GLK Signal Isolator

I. Product Definition

The Qidian GLK Signal Isolator is a standard analog signal isolation and conditioning module for industrial automation field applications, designed for the safe transmission and interference-resistant protection of signals such as 4–20 mA and 0–10 V.

Core Functions

Electrical Isolation: Cuts off direct electrical connections between inputs, outputs, and power supplies, eliminating ground loops and common-mode interference.
Signal Conditioning: Converts, distributes, and amplifies standard signals for use with PLCs, DCS systems, and instrumentation.
Interference Suppression: Suppresses electromagnetic interference, surges, and spike pulses to ensure signal stability.
Power Distribution: Provides isolated power supply for two-wire and three-wire transmitters, simplifying field wiring.

II. Working Principle

Process: Input → Isolation → Processing → Output
Input: Receives standard analog signals (e.g., 4–20 mA, 0–10 V) from sensors and instruments
Isolation: Utilizes electromagnetic or optoelectronic isolation technology to transmit signals via non-electrical media, physically breaking the electrical path
Processing: Signal amplification, filtering, and linear correction to ensure accuracy and stability
Output: Converts signals back to standard formats for output to control systems, while simultaneously providing power distribution and signal distribution

Core Advantages of Three-Port Isolation

The input circuit, output circuit, and power supply are completely electrically independent, with no mutual interference:
Completely blocks signal drift caused by ground potential differences and ground loops
Prevents high-voltage surges and strong electromagnetic interference from entering and damaging downstream equipment
Meets electrical safety requirements for explosion-proof and intrinsically safe applications, enhancing system compatibility

III. Core Value

Compared with scenarios without isolators, it highlights the benefits of stable transmission, equipment protection, extended service life, compliance with explosion-proof requirements, etc.

Pain Points Without Isolator

--Signal transmission: Ground loop interference, signal jumping, data distortion, inaccurate control
--Equipment safety: Surge/high voltage intrusion, burning out PLC, modules and sensors
--System life: Rapid device aging, high failure rate and frequent maintenance due to long-term interference
--Safety compliance: Failure to meet explosion-proof/intrinsically safe requirements in chemical, oil and gas scenarios
--On-site wiring: Complex multi-device common grounding, mutual signal interference

Qidian GLK Signal Isolator:

--Stable transmission: Strong anti-interference ability, pure signal without drift, higher accuracy
--Equipment protection: Three-terminal isolation blocks fault voltage and avoids damage to core devices
--Extended service life: Reduce electrical stress, reduce downtime and extend operation and maintenance cycle
--Compliance with explosion-proof: Electrical isolation meets standards and adapts to safety specifications in hazardous areas
--Simplified wiring: Support 1-in multiple-out and isolated power distribution, reducing wiring and debugging costs

IV. Key Product Specifications

4.1 Basic Electrical Specifications

Input Signal Types: 4–20 mA, 0–10 V, 0–5 V, 1–5 V, 0–10 mA, 0–20 mA
Output Signal Types: Matches the input signal (4–20 mA, 0–10 V, etc.)
Channels: 1 In 1 Out / 1 In 2 Out / 1 In 3 Out / 1 In 4 Out / 2 In 2 Out
Load Capacity: For 4-20mA output, maximum load ≤500Ω; for 0-10V output, minimum load ≥10kΩ
Input Impedance: Current signal input ≥100 Ω; Voltage signal input ≥1 MΩ
Accuracy Class: ≤0.1% F.S. (Standard); High-precision versions can achieve ≤0.05% F.S.

4.2 Isolation Performance Parameters

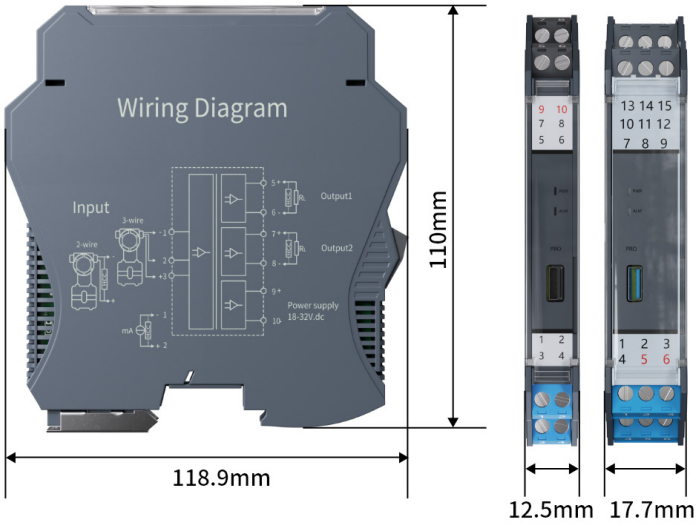
Dielectric Strength: Input/Output/Power Supply ≥1.5 kV/1 min (AC, 50 Hz)
Insulation Resistance: Input/Output/Power Supply ≥100 MΩ (DC 500 V)
Electromagnetic Compatibility Standards: Complies with IEC 61326-3 standard; meets requirements for Electromagnetic Immunity (EMI) and Electromagnetic Emission (EMS)
Response Time: ≤10 ms (0–90%), typical value ≤5 ms
Temperature Drift: ≤0.01% F.S./°C (-20°C to +60°C)

4.3 Power Supply & Power Consumption Parameters

Supply Voltage: Typically 24 V DC (wide voltage range 18 V DC–36 V DC), compatible with 12 V DC and 220 V AC (customizable)
Full-Load Power Consumption: ≤70 mA (when powered by 24 V DC), No-Load Power Consumption: ≤15 mA
Power Distribution Output Parameters: Distribution Voltage 24 V DC, Distribution Current ≤200 mA

4.4 Environmental Adaptation Parameters

Operating Temperature and Humidity: Temperature -20°C to +60°C, Relative Humidity 10%RH to 90%RH (at 40°C)
Storage Temperature and Humidity: Temperature -40°C to +80°C, Relative Humidity 5%RH to 95%RH,
Protection Rating: IP20
Explosion-Proof Rating: (Ex ia Ga) II C



Mounting Method: 35mm DIN Rail
Dimensions: 118.9mm × 110mm × 12.5mm / 118.9mm × 110mm × 17.7mm
Indicator Lights: PWR (Power) / ALM (Alarm)

V. Selection Guide

5.1 Key Selection Criteria

1. Signal Type: Prioritize compatibility with the input and output signals of on-site sensors/instruments (key compatibility factor).
2. Number of Channels: Select based on on-site signal transmission requirements. For standard scenarios, choose 1 input/1 output; when transmitting the same signal to multiple control systems simultaneously, select 1 input/2 outputs or 1 input/3 outputs; for parallel transmission of multiple signals, multi-input/multi-output models are available (customizable).

3. Power Supply: Default is 24V DC wide-range voltage (18V DC–36V DC); 220V AC models are available upon request;
4. Explosion-proof Requirements: For hazardous areas such as chemical and oil & gas facilities, select models with explosion-proof rating (Ex ia Ga) II C and use them in conjunction with safety barriers such as the QD-6045;
5. Installation Environment: For standard installation inside control cabinets, an IP20 protection rating is sufficient; for high-temperature, high-humidity, or dusty environments, verify compatibility with operating temperature and humidity ranges, and opt for customized high-temperature or moisture-resistant optimized models if necessary.

5.2 Industry Application Selection Table

1. Chemical Industry (including oil and gas, coal chemical): Application characteristics—explosion-proof requirements, strong electromagnetic interference, and corrosive gases; signal transmission must be stable and interference-resistant, and comply with hazardous area safety regulations.
2. Power Industry (Power Generation, Substation, Power Distribution): Environment Characteristics—Strong electromagnetic interference, parallel transmission of multiple signals; requires high precision and fast response; must adapt to complex electromagnetic environments.
3. Metallurgy Industry (Steel, Non-ferrous Metals): Environment Characteristics—High temperatures, high dust levels, and strong vibrations; equipment must be heat-resistant and interference-resistant; must adapt to extreme operating environments.
4. Pharmaceutical Industry: Environment characteristics—cleanroom environments, high-precision control; requires zero signal drift and compliance with industry regulations.
5. Smart Manufacturing (Automated Production Lines, Robotics): Environment characteristics—multi-channel, standardized cabling; requires compatibility with PLC/DCS systems and support for rapid integration.

5.3 Common Selection Pitfalls

1. Ignoring Isolation Level: Focusing solely on signal type while neglecting three-terminal isolation (input-output-power supply) leads to ground loop interference, signal drift, and even damage to downstream PLCs/modules—particularly evident in environments with strong electromagnetic interference;
Correct Approach: Prioritize models with three-terminal isolation, dielectric strength ≥1.5 kV/1 min, and insulation resistance ≥100 MΩ to ensure adequate interference resistance.
2. Incorrect Signal Range Selection: Mistakenly selecting a 4–20 mA model for a 0–10 V signal, or vice versa, results in failed signal transmission and data distortion, affecting the accurate monitoring and control of production parameters;
Correct Approach: Clearly identify the input and output signal types of on-site sensors/instruments and ensure precise matching; for special signal requirements, consult in advance for customization.
3. Neglecting load matching: Failing to verify the load resistance (must be ≤500 Ω) for 4–20 mA output, or failing to verify the load resistance (must be ≥10 kΩ) for 0–10 V output, resulting in signal attenuation and inaccurate control;
Correct approach: Verify the load parameters of downstream equipment before selection; if the load exceeds standards, choose a custom model with higher load capacity.
4. Incorrect selection of general-purpose models in explosion-proof environments: In hazardous areas such as chemical and oil & gas facilities, using non-explosion-proof models violates safety regulations, poses safety risks, and may even result in project acceptance failure;
Correct procedure: In explosion-proof environments, models with (Ex ia Ga) II C explosion-proof rating must be selected and paired with corresponding safety barriers to ensure compliance with intrinsically safe explosion-proof requirements and industry safety standards.

5.4 Customization Recommendations

1. Customization for Special Signals: When non-standard signals (e.g., 0–20 mA, 0–1 mA, 0–30 V) are present on-site, or signal conversion is required (e.g., voltage to current, current to voltage), signal types and ranges can be customized to ensure seamless compatibility with on-site instruments and control systems.
2. Customization for Non-Standard Operating Conditions: For non-standard operating conditions such as high temperatures (>60°C), low temperatures (<-20°C), high humidity (>90% RH), or strong electromagnetic interference, we offer customized models optimized for high-temperature resistance, low-temperature resistance, and high electromagnetic interference immunity. This enhances product stability in extreme environments and prevents equipment failure caused by insufficient environmental adaptability.
3. Multi-Channel Integrated Customization: For applications requiring simultaneous isolation and transmission of multiple signals (e.g., 8-channel or 16-channel), we offer multi-channel integrated models. These reduce installation space in control cabinets, simplify wiring, and lower integration costs, while ensuring stable parallel transmission of multiple signals to meet the multi-channel demands of smart manufacturing.
4. Customization Service Guarantee: All customized products adhere to Qidianjia's standardized production processes and come with comprehensive testing reports covering explosion-proof certification and accuracy. The customization cycle can be shortened to 15–20 days, and 24/7 technical support is provided to ensure that customized products quickly adapt to on-site conditions and are successfully put into operation.

VI. Installation and Commissioning Guidelines

6.1 Pre-installation Preparation

1. Check Accessories: After unpacking, verify that all accessories—including the GLK signal isolator main unit, rail clips, mounting screws, product manual, and wiring label—are complete, undamaged, and secure. Confirm that the main unit model and explosion-proof rating (if applicable) match the selection requirements to prevent incorrect installation.

2. Environmental Inspection: Ensure the installation environment meets product requirements. The control cabinet must be free of debris, corrosive gases, and strong electromagnetic interference sources (such as variable frequency drives or high-power contactors). The installation location must have adequate ventilation. Operating temperature and humidity must be maintained between -20°C and +60°C, with relative humidity between 10% RH and 90% RH (no condensation). In explosion-proof environments, verify that the on-site hazard level matches the product's explosion-proof rating.

3. Tool List: Prepare a Phillips screwdriver, wire strippers, crimping pliers, a multimeter (for calibration), electrical tape, cable ties, grounding terminals, and a marker pen. In explosion-proof environments, additional explosion-proof tools must be prepared to prevent the generation of sparks.

4. Safety Precautions: Before installation, disconnect the main power supply at the site and post a "Do Not Operate, Work in Progress" sign. Operators must wear insulated gloves to avoid live-line work. In explosion-proof areas, strictly adhere to explosion-proof regulations; unauthorized operations are strictly prohibited to prevent safety hazards.

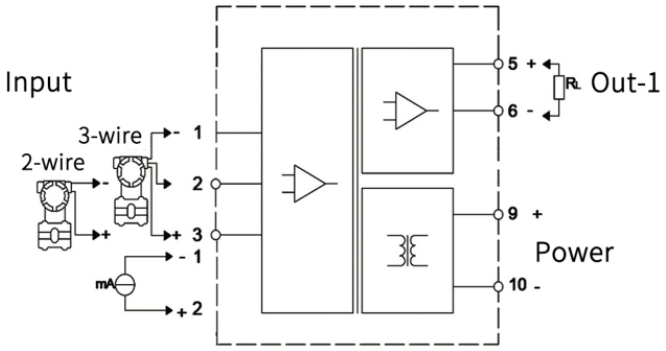
6.2 Standard Installation Steps

1. Mounting the Rail: Use a standard 35mm DIN rail. Align the clips on the back of the isolator with the rail, snap them into place from top to bottom, and gently press until the clips are securely locked to ensure the device is stable. When installing multiple devices side by side, maintain a spacing of ≥5mm to allow for ventilation and heat dissipation, preventing overheating that could affect performance.

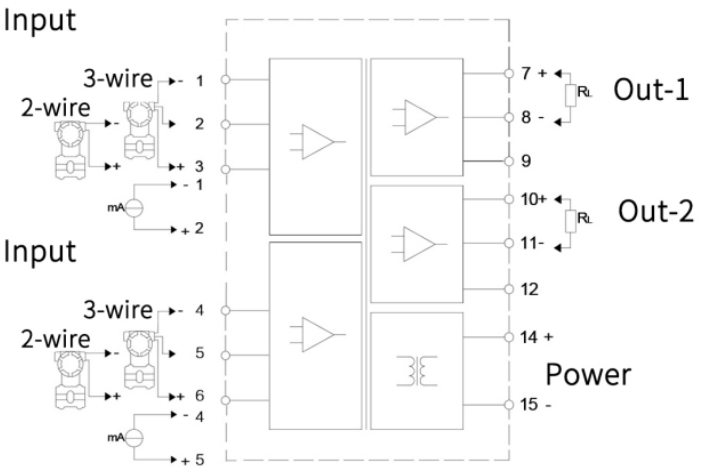
2. Wiring Guidelines: Strictly distinguish between power supply, input, and output terminals. Each terminal is clearly labeled (Power: DC24V+, DC24V-; Input: IN+, IN-; Output: OUT+, OUT-). Do not mix them up. Keep the stripped wire length between 5–8 mm. After stripping, remove any excess insulation to prevent short circuits caused by exposed conductors; Tighten the terminal screws during wiring to ensure good contact and prevent looseness or loose connections.

3. Grounding Requirements: The equipment housing must be grounded separately, with a grounding resistance ≤4Ω. Use a copper-core wire with a cross-sectional area of ≥1.5mm² for the grounding conductor. Signal shielding cables must be grounded at a single end (grounding at the control system end is recommended); grounding at both ends is strictly prohibited to avoid ground loop interference. In explosion-proof environments, grounding must comply with intrinsically safe explosion-proof requirements to ensure reliable grounding.

6.3 Wiring Diagram



1 In 1 Out

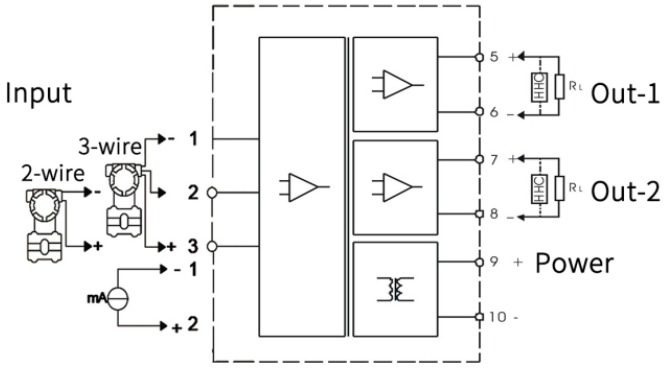


2 In 2 Out

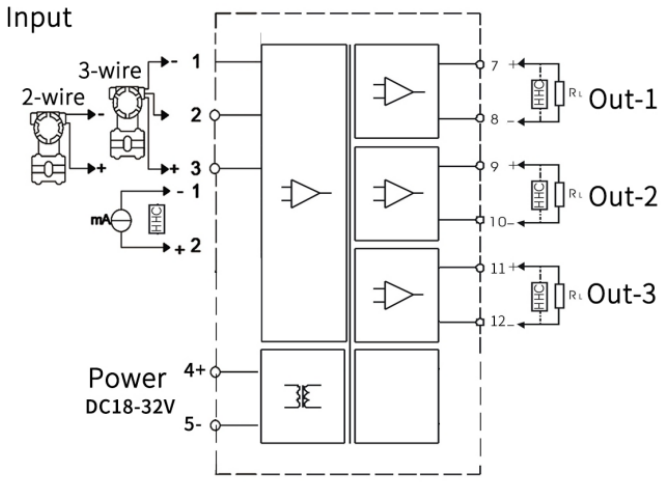
The 2-wire input is 2(5) - 3(6) +

3-wire input 1(4) - 3 (6) + common 2(5)

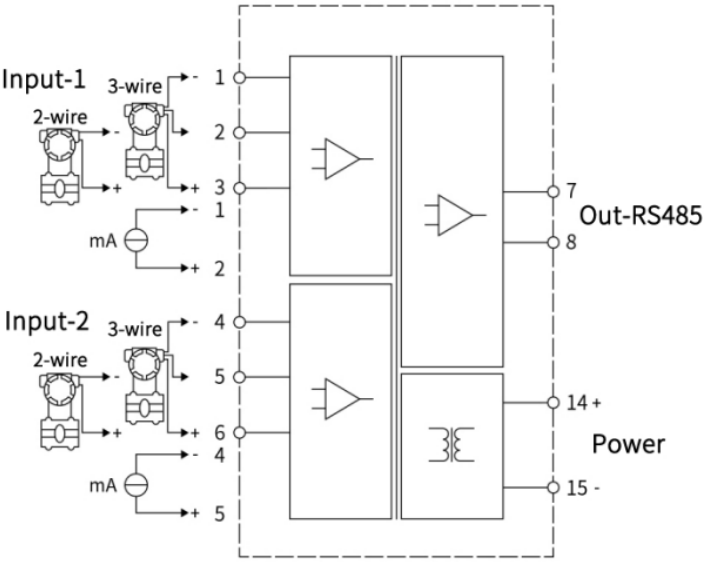
The active output is connected to 7 and 8 or 10 and 11



1 In 2 Out



1 In 3 Out

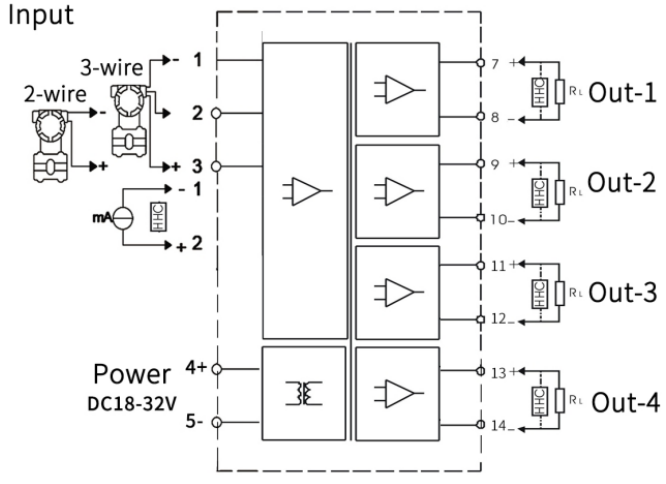


1 In 1 Out / 2 In 1 Out

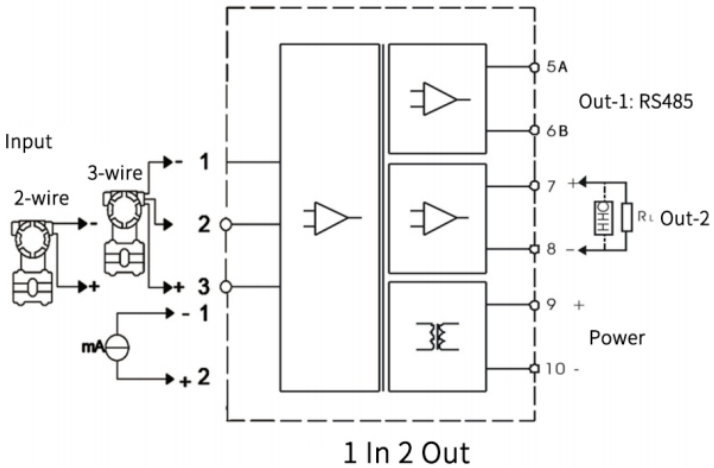
The 2-wire input is 2(5) - 3(6) +

3-wire input 1(4) - 3 (6) + common 2(5)

The active output is connected to 7 and 8 or 10 and 11



1 In 4 Out



1 In 2 Out

6.4 Power-On Commissioning Procedure

1. No-Load Test: Connect the device to power without connecting any input or output signals. Observe the status of the device indicator lights (normal status: power light is on continuously, no fault lights are illuminated). Run the device under no-load conditions for 5–10 minutes to check for overheating or abnormal noises, and confirm that the power supply is functioning normally.

2. Signal Verification: Connect the sensor/instrument input signal. Use a multimeter to measure the isolator's output signal and confirm that the output signal is linearly matched to the input signal (e.g., 4 mA input yields 4 mA output; 20 mA input yields 20 mA output). Ensure the error is within the specified accuracy range (typically ≤0.1% F.S.).

3. Indicator Status Assessment: Power Indicator (PWR): Steady on = Power supply normal; Off = Power supply failure (check power connections and voltage); Error Indicator (ERR): Off = Normal; Steady on/flashing = Signal abnormality or equipment failure (check input signal, wiring, and load); Operation Indicator (RUN): Steady on = Normal operation; Flashing = Signal transmission in progress.

4. Calibration Method: If the output signal error exceeds the standard, calibration can be performed using the device's built-in calibration potentiometers (labeled "ZERO" for zero point and "SPAN" for full scale). Connect a standard signal (e.g., 4 mA, 20 mA), adjust "ZERO" to set the output to the standard zero point, and adjust "SPAN" to set the output to the standard full scale. Repeat the calibration 2–3 times to ensure accuracy meets specifications.

6.5 Installation Precautions

1. Never exceed the rated supply voltage: The device's rated supply voltage is 24 V DC (wide range: 18 V DC to 36 V DC). Never connect a voltage exceeding 36 V DC to avoid burning out the mainboard or power supply module. Additionally, never reverse the polarity of the power supply.

2. Avoid High-Voltage Interference: During installation and wiring, keep the device away from sources of strong electromagnetic interference such as variable frequency drives, high-power motors, and contactors. Maintain a distance of ≥10 cm between signal cables and high-voltage cables (220 V AC and above). Avoid running cables in parallel to prevent signal drift and distortion caused by electromagnetic interference.

3. Protective Measures for Humid Environments: In high-humidity or condensation-prone environments (such as outdoor control cabinets or underground workshops), install a moisture-proof cover on the equipment. Regularly inspect the equipment's terminal blocks for corrosion and promptly remove dust and condensation. Avoid direct contact with moisture to prevent a decline in insulation performance and short-circuit failures.

4. Other Prohibitions: It is strictly prohibited to connect or disconnect wires or disassemble the equipment while it is powered on; it is strictly prohibited to alter the equipment's wiring or modify its structure without authorization (especially for explosion-proof models); it is strictly prohibited to operate the equipment beyond its rated load capacity to prevent damage caused by overloading.

VII. Recommendations for Daily Use and Maintenance

7.1 Key Points for Daily Inspections (Daily/Weekly)

1. Indicator Light Inspection: During daily inspections, focus on checking the status of the equipment's indicator lights and comparing them to the normal state established after successful commissioning. Normal operation is indicated by the power light (PWR) being constantly on, the error light (ERR) being off, and the run light (RUN) being constantly on or flashing normally. If any indicator lights are off or flashing abnormally, promptly investigate issues with the power supply, wiring, or signals.

2. Signal Stability Monitoring: Use a multimeter to randomly check 1–2 input and output signal channels weekly to confirm that signals show no significant fluctuations or drift, and that errors are within the specified accuracy range (typically ≤0.1% F.S.). Cross-reference with control system display data to assess signal transmission stability; if abnormalities are detected, shut down the system immediately for inspection.

3. Temperature and Humidity Monitoring: Record the temperature and humidity inside the control cabinet daily to ensure the operating temperature remains between -20°C and +60°C, and relative humidity between 10% RH and 90% RH (no condensation). If the ambient temperature or humidity exceeds these ranges, promptly activate cooling and dehumidification equipment to prevent abnormal conditions from affecting equipment performance.

7.2 Regular Maintenance Schedule (Weekly)

1. Cleaning Frequency: Clean once a month in standard environments; clean once every two weeks in high-dust or oily environments. Wipe dust from the equipment surface and terminals with a dry, soft cloth. Never use wet cloths or corrosive cleaning agents to avoid water ingress and equipment corrosion.

2. Wiring Tightness Inspection: Inspect the terminal blocks every 3 months. Use a screwdriver to gently tighten any loose terminal screws to ensure good contact, no loose connections, and no looseness. Pay special attention to the power and ground terminals to prevent signal abnormalities or equipment failures caused by loose wiring.

3. Recommendations for Accuracy Retesting: Perform an accuracy retest on the equipment once every 6 months. Apply standard signals (4mA, 12mA, 20mA, or 0V, 5V, 10V) and measure the output signal with a multimeter. If the error exceeds the standard, perform accuracy calibration according to the commissioning specifications to ensure precise signal transmission.

7.3 Long-Term Maintenance Tips

1. Dust and Moisture Protection: Place desiccant inside the control cabinet and replace it regularly (every 1–2 months) to prevent moisture and dust accumulation inside the equipment. In high-dust environments, install a dust cover on the equipment to prevent dust from entering and affecting the normal operation of the circuit boards.

2. Interference Mitigation: Avoid introducing new sources of electromagnetic interference near the equipment (such as variable frequency drives or high-power contactors). If on-site interference is severe, replace signal cables with shielded cables and verify that the shielding is properly grounded to further enhance the equipment's resistance to interference.

3. Protection Against Extreme Environments: In high-temperature environments (□60°C), install cooling fans to ensure adequate ventilation; in low-temperature environments (□-20°C), install heating devices inside the control cabinet to prevent the equipment from failing to start due to low temperatures; in explosion-proof environments, regularly inspect the equipment's seals to ensure no gas ingress.

7.4 Parameter Backup & Adjustment (For Programmable Models, Standard Operating Procedures)

1. Parameter Settings: For programmable models, parameters can be adjusted using the device's built-in buttons or host computer software. Key settings include input/output signal types, ranges, and channel modes. Strictly follow the product manual during setup to prevent incorrect parameter changes that could cause the device to malfunction.

2. Backup Method: Once parameter settings are complete and the device has passed debugging, back up the parameters promptly. Use the host computer software to export the parameter file and save it to a computer or portable storage device, using the naming format "Device Model + Backup Date." Simultaneously record key parameters (such as signal range and calibration values) to facilitate subsequent parameter restoration or device replacement.

3. Parameter Restoration: If device parameters are lost or incorrectly modified, import the backed-up parameter file or manually reconfigure the settings by referring to the recorded key parameters. After restoring the parameters, perform signal verification and accuracy retesting; only put the device back into service after confirming it is operating normally.

VIII. Troubleshooting & Emergency Response

8.1 List of Common Faults (Precisely Addressing Frequent On-Site Issues)

1. No Output: After powering on the device, there is no signal at the output terminal (no current for 4–20 mA, no voltage for 0–10 V), and the control system displays no data.
2. Signal Drift: The output signal is unstable, exhibiting frequent fluctuations or deviations beyond the accuracy range, resulting in abnormal control system operation.
3. Abnormal Indicator Lights: Power indicator does not illuminate; fault indicator remains lit or flashes; operation indicator does not illuminate or flashes abnormally, inconsistent with normal operating conditions
4. Alarm Triggered: The device's built-in alarm function is triggered, or the linked control system triggers an alarm, indicating a device malfunction
5. Interference and Distortion: Output signal exhibits noise or distortion; is non-linear relative to the input signal; cannot accurately reflect on-site operating conditions

8.2 Analysis of Fault Causes (Precise Identification of Root Causes)

1. Wiring errors: Reversed polarity of power supply, incorrect connection of input/output terminals, both ends of the shielding wire grounded, mixing of power distribution terminals with signal terminals, or loose or faulty connections.
2. Power Supply Abnormalities: Supply voltage exceeds the wide voltage range (<18 V DC or >36 V DC), poor contact in power supply lines, damaged power supply module, or power supply in explosion-proof environments does not meet intrinsic safety requirements.
3. Signal Overload: Input signal exceeds the device's rated range; output load exceeds standard limits (4–20 mA output load > 500 Ω, 0–10 V output load < 10 kΩ) .
4. Environmental interference: Strong electromagnetic interference present at the site (e.g., from variable frequency drives or high-power motors), ambient temperature and humidity exceeding the operating range, or condensation or dust ingress into the device.
5. Device damage: Internal circuit board failure, damaged calibration potentiometer, failed isolation module, or component aging due to prolonged use, or damaged seals on explosion-proof models.

8.3 Step-by-Step Troubleshooting

1. No output fault

Troubleshooting Steps: □ Check the power supply wiring to ensure the positive and negative terminals are not reversed and that the supply voltage is within the range of 18 V DC to 36 V DC; □ Check the input and output terminal connections to ensure correct terminal matching and that there are no loose or faulty connections; □ Check the device indicator lights to confirm that the power indicator is constantly lit, indicating normal power supply; □ Use a multimeter to measure the voltage at the power supply terminals to confirm normal power supply.

Remedial Actions: □ Correct the power supply and input/output terminal connections; tighten any loose terminals; □ Replace damaged power supply lines or power modules; □ If terminals are oxidized, wipe them with a dry, soft cloth to ensure good contact.

Emergency Workaround: If no spare power supply module is available on-site, temporarily replace it with a spare isolator of the same model to restore on-site operation, then repair the faulty device later.

2. Signal Drift Failure

Troubleshooting Steps: □ Use a multimeter to measure the input and output signals to confirm that the input signal is stable and free of abnormalities; □ Check the ambient temperature and humidity to confirm they are within the range of -20°C to +60°C and 10% RH to 90% RH; □ Check the shielding wire grounding to confirm it is grounded at one end and that the grounding is secure; □ Check for strong electromagnetic interference sources near the equipment.

Remedial Measures: ① Adjust the device's calibration potentiometers (ZERO/SPAN) to recalibrate signal accuracy; ② Improve environmental conditions by activating cooling and dehumidification equipment, and cleaning dust from the device's surface and interior; ③ Adjust the shielding cable grounding method, move the device away from strong electromagnetic interference sources, and replace the shielding cable if necessary; ④ If drift is severe, check whether the isolation module has failed and replace it promptly.

Emergency Workaround: Temporarily calibrate the device's accuracy to an acceptable range to minimize production impact, then shut down operations for a comprehensive overhaul or replacement of the equipment.

3. Indicator Light Malfunctions

Troubleshooting Steps: □ Refer to the indicator light guide to identify the type of malfunction (e.g., power light not on, fault light flashing); □ Power light not on: Check power supply wiring, voltage, and the power supply module; □ Fault light constantly on/flashing: Check input signals, load, and wiring; □ Abnormal operation light: Check the equipment's operating status and signal transmission.

Remedial Actions: ① Power indicator not lit: Correct power connections and replace damaged power modules; ② Fault indicator malfunction: Troubleshoot input signals and loads; resolve loose connections and overload issues; ③ Operation indicator malfunction: Restart the equipment; if the issue persists, inspect the internal circuit boards.

Emergency Workaround: If indicator lights are abnormal but signal transmission is normal, continue operation temporarily while closely monitoring the equipment's status; if signal transmission is affected, immediately switch to a backup device.

4. Alarm Triggering Faults

Troubleshooting Steps: □ Review the alarm message to identify the alarm type (overload alarm, interference alarm, equipment malfunction alarm, etc.); □ Depending on the alarm type, check the input and output loads, environmental interference, and the equipment's operating status; □ Inspect the equipment's wiring and grounding to ensure there are no abnormalities.

Remedial Actions: □ Overload Alarm: Adjust the load to the standard range to prevent signal overload; □ Interference Alarm: Optimize anti-interference measures, move away from interference sources, and check the grounding of shielded cables; □ Equipment Failure Alarm: Restart the equipment; if the alarm persists, troubleshoot internal equipment faults.

Emergency Workaround: If the alarm does not affect core production, temporarily disable the alarm (document and file a record), and perform troubleshooting during a subsequent shutdown; if production is affected, immediately switch to a backup device.

5. Interference and Distortion Faults

Troubleshooting Steps: □ Use a multimeter to measure input and output signals to determine the degree of distortion and the presence of noise; □ Check the distance between the equipment and strong electromagnetic interference sources, and verify that the spacing between signal cables and power cables is ≥10 cm; □ Check whether the shielding grounding is secure and whether the cables are damaged; □ Check the environment for moisture or condensation.

Remedial Actions: □ Relocate the equipment away from strong electromagnetic interference sources and increase the spacing between signal cables and high-voltage power cables; □ Re-establish shield grounding (single-point grounding) and replace damaged signal cables; □ Remove condensation and dust from the equipment interior and improve environmental conditions to prevent moisture and dust; □ Recalibrate the signal to ensure linear matching between input and output signals.

Emergency Workaround: Temporarily replace the existing cable with a spare shielded cable, shorten the signal transmission distance, restore normal signal transmission first, and optimize anti-interference measures later.

8.4 After-Sales Repair Guidelines

1. Criteria for Determining a Malfunction: The issue remains unresolved after the step-by-step troubleshooting described above; the equipment shows obvious damage (e.g., damaged housing, burnt circuit boards, failed explosion-proof seals); Signal errors persistently exceed the accuracy range and cannot be corrected through calibration; the equipment experiences non-human-induced damage within the warranty period.

2. Repair Process: Prepare repair documentation (equipment model, installation date, fault symptoms, troubleshooting process, and photos of the on-site conditions); Contact Qidianjia's after-sales customer service, submit the repair documentation, and describe the fault details; After-sales technicians will provide remote troubleshooting guidance; if the issue cannot be resolved, on-site repair or equipment replacement will be arranged; After repair/replacement is completed, verify that the equipment is operating normally to close the service request.

3. Contact Information: After-sales Customer Service Hotline: 19715617532 (24/7); Technical Support Email: sales008@qd-zdk.com;

4. Warranty Coverage: The warranty period is 1 year (effective from the date of successful installation and acceptance); within the warranty period, we provide free repair and replacement of parts damaged due to non-human factors (excluding consumables). Faults caused by human damage, improper operation, or use beyond the specified operating conditions are not covered by the warranty; however, paid repair services are available.