself.

Step 2: Wiring Inspection: Check whether the terminal blocks are loose, oxidized, or waterlogged. Re-tighten the connections and ensure waterproof sealing; repair or replace damaged cables promptly.

Step 3: Equipment Cleaning and Repair: Remove the probe and disassemble the protective filter screen. Rinse away accumulated silt and debris with clean water, clear the pressure-sensing ports, and ensure the sensing surface is clean and unobstructed.

Step 4: Accuracy Reset

After cleaning, allow the device to stand for a reset. Compare with manual level data to fine-tune the calibration and eliminate drift errors.

Step 5: Interference Mitigation

Reinforce the probe mounting bracket, position it away from areas of strong currents or debris accumulation, and minimize interference from water impact.

Emergency Workaround: If the device experiences a temporary malfunction that cannot be repaired immediately, manually measure and record the liquid level at regular intervals. Temporarily disable the automatic interlock control and resume fully automatic operation once the device is repaired.

4. After-Sales Service Request Guidelines

Failure Criteria: No signal output after cleaning, rewiring, and power adjustment;

Persistent significant drift that cannot be calibrated; damaged housing, deformed pressure-taking structure, or water ingress damage.

Repair Process: Record the fault symptoms, on-site conditions, equipment serial number, and duration of installation; take photos of the faulty equipment and its installation environment; contact after-sales technical support. Warranty Coverage: Free repair or replacement of parts within the warranty period for non-human-induced damage and non-violent external force damage; normal wear and tear caused by sediment is not covered under the warranty.

7.2. QDY30A-316 316L Stainless Steel Seawater Aquaculture Level Transmitter (Specifically for Seawater and Weakly Corrosive Water Environments)

1. List of Common Faults

Frequently occurring faults include: no signal output; value drift caused by salt spray environments; indicator lights flickering on and off; abnormal aquaculture water level alarms; and data distortion caused by interference from salt spray and water circulation.

2. Analysis of Fault Causes

No output: Salt fog corrosion of terminal blocks, water ingress at interfaces causing short circuits, aging or broken cables;

Signal drift: Salt deposits or algae buildup on the probe surface, affecting pressure sensing accuracy;

Abnormal indicator lights: Poor circuit contact due to high humidity and condensation, unstable power supply;

False Alarms: Salt concentration fluctuations or water level variations leading to misinterpreted data;

Interference and Distortion: Vibrations and electromagnetic interference from aerators and water circulation equipment, as well as disturbances from seawater surges.

3. Step-by-Step Troubleshooting

Step 1: Power-Off Safety Inspection: Disconnect the power supply to the equipment. Inspect the junction box and terminals for condensation, oxidation, or rust. Clean off any oxidation and dry out any moisture.

Step 2: Secure and Seal Wiring: Re-tighten all wiring connections, replace aged waterproof O-rings, and install waterproof protective sleeves to prevent salt fog intrusion.

Step 3: Probe Cleaning and Maintenance: Gently wipe salt deposits and algae from the probe surface with clean water; do not scrape with hard objects to protect the stainless steel passivation layer.

Step 4: Calibration and Reset: After cleaning and drying, power on the device to warm it up, then perform level accuracy calibration to correct measurement deviations caused by salinity. Step 5: Isolation from Interference: Relocate the probe to an area of calm water, away from water circulation and aeration equipment, to minimize vibration and water flow interference.

Emergency Alternative: During a malfunction, manually monitor water levels and record data at regular intervals. Manually regulate water exchange and replenishment in the aquaculture pond to ensure a stable aquatic environment.

4. After-Sales Repair Guidelines

Failure Criteria: The device still fails to function normally after cleaning, rust removal, and calibration;

The probe exhibits severe pitting corrosion, perforation, or water ingress;

The circuitry is burned out, or there is a complete loss of signal.

Repair Process: Compile information on the device's usage duration, seawater operating conditions, and the sequence of events leading to the failure; upload on-site photos and submit the device for after-sales inspection.

Warranty Coverage: The warranty is valid under normal seawater conditions with mild corrosion; damage caused by human-induced chemical corrosion or unauthorized disassembly is not covered by the warranty.

7.3. QDY30A Submersible Level Transmitter for Deep Wells (Specifically for deep well water extraction and deep groundwater monitoring)

1. List of Common Faults

Frequently occurring faults include: no output during long-cable transmission, water pressure data drift in deep wells, abnormal wellhead indicator lights, false alarms due to water level exceeding limits, and signal attenuation, interference, or distortion in long cables.

2. Analysis of Fault Causes

No output: Long cables in deep wells being pulled and broken, loose connections at the wellhead, water ingress through seals, or power interruption;

Signal Drift: Probe scaling, probe touching the well wall, or sediment rising from the well bottom affecting pressure sensing;

Abnormal Indicator Lights: Moisture at the wellhead causing electrical leakage, or poor circuit contact;

False Alarms: Cable movement or minor water level fluctuations causing data misinterpretation;
Interference and Distortion: Signal attenuation in excessively long transmission cables, or transmission interference caused by bending or compression.

3. Step-by-Step Troubleshooting
Step 1: Inspect Wellhead Wiring Open the wellhead junction box and check the terminals for looseness, moisture, or oxidation. Tighten the connections, dry out any moisture, and reseal the waterproofing.
Step 2: Inspect Cable Condition Pull the cable to check for breaks, damaged insulation, or severe kinks. Straighten long cables to prevent tangling or compression.
Step 3: Clean and Reset the Probe: Remove the probe to clean off scale and sediment. Inspect the probe for damage, then lower it vertically into the deep well, ensuring it does not touch the well wall or bottom.
Step 4: Signal Calibration: Allow the system to stabilize, then power it on for testing. Compare the results with manual well depth measurements to complete the accuracy calibration. Step 5: Optimize Wiring: Organize the cables at the wellhead to reduce line loss and improve signal transmission stability.
Emergency Alternative: In the event of equipment failure, use manual rope-measuring to determine the water level in deep wells and record data at regular intervals to ensure normal water extraction operations.

4. After-Sales Repair Guidelines
Failure Criteria: No signal after checking wiring, cleaning, and calibration; internal cable breakage; probe water damage; or severe, irreparable long-term data drift.
Repair Process: Describe the well depth, years since installation, and fault symptoms; provide details of the equipment installation site; submit a request for after-sales repair.
Warranty Coverage: Standard warranty applies under normal deep well groundwater conditions, excluding damage caused by intentional pulling or unauthorized cutting of cables.

7.4. QDY30A-FB Mine-Grade Explosion-Proof Cable-Type Level Transmitter (Designed for Underground Mining and Explosion-Proof Industrial Environments)
1. List of Common Faults
Frequently occurring faults include: no output from explosion-proof equipment, data drift in underground conditions, abnormal explosion-proof indicator lights, false triggering of excessive water accumulation alarms, and signal distortion caused by electromagnetic interference in mining environments.

2. Analysis of Fault Causes
No output: short circuits caused by moisture in underground dust, loose explosion-proof connections, worn or damaged cable insulation, or insufficient power supply voltage;
Signal Drift: Mine dust covering the sensor probe; turbid underground water with attached impurities affecting pressure sensing;
Abnormal Indicator Lights: Poor contact in the explosion-proof circuit; dust accumulation and moisture in the circuitry;
False Alarm Triggers: Fluctuations in underground water levels; complex operating conditions leading to data misinterpretation;
Interference-Induced Distortion: Strong electromagnetic interference from large underground electromechanical equipment; interference from parallel wiring.

3. Step-by-Step Troubleshooting
Step 1: Safely Disconnect Power Strictly follow mining safety regulations to disconnect power. Inspect the power supply circuit and the status of explosion-proof switches to eliminate safety hazards associated with live maintenance.
Step 2: Inspect Explosion-Proof Structure Check the integrity of the explosion-proof housing, connectors, and gaskets. Clean mining dust from the equipment surface and clear ventilation holes to ensure the explosion-proof seal remains intact.
Step 3: Inspect and Secure Wiring: Tighten explosion-proof terminal blocks; inspect cables for wear and damage; immediately replace damaged cables; strictly prohibit operation with faulty wiring.
Step 4: Calibrate and Repair Probes: Clean mineral dust and impurities from the probe surface; perform accuracy calibration after power-up; correct drift errors caused by operating conditions.
Step 5: Optimize Electromagnetic Interference Mitigation: Adjust cable routing to avoid high-voltage and magnetic equipment; run cables separately to reduce parallel interference.
Emergency Alternative Plan: In the event of an underground equipment failure, initiate manual spot inspections of water levels, strengthen underground drainage management, temporarily disable automatic interlocks, and eliminate water accumulation hazards.

4. After-Sales Repair Guidelines
Failure Criteria: Failure to operate after routine maintenance and calibration; damage to the explosion-proof structure, cracked housing, or burnt-out circuitry;
Frequent false alarms or complete signal failure. Repair Process: Notify the on-site safety supervisor upon shutdown, record underground operating conditions and the fault status, and contact the dedicated after-sales technical support team.
Warranty Coverage: The warranty applies to normal mining conditions and equipment that has not been disassembled or modified without authorization. Damage resulting from unauthorized disassembly of the explosion-proof structure or non-compliant operation is not covered by the warranty.

7.5. QDY30A-B-FL Outdoor Lightning-Protected Level Sensor Transmitter (Designed for open-air equipment and environments prone to thunderstorms)
1. List of Common Faults
Frequently occurring faults include: no signal output outdoors, data drift caused by fluctuating temperature and humidity, abnormal operation indicator lights, false triggering of heavy rain water level alarms, and signal distortion due to lightning surge interference.

2. Analysis of Fault Causes
No output: Circuit damage caused by lightning surges, waterlogged junction boxes due to outdoor rain, aging or broken wiring, or poor grounding;
Signal Drift: Temperature fluctuations between high and low extremes; rainwater or debris covering the probe, causing measurement errors;
Abnormal Indicator Lights: Unstable power supply; induced voltage from lightning strikes; short circuits due to moisture in wiring;
False Alarm Triggers: Sudden changes in water level during heavy rain; misjudgment caused by wind-induced water surface fluctuations;
Interference and Distortion: Electromagnetic surges during thunderstorms; interference from strong outdoor electric fields.

3. Step-by-Step Troubleshooting
Step 1: Lightning Protection and Power Supply Inspection: Check whether the lightning protection module and grounding lines are intact, verify that the grounding resistance meets standards, and inspect whether the supply voltage is stable and if there are any signs of surge damage.
Step 2: Outdoor Sealing Inspection: Inspect the sealing gaskets of junction boxes and equipment enclosures, remove water ingress and condensation, dry moisture from circuit boards, and replace aged seals.
Step 3: Probe Cleaning and Calibration
Clean dirt and dust from the probe surface, remove any obstructions, and if temperature differences are excessive, allow the probe to stabilize at a constant temperature before recalibrating for accuracy.
Step 4: Anti-Interference Reset
Verify grounding compliance, restart the equipment to clear interference data, and resume normal monitoring.
Step 5: Outdoor Protection Reinforcement
Reinforce equipment mounts and cables, and implement sunshade, waterproofing, and freeze protection measures to withstand extreme weather.
Emergency Alternative: During thunderstorms, if the device malfunctions, manually monitor water level changes in real time and manually start or stop drainage and water supply equipment to mitigate safety risks posed by extreme weather.

4. After-Sales Repair Guidelines
Failure Criteria: The device remains inoperative after lightning protection reset, cleaning, and calibration; circuit damage caused by lightning strikes resulting in a black screen with no indicators; or seal failure leading to prolonged water ingress and complete loss of data control. Repair

Repair Process: Record the weather conditions at the time of the failure and the extent of equipment damage; take photos of the lightning protection structure and the equipment's condition; submit the information for after-sales repair. Warranty Coverage: The warranty applies to normal outdoor thunderstorm conditions, damage not caused by direct lightning strikes, and non-human-induced damage, excluding damage resulting from unauthorized modifications to grounding or equipment alterations.

General After-Sales Policy: For service requests regarding any product in our series, please contact our official after-sales hotline or online technical support. Provide the equipment model, serial number, usage scenario, and fault symptoms. Our after-sales team will offer technical support including remote guidance, mail-in repairs, and on-site service. All equipment used in compliance with specifications is eligible for standard warranty service and lifetime technical consultation.