JXK-21 Current Transducer

I. Product Definition

The Anhui Qidian JXK-21 Series AC/DC Current Transmitter with a blue housing is a high-precision signal conversion and isolation device designed specifically for industrial automation applications. Its core functions can be broken down into the following categories:

---Signal Conversion: Linearly converts AC/DC current signals from industrial field environments (e.g., AC 0–5 A, DC 0–10 A) into standard signals compatible with PLC/DCS systems (e.g., DC 4–20 mA, 0–5 V, 0–10 V), resolving signal format incompatibility issues between different devices.

---Electrical Isolation: Achieves three-port electrical isolation between the input, output, and power supply sides, blocking ground loop currents and common-mode interference, and protecting downstream control equipment from damage caused by high-voltage interference and surge impacts.

---Signal Conditioning: Amplifies, filters, linearly corrects, and temperature-compensates the raw current signal to output stable, low-noise signals, meeting the requirements for long-distance transmission and high-precision measurement.

---Wide-Scene Adaptability: Compatible with power-frequency AC, DC, and certain irregular current signals; supports stable operation in harsh industrial environments (wide temperature range, high humidity, strong electromagnetic interference); meets current monitoring requirements across multiple industries, including chemical, power, and rail transportation.

---Modular Integration: Features a DIN rail mounting design, a blue industrial-grade plastic housing, and a maintenance-free structure; plug-and-play functionality simplifies on-site wiring and post-installation maintenance.

II. Working Principle

You can think of this transmitter as a “current translator and security firewall” for industrial environments:

It first receives the “dialect signals” (AC/DC current) from the field, then “translates” them via internal circuitry into “standard Mandarin” (such as 4–20 mA signals) that PLCs and DCS systems can understand. At the same time, it acts as a “firewall” to block high-voltage and interference signals from the field from entering the backend control system.

Detailed Workflow

---Signal Acquisition and Preprocessing

The measured current enters the transmitter via the input terminals. For AC signals, a proportional voltage is obtained through current sampling or a current transformer; for DC signals, a high-precision shunt resistor converts the current into a millivolt-level voltage signal, completing the initial signal acquisition.

--- Isolation and Signal Conditioning

The acquired signal enters the isolation circuit (linear optocoupler or electromagnetic isolation module) to achieve electrical isolation between the input and output. Simultaneously, the signal passes through a filter circuit to remove electromagnetic interference noise from the field, and then undergoes amplification and linear correction via an operational amplifier to eliminate signal distortion.

---Standard Signal Conversion

The conditioned signal enters the conversion circuit, where it is linearly converted into standard signals such as 4–20 mA or 0–10 V via V/I (voltage-to-current) or V/V (voltage-to-voltage) circuits. For example, when the input is 0–5 A AC, the output corresponds to 4–20 mA DC, achieving a linear mapping where “0 current corresponds to 4 mA, and full scale (5 A) corresponds to 20 mA.”

---Power Supply and Protection Circuit Support

The 24 VDC power supply module provides a stable power source for the internal circuitry. It also integrates reverse polarity protection, overcurrent protection, and surge suppression circuits to ensure the device remains undamaged during power abnormalities or signal surges, maintaining a continuous and stable signal output.

III. Core Value

1. Signal Format Incompatibility: PLCs/DCSs Cannot Directly Read Field Current

Q: What should I do if the PLC cannot directly recognize the current signals from field motors or variable frequency drives?

A: This transmitter linearly converts AC/DC current signals from the field into standard signals compatible with PLCs and DCS systems, such as 4–20 mA DC or 0–10 V DC, ensuring cross-device signal compatibility and allowing the control system to directly read the current data.

2. Signal fluctuations and inaccurate data caused by ground loop currents and electromagnetic interference

Q: Electromagnetic interference from field inverters and motors causes the current data read by the PLC to fluctuate and exhibit significant errors. How can this be resolved?

A: The transmitter features a built-in three-port electrical isolation circuit that blocks ground loop currents and common-mode interference. Combined with a filtering circuit, it outputs a low-noise, stable signal, keeping measurement errors within ±0.2% and significantly improving data reliability.

3. Frequent damage to downstream PLC/DCS cards caused by high voltage and surge impacts

Q: High-voltage interference and surge impacts at the site frequently cause PLC analog cards to fail, resulting in high equipment maintenance costs. How can this be prevented?

A: The fully isolated design across the input, output, and power supply ports, combined with surge suppression and overcurrent protection circuits, can withstand isolation withstand voltages exceeding 1500V. This prevents high-voltage signals from entering the control system, protects downstream equipment from damage, and reduces maintenance costs.

4. Harsh industrial environments render standard instruments unreliable

Q: In field environments with extreme temperatures, humidity, and dust, standard signal conversion devices frequently fail. Is there a durable solution?

A: Featuring a blue industrial-grade plastic housing and a fully sealed structure, it supports wide-temperature operation from -20°C to +60°C and offers vibration resistance, moisture resistance, and dust resistance. It is suitable for harsh industrial environments such as chemical plants, metallurgy, and outdoor settings, ensuring maintenance-free, long-term stable operation.

5. Complex on-site wiring and high installation/maintenance costs

Q: Traditional current measurement devices involve cumbersome wiring and difficult post-installation maintenance. How can this process be simplified?

A: Featuring a standard DIN rail mounting design and modular terminal wiring, the device is plug-and-play with no complex configuration required. Its maintenance-free design eliminates the need for periodic calibration, significantly reducing installation and maintenance time costs.

6. Signal attenuation over long distances and unstable control signals

Q: The distance between the field and the control room is long, causing severe attenuation of current signals, which leads to control signal lag and malfunctions. How can this be resolved?

A: The converted 4–20 mA current signal offers strong resistance to attenuation, supporting transmission over distances of hundreds of meters with minimal signal loss. This ensures stable control signals between the control room and field equipment, preventing malfunctions caused by signal attenuation.

IV. Key Product Specifications

4.1. Basic Electrical Specifications

Input Signal Type: AC Current / DC Current

Standard Input Range: AC 0–5 A (Custom ranges available, including 0–1 A, 0–10 A, 0–20 A, 0–100 A, and more)

Input Method: Terminal block input (suitable for low-current applications)

Output Signal Type: Standard DC analog signal, default DC 4–20 mA; optional 0–5 V/0–10 V/RS485 digital signal

Output Load Capacity: Current output: ≤500 Ω; Voltage output: ≥2 kΩ

Measurement Accuracy: Class 0.2 / Class 0.5 (Standard Class 0.5; Class 0.2 available for high-precision models)

Linearity Error: ≤±0.1% FS

Repeatability Error: ≤±0.1% FS

Temperature drift: ≤±50 ppm/°C
Response time: ≤200 ms
Bandwidth: DC to 20 kHz (AC version compatible with 50 Hz power frequency; supports extension up to 400 Hz)
Output ripple: ≤10 mVpp

4.2 Isolation Performance Parameters
Isolation Method: Full electrical isolation at all three ports (input, output, and power supply)
Isolation Withstand Voltage: AC 2500 V/50 Hz, no breakdown for 1 minute
Insulation Resistance: ≥100 MΩ (tested at DC 500 V)
Common-Mode Rejection Ratio (CMRR): ≥100 dB
Differential-Mode Rejection Ratio (DMRR): ≥60 dB
Ground Loop Cancellation: Completely eliminates signal interference caused by ground potential differences in the field

4.3 Power Supply & Power Consumption Parameters
Standard Supply Voltage: DC 24V (±10%, compatible with industrial standard power distribution systems)
Optional Power Supply Options: DC 12V/DC 5V/AC 85–265V (customizable wide-voltage version)
Full-Load Power Consumption: ≤1.5W (when powered by DC 24V, current ≤60mA)
Reverse Polarity Protection: Built-in reverse polarity protection circuit to prevent equipment damage caused by incorrect polarity connection
Overcurrent Protection: Built-in current limiting protection; automatically limits current during output short circuits and resumes normal operation once the fault is resolved

4.4 Environmental Adaptation Parameters
Operating Temperature Range: -20°C to +60°C (extendable to -40°C to +85°C for wide-temperature models)
Storage Temperature Range: -25°C to +85°C
Operating Humidity Range: 10% to 90% RH (non-condensing)
Protection Rating: IP30 (industrial-grade plastic housing, dust- and splash-proof, suitable for installation inside distribution cabinets)
Explosion-Proof Compatibility: Intrinsically safe models compatible with safety barriers: Zener safety barriers / Isolated safety barriers, suitable for Zone 2 chemical explosion-proof environments (Must be used with a certified safety barrier)
Electromagnetic Compatibility: Complies with GB/T 17626 standard; meets requirements for resistance to static, surge, and radio frequency interference
Vibration Resistance: 10–500 Hz, 1 g acceleration; 10 cycles in all directions without damage

4.5. Physical Parameters
Mounting Method: Standard 35mm DIN rail mounting, compatible with standard industrial control cabinet rails
Dimensions: L × W × H: 105mm × 22.5mm × 80mm (blue housing, total height including terminal protrusions approx. 90mm)
Weight: Approx. 120g (including terminals)
Housing Material: Industrial-grade flame-retardant ABS plastic (blue), resistant to aging, with excellent insulation properties
Terminal Specifications: Green pluggable terminal blocks, compatible with 0.5–2.5 mm² wire gauge, pluggable and solder-free
Housing Protection: Fully sealed potting process, moisture- and dust-proof; internal circuitry is protected from on-site dust and moisture

V. Application-Specific Selection Guide
5.1 Key Selection Criteria
1. Signal Type: You must first determine whether the signal to be measured is AC (alternating current), DC (direct current), or both AC and DC. The JXK-21 supports both AC and DC input types; selecting the wrong option may result in inaccurate measurements or an inability to read the data.
2. Input Range: Select the standard range based on the actual current being measured. The standard range is 0–5 A, but custom ranges such as 0–1 A, 0–10 A, 0–20 A, and 0–50 A are available. It is recommended to allow a margin of 1.2 to 1.5 times the maximum current to prevent damage from overloading.
3. Output Signal: Prioritize compatibility with PLC/DCS/data acquisition module interfaces. Typically, select DC 4–20 mA for more stable long-distance transmission; for short-distance local acquisition, 0–5 V or 0–10 V may be used; RS485 output is available upon request for digital communication.
4. Number of channels: For single-loop monitoring, select the standard 1-in-1-out model; if a single input is required to power both the display instrument and the control system, select the 1-in-2-out dual-output model; for centralized data acquisition across multiple loops, a multi-channel integrated solution is available.
5. Power Supply: For centralized power distribution within cabinets, prioritize the standard 24 V DC model; if DC power is unavailable or wiring is inconvenient, select the 85–265 V AC/DC wide-voltage model, which supports direct power sourcing from the field.
6. Isolation Performance: In environments with strong interference, significant ground potential differences, or high voltage, the three-port fully isolated model must be selected, with an isolation withstand voltage of ≥2500 V AC; for standard, clean, low-voltage environments, the basic isolation model may be used.
7. Explosion-Proof Requirements: In hazardous explosive environments such as chemical, oil and gas, and pharmaceutical industries, intrinsically safe explosion-proof certified models must be selected and used in conjunction with corresponding safety barriers; the use of general-purpose models as substitutes is strictly prohibited.
8. Installation Environment: Standard 35mm DIN rail mounting in indoor distribution cabinets; for high-temperature, high-humidity, dusty, or vibrating environments, select wide-temperature, reinforced, or potted models to enhance stability and service life.
9. Accuracy Class: Select Class 0.2 high-precision models for precision control and metering applications; choose Class 0.5 general-purpose models for routine monitoring and protective logic to balance cost and performance.
10. Load Capacity: For current output models, ensure the total resistance of the downstream circuit is ≤500Ω; for voltage output models, ensure the input impedance of the downstream circuit is ≥2kΩ to prevent signal distortion due to insufficient load.

5.2. Recommended Models by Industry Application
1. Chemical Industry: Prioritize the JXK-21 intrinsically safe AC/DC current transmitter, featuring three-port full isolation and designed for use with safety barriers. It is suitable for current monitoring in equipment such as reactors, pumps, fans, and compressors, meeting both explosion-proof and high anti-interference requirements.
2. Power Industry: Select the standard or wide-voltage version of the JXK-21, primarily for AC input, featuring high isolation and voltage resistance. It is used for current acquisition in power distribution circuits, transformers, switchgear, and DC power panels, and is suitable for environments with power grid harmonics and electromagnetic interference.
3. Metallurgy Industry: Select the JXK-21 wide-temperature, reinforced, and high-overload protection model, which supports both AC and DC. It is suitable for high-current, high-vibration, and high-temperature operating conditions such as electrolytic cells, electric arc furnaces, and rolling mill motors, ensuring long-term stability without drift.
4. Pharmaceutical Industry: Select the JXK-21 Cleanroom-grade, high-precision model (with optional explosion-proof version) for current monitoring in cleanroom mixing, batching, and conveying equipment, ensuring process stability and consistent pharmaceutical quality.
5. Smart Manufacturing / Automated Production Lines: Select the JXK-21 standard 1-in-1-out or 1-in-2-out models, powered by 24V DC, with quick DIN-rail mounting, suitable for multi-point monitoring in robots, machine tools, conveyor belts, and packaging equipment.
6. Rail Transit / Municipal Equipment: Select the JXK-21 wide-temperature, vibration-resistant reinforced model, compatible with both AC and DC power, for outdoor and onboard environments such as traction systems, ventilation equipment, and water pumps, ensuring high reliability.
7. New Energy / Photovoltaic Energy Storage: Select the JXK-21 DC-specific or AC/DC universal models, featuring high precision and high isolation, for battery pack charging/discharging and inverter current monitoring to ensure system safety.
8. Environmental Protection / Water Treatment: Select the JXK-21 moisture- and dust-resistant reinforced model, suitable for humid and dusty environments such as water pumps, fans, and chemical dosing systems, ensuring long-term, maintenance-free, and stable operation.

5.3 Common Selection Pitfalls

Pitfall 1: Ignoring isolation levels and focusing only on accuracy and measurement range

Consequences: Ground-loop interference and common-mode voltage can cause signal fluctuations and inaccurate data; in severe cases, this can lead to the breakdown of PLC modules. Correct approach: In systems with strong interference, high voltage, or multiple grounding points, a three-port fully isolated model must be selected.

Misconception 2: Selecting the Wrong Signal Range (Too Large or Too Small)

Consequences: A range that is too small can lead to overload damage; a range that is too large results in poor measurement accuracy and insufficient resolution for small currents. Correct Approach: Select a range that is 1.2 to 1.5 times the actual maximum current.

Misconception 3: Neglecting output-to-load matching

Consequences: Excessive resistance in the 4–20 mA output loop prevents current from reaching the required level and causes signal distortion; too low an output impedance in voltage output results in insufficient load-carrying capacity. Correct approach: Calculate the total load resistance before selection.

Misconception 4: Selecting general-purpose non-explosion-proof models for explosion-hazardous environments

Consequences: Failure to comply with safety regulations, posing explosion risks, and resulting in failure to pass acceptance testing. Correct Approach: Intrinsically safe models + matching safety barriers must be used in hazardous areas.

Misconception 5: Mismatching the Number of Channels with the Output Signal

Consequences: Selecting a single-output model when dual outputs are required leads to the need for an additional splitter, increasing costs and potential failure points; output signals incompatible with the data acquisition module prevent system integration. Correct Approach: First confirm the system interfaces and the number of loops.

Misconception 6: Mismatching the Supply Voltage with On-Site Power Distribution

Consequences: Selecting an AC220V model when the site only has DC24V, resulting in no power supply; or using a narrow-voltage model when wide-voltage is required, causing system crashes and reboots during voltage fluctuations. Correct Approach: Select the model directly based on the site's power distribution type.

5.4 Customization Recommendations

1. Custom Special Signals: Non-standard input ranges such as 0–30A, 0–75mA, or bidirectional ±5A can be customized according to customer specifications; Special outputs such as 0–10V, 1–5V, and RS485 Modbus-RTU can all be customized.

2. Customization for Non-Standard Operating Conditions: For environments with extreme high or low temperatures, high humidity, high corrosion, or strong vibrations, we can provide wide-temperature extensions, sealed potting, enhanced anti-interference measures, and corrosion-resistant housing treatments to improve environmental adaptability.

3. Multi-channel integration customization: For centralized monitoring of multiple circuits, we offer 2-channel, 4-channel, and 8-channel integrated JXK-21 customization solutions to save installation space, simplify wiring, and reduce costs.

4. Explosion-proof and safety customization: For hazardous areas, we provide complete intrinsically safe explosion-proof certification solutions, including a full configuration of transmitters and corresponding safety barriers, to meet explosion-proof certification requirements in industries such as chemicals and oil & gas.

5. Functional Expansion Customization: Additional features such as out-of-limit alarms, relay outputs, power distribution outputs, surge protection, and reverse connection protection can be added to accommodate complex control logic.

6. Interface and Structural Customization: Special terminal blocks, lead wire outputs, non-standard dimensions, and wall-mounting structures can all be customized to meet specific cabinet and wiring requirements.

VI: Installation and Commissioning Guidelines

6.1 Pre-installation Preparation

1. Verification of Components

After unpacking, verify that the product model is the JXK-21 blue-cased AC/DC current transmitter. Inspect the exterior for damage or cracks, and ensure the terminals are not deformed. Check that the included terminal blocks, certificate of conformity, and user manual are all present. Confirm that the input range, output signal, and supply voltage match the order specifications.

2. Environmental Inspection

Ensure the installation location is free from severe vibration, direct sunlight, and corrosive gases. Confirm that the installation cabinet is dry and well-ventilated, and keep it away from strong interference sources such as high-power inverters, contactors, and transformers. Ambient temperature and humidity must be within the product's permissible range; avoid direct installation in areas with standing water, condensation, or heavy dust.

3. Tool List

Prepare a 35mm standard DIN rail, Phillips screwdriver, wire strippers, crimping pliers, multimeter, voltage/current signal source, electrical tape, and wire marking tubes. If shielded cabling is required, prepare shielded cables, grounding terminals, and grounding busbars.

4. Safety Precautions

All on-site power must be disconnected before installation. Live wiring and plugging/unplugging terminals are strictly prohibited. Wiring personnel must wear insulated tools and possess basic electrical operation qualifications. Verify the supply voltage level to prevent equipment damage from high-voltage misconnection. Installation in explosion-proof areas must strictly follow explosion-proof regulations; unauthorized live-line work is prohibited.

6.2 Standard Installation Steps

1. Mounting the Rail

Align the latches on the back of the JXK-21 blue-cased transmitter with the 35mm DIN rail, then press down firmly from top to bottom to secure it, ensuring the device is secure and does not wobble. When installing multiple units side by side, it is recommended to leave a gap of at least 10–15mm between each unit to facilitate heat dissipation and wiring operations.

2. Wiring Specifications

Strictly distinguish between power terminals, input terminals, and output terminals. Connect wires according to the markings on the housing; do not mix connections.

Connect the power terminals to a 24 V DC power supply, distinguishing between positive and negative poles: connect the positive pole to V+ and the negative pole to GND;

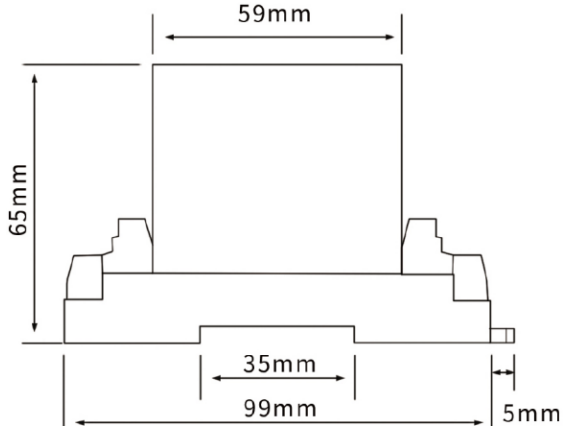
Connect the input terminals to the measured AC or DC current signal. DC signals require positive and negative polarity distinction, while AC signals have no polarity requirements;

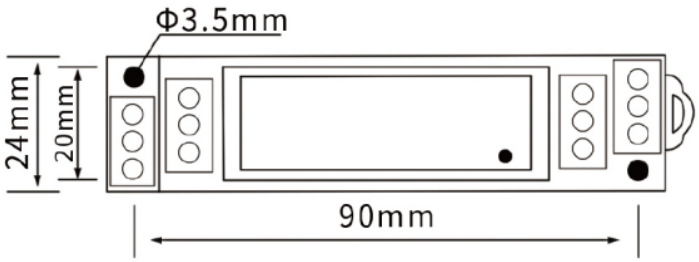
Connect the output terminals to a PLC, data acquisition instrument, or DCS system. Wire current and voltage outputs according to the system interface specifications; do not short-circuit the output ports.

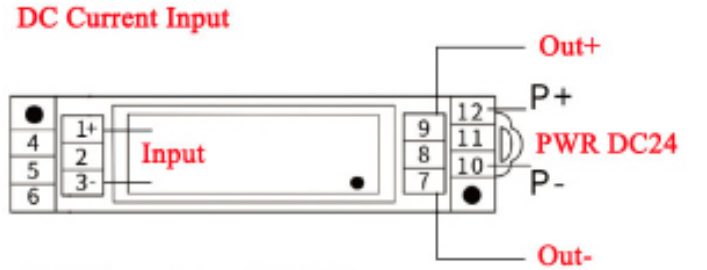
3. Grounding Requirements

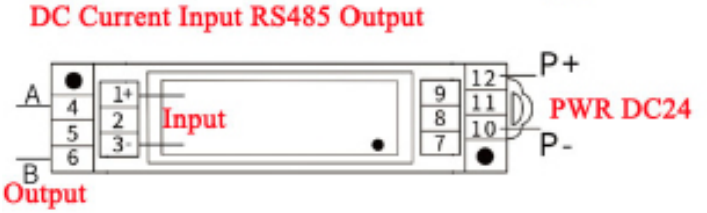
The transmitter housing and mounting rail do not require mandatory grounding. The shield of the shielded cable must be grounded at one end; it is recommended to ground it reliably at the instrument end in the control room and leave it floating at the field end to avoid ground loop interference. In environments with strong interference, the device's common terminal may be connected to the cabinet's grounding busbar; the grounding resistance must be less than 4Ω.

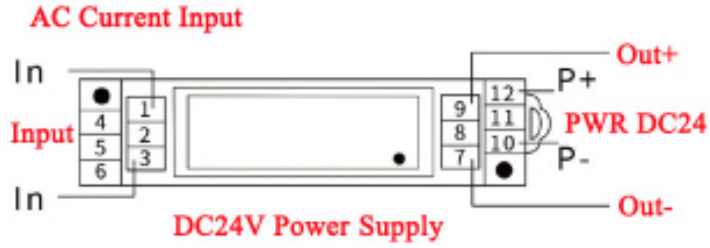
6.3, Wiring Diagram Notes

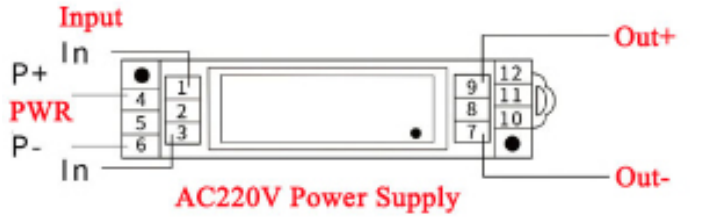


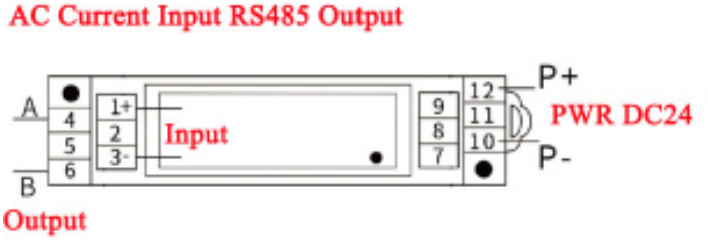












6.4 Power-On Commissioning Procedure

1. No-Load Test

After verifying that the wiring is correct, apply a 24 V DC power supply and observe that the device emits no unusual odors, does not overheat, and produces no abnormal noises. Use a multimeter to measure whether the supply voltage is stable within the standard range to confirm that the power supply is functioning normally.

2. Signal Calibration

Apply a standard analog current signal, gradually increasing it from zero to full scale, and observe whether the transmitter's output changes linearly in proportion; For example, an input of 0–5 A should correspond to an output of 4–20 mA, and the measured value at each point should generally match the theoretical value.

3. Accuracy Calibration Method

If measurement deviations occur, after the device has been powered on and stabilized for 15 minutes, use a standard signal source to input a full-scale signal. Adjust the zero and span using the internal fine-tuning potentiometers. After calibration is complete, secure the cover to prevent accidental contact.

4. Indicator Light Status

The standard JXK-21 model with a blue housing does not have an external indicator light; normal operation is indicated by a stable power supply and stable signal output. For versions equipped with an indicator light, a steady light indicates normal power supply, while a flashing light indicates a signal abnormality or overload.

6.5 Installation Precautions

-- Never connect to a supply voltage exceeding the rated range. Do not connect AC 220V power to the DC 24V power terminals to prevent instantaneous module breakdown.

--- Never bundle input signal cables with high-voltage power cables to avoid measurement drift and data fluctuations caused by strong electromagnetic interference.

--- Never install the unit without protection in environments with severe humidity, prolonged condensation, or standing water. A sealed distribution cabinet with a dehumidification device must be used to prevent internal short circuits.

--- Never allow prolonged short circuits at the output terminals or prolonged overloads at the input terminals. Exceeding the measurement range will result in reduced accuracy or even permanent damage.

---Never connect or disconnect terminal blocks while the device is energized to prevent surge damage to internal isolation components.

In explosion-proof zones, never disassemble the housing, modify the wiring, or use non-compatible safety barriers without authorization, as this will void explosion-proof protection and create a hazard.

7. Daily Use & Maintenance Recommendations

7.1 Key Points for Daily Inspections

Observation of Indicator Lights

After powering on the device, check the power supply and operational status. For models without indicator lights, refer to the output signal; for models with indicator lights, a steady light indicates normal operation, while flashing or no light requires checking the power supply, wiring, or for possible overload.

Signal Stability Monitoring

Use a multimeter or host computer to periodically check whether the output current/voltage is stable, with no sudden changes, fluctuations, or zero-drift. Compare the actual on-site current with the measured values to ensure there are no significant deviations.

Temperature and Humidity Monitoring

The housing should not feel noticeably hot to the touch, and the internal cabinet temperature should not exceed 60°C. Check that there is no condensation, standing water, or dampness/mold inside the cabinet to prevent insulation degradation caused by excessive humidity.

Wiring and Visual Inspection

Check that terminals are not loose, charred, or discolored due to overheating; ensure the blue housing has no cracks, deformation, or signs of corrosion; verify that wiring is neat, with no crushing or damaged insulation.

7.2. Regular Maintenance Schedule

Cleaning Schedule

Dust the surface every 3 months; use a dry brush or compressed air to remove dust from the terminals and housing. In dusty environments, clean once a month.

Wire Tightness Inspection

Tighten the power, input, and output terminal blocks every 6 months to prevent loosening, poor contact, overheating, and arcing caused by vibration. Pay special attention to check for oxidation or blackening at the wire clamping points.

Accuracy Recalibration Recommendations

Perform a full-range accuracy calibration at least once a year. Input three-point signals (0%, 50%, 100%) from a standard signal source to verify that the output error is within Class 0.5. For high-precision applications, calibration is recommended every six months.

Insulation and Isolation Inspection

Test the insulation between the input, output, and power supply once a year to ensure there is no breakdown or leakage; in high-interference environments, additionally verify that the shielding grounding is reliable.

7.3 Long-Term Maintenance Tips

Dust and Moisture Protection

Keep the distribution cabinet sealed and install dust filters. In humid areas, it is recommended to place desiccants inside the cabinet or install a dehumidifier to prevent short circuits caused by condensation. Outdoor or underground cabinets must be waterproofed and sealed.

Optimized Maintenance for Interference Resistance

Route signal and power lines separately, maintaining a minimum distance of 20 cm; ensure shielded cables are grounded at a single point to avoid creating ground loops; keep the cabinet away from strong interference sources such as inverters, contactors, and transformers.

Protection in Extreme Environments

In high-temperature environments, ensure adequate ventilation and avoid direct sunlight; in low-temperature environments, install mild trace heating to prevent accuracy issues caused by temperatures below -20°C; in high-vibration areas, reinforce the mounting rails and install anti-disengagement clips.

Tips for Extending Service Life

Avoid prolonged operation at full-scale overload; reserve a margin of 1.2 to 1.5 times the full scale. Do not disassemble, modify, or open the housing for debugging without authorization. Maintain a stable power supply to minimize voltage fluctuations and surges.

7.4 Quick Troubleshooting of Common Issues

No output signal: First check the 24 V DC power supply, terminal polarity, and whether the wiring is loose.

Signal Fluctuations: Typically caused by interference, poor grounding, damaged shielding, or poor terminal contact.

Output Too High / Too Low: Usually due to zero-point drift or range offset; recalibration is required.

Housing Overheating: Check for overloading, overvoltage in the power supply, output short circuits, or excessively high ambient temperature.

8. Troubleshooting & Emergency Procedures

8.1. List of Common Faults

No output signal: Output is 0 mA/0 V or remains unchanged after power-on

Signal drift/fluctuation: Unstable values, fluctuating between high and low, or persistent deviation

Abnormal indicator lights: Not lit, constantly off, flashing, or changing color

Alarm Triggered: Out-of-range, overcurrent, overvoltage, or short-circuit protection activated

Interference/Distortion: Data jitter, inaccurate readings, significant influence from inverters or motors

8.2. Analysis of Fault Causes

No Output: Power supply not connected, reversed, or incorrect voltage; loose terminals; output short circuit; internal circuit damage

Signal drift: Poor wiring contact, ground loop interference, excessive temperature or humidity, zero-point drift, overload damage

Indicator light abnormalities: Power supply failure, internal protection, wiring errors, equipment aging

Alarm triggers: Input out of range, output short circuit, overvoltage in power supply, load mismatch

Interference and distortion: No isolation, shielding wire grounded incorrectly, cables running parallel to high-voltage lines, cabinet not shielded

8.3 Step-by-Step Troubleshooting

1. No Output Signal

First, disconnect the power supply and check whether the positive and negative terminals of the 24 VDC power supply are reversed.

Use a multimeter to measure whether the supply voltage is within the range of 24 VDC ±10%.

Check whether the power supply terminals, input terminals, and output terminals are loose or have poor connections.

Disconnect the output wires to determine if a short circuit in the downstream circuit has triggered the protection mechanism.

After reconnecting the wires correctly, power on the unit again. If there is still no output, determine that the device is faulty and activate the backup transmitter.

2. Signal Drift / Fluctuation

Inspect all terminal connections, retighten them, and remove any oxidation.

Ensure that the shielded cable is grounded at one end only; the field end must not be grounded, while the control room end must be securely grounded.

Keep the cable away from the inverter, contactors, and power cables; route them separately.

Improve temperature and humidity conditions inside the cabinet by dehumidifying, dusting, and ventilating.

Verify with a standard signal source; if there is a zero-point or full-scale deviation, recalibrate.

If drift persists, replace the transmitter.

3. Abnormal Indicator Lights

Light does not illuminate: First check the power supply, fuses, and terminal blocks.

Light flickers: This is typically caused by overload, output short circuit, or input out-of-range.

If the light remains abnormal after ruling out external issues, replace the device immediately.

4. Alarm Triggered

Immediately cut power and check if the input current is out of range

Check for output short circuits or excessive load

Check for overvoltage in the power supply or interference from high-voltage power lines

Reset after eliminating external faults; if the alarm persists, replace the transmitter

5. Interference and Distortion

Confirm use of the three-port fully isolated JXK-21 model

Replace signal cables with shielded cables and keep them away from high-voltage lines

Ensure single-point grounding to eliminate ground loops

Install shielded partitions inside the cabinet and keep it away from interference sources

If the issue persists, install a signal isolator to enhance interference resistance

8.4 Emergency Workarounds

In the event of an emergency shutdown: Immediately replace the unit with a spare JXK-21 transmitter, following the original wiring configuration.

If no spare unit is available: Temporarily use a standard current transformer + isolation transmitter as a substitute.

In explosion-proof areas: Do not open the housing for repairs; replace the entire unit directly while maintaining the existing safety barrier configuration.

8.5 After-Sales Repair Guidelines

1. Criteria for Determining Malfunctions

Repair requests may be submitted if any of the following conditions are met:

Power supply, wiring, and load are all normal, but there is no output

Out-of-tolerance readings persist after calibration, rendering the device unusable

Internal damage, scorched casing, unusual odors, or abnormal noises

Protection failure, breakdown, or short circuit caused by non-human factors

2. Repair Process

Record the product model, specifications, serial number, and purchase date

Take photos: device exterior, wiring, and fault display/readings

Brief description: Symptoms, usage scenario, and time of occurrence

Submit to a sales or after-sales representative

Await remote diagnosis from technical support; follow instructions for troubleshooting or return the unit to the factory

3. Contact Information

Technical Support Hotline: 19715617532

After-Sales Email: sales008@qd-zdk.com

Business Hours: Monday–Friday, 8:30 AM–5:30 PM