JXK-10-22-Z True RMS AC/DC Current Transmitter

User_Product_Manual

Item	Detail
Product Name	True RMS Current Transmitter (Closed-Loop Type)
Model	JXK-10-22-Z
Hardware Version	V2.6
Firmware Version	RMS_current_V2.0
Interface Definition	V2.0
Calibration Software	V2.4
Document Number	UM-JXK1022Z-V2.6-EN
Revision	V1.0
Release Date	October 2026
Product Series	Standard-Current True RMS Series
Language	English
Target Market	Global (International)

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1. Safety Information

READ ALL INSTRUCTIONS BEFORE INSTALLATION OR OPERATION ! ! ! ! ! ! !

This chapter contains important safety instructions that must be followed during installation, operation, and maintenance of the JXK-10-22-Z True RMS Current Transmitter. Failure to follow these instructions may result in equipment damage, personal injury, or voiding of the warranty.

1.1 Safety Symbol Definitions

The following safety symbols may appear on the product or in this manual:

Symbol	Meaning
DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or equipment damage.
NOTE	Provides important information or additional guidance to help the user operate the product effectively.

1.2 General Safety Precautions

WARNING:

•This product is an industrial-grade instrument. It is NOT designed for medical or life-support applications.

•Do not use this product in environments exceeding the specified operating conditions.

•The integrated structure must NOT be disassembled by unauthorized personnel. Unauthorized disassembly will void the warranty and may create safety hazards.

•Do not alter or remove any labels or nameplates from the product housing.

CAUTION:

•Installation and wiring must be performed by qualified electrical personnel only.

•Always verify wiring connections before applying power to the device.

•Do not exceed the maximum input current rating. Input overload may damage the internal magnetic ring and Hall elements.

•Ensure the power supply voltage matches the product specification before connection.

NOTE:

•This product should be installed in environments free from conductive dust, corrosive gases, strong electromagnetic interference, and excessive vibration.

•The product is designed for indoor use. If outdoor installation is required, additional environmental protection measures must be taken.

1.3 Electrical Safety

WARNING:

•Before performing any wiring or maintenance work, ensure the circuit is de-energized and locked out/tagged out (LOTO) procedures are followed.

•The isolation voltage between input, output, and power supply is DC 2.5 kV (1 minute). Do not exceed this voltage rating.

•Never connect the primary conductor while the circuit is live without proper personal protective equipment (PPE).

CAUTION:

•Power supply polarity must be observed. Reverse connection protection is built in, but prolonged reverse connection may damage the protection circuit.

•For AC power supply models (AC220V), ensure proper grounding and use appropriate circuit protection (fuse/MCB).

1.4 Environmental Safety

NOTE:

•Operating temperature: -20 degrees C to +60 degrees C (no condensation)

•Storage temperature: -25 degrees C to +85 degrees C

•Relative humidity: 45% to 75% RH (non-condensing)

•Do not install in environments with conductive dust, corrosive gases, strong impacts, or excessive vibration.

•Maintain minimum spacing of 10 mm between units during concentrated installation for proper heat dissipation.

2. Product Introduction

2.1 Product Overview

The JXK-10-22-Z True RMS Current Transmitter is a high-performance closed-loop measurement device designed to convert large industrial current signals into standardized process signals. Based on the Hall effect principle with closed-loop magnetic balance technology, this transmitter utilizes a high-precision silicon steel magnetic ring and Hall elements to achieve excellent accuracy, linearity, and low temperature drift.

The product features input, output, and power supply mutual electrical isolation, providing enhanced safety and noise immunity in demanding industrial environments. The compact DIN rail-mountable design makes it ideal for integration into control panels, power distribution systems, and industrial automation equipment.

2.2 Primary Applications

Application Area	Description
Power Monitoring Systems	Real-time current monitoring in electrical distribution panels and power quality analysis
Industrial Automation	Integration with PLCs, SCADA systems, and DCS for process control and monitoring
Renewable Energy	Solar inverters, wind turbine generators, and battery energy storage systems
Motor Drive Systems	VFD output current measurement, motor protection, and energy management
Power Quality Analysis	Harmonic analysis, power factor monitoring, and load balancing
Smart Grid Infrastructure	Substation monitoring, feeder automation, and metering applications
Marine and Railway	Ship power systems, railway traction systems, and trackside equipment

2.3 Product Variants

Variant	Description
JXK-10-22-Z (Standard)	DC24V supply, 4-20mA output, 100A range (default configuration)
JXK-10-22-Z (Custom)	Custom power supply (AC220V/DC12V), custom output, custom range

3. Key Features

3.1 Core Technical Advantages

Feature	Description
True RMS Measurement	Accurately measures the true root-mean-square value of complex waveforms including AC, DC, harmonics, and distorted waveforms
Dual Acquisition Mode	Built-in Total RMS (AC+DC) and AC-Only modes selectable via front panel button
High Accuracy	Overall accuracy of +/-0.5% F.S. with linearity of +/-0.2% F.S.
Wide Bandwidth	0 to 5 kHz bandwidth for capturing fast transient signals and harmonics
Fast Response	Response time of less than 200 ms for real-time monitoring applications
Low Temperature Drift	Temperature coefficient of less than 250 PPM/C ensures stable performance across temperature variations
High Isolation	2.5 kV DC isolation between input, output, and power supply for safety and noise immunity
Versatile Output	Supports 4-20mA, 0-10V, RS485, CAN, and custom output configurations
Flexible Range	Single resistor (R8) configuration allows range adjustment from 10A to 1000A
Robust Protection	Comprehensive protection: input overload, output short-circuit, overvoltage, reverse polarity
Compact Design	Lightweight DIN rail mounting with 22mm through-hole aperture
Easy Installation	Standard 35mm DIN rail clip for quick snap-on installation

3.2 Protection Features

Protection Type	Description
Input Overload Protection	Protects against excessive primary current that could damage the magnetic ring
Output Over-Current Protection	Limits output current to safe levels preventing damage to connected equipment
Output Short-Circuit Protection	Withstands prolonged output short-circuit without damage
Power Supply Overvoltage Protection	Protects against voltage spikes and transient overvoltage on the power supply
Power Supply Reverse Polarity Protection	Prevents damage from incorrect power supply connection

4. Technical Specifications

4.1 General Specifications

Parameter	Specification	Test Conditions
Measurement Principle	Hall Effect / Closed-Loop	True RMS
Product Model	JXK-10-22-Z	V2.6 Hardware
Installation Method	DIN Standard Rail (35mm)	-
Isolation Voltage	DC 2.5 kV / 1 min	Input-Output-Power
Power Consumption	≤2W	At rated load
Weight	150g	-

4.2 Electrical Specifications

Parameter	Specification	Test Conditions
Primary Measurement Range	0 to 1000 A	Full scale configurable
Rated Output	0-5V, 0-10V, 0-20mA, 4-20mA, RS485, CAN,	-
Accuracy	±0.5% F.S.	Includes linearity, hysteresis, repeatability
Linearity	≤ 0.2% F.S.	Best fit straight line
Bandwidth	DC 0~ 5 kHz	-3dB point
Response Time	≤ 200 ms	Step response 90%
Temperature Drift	≤ 250 PPM/℃	Full temperature compensated

4.3 Power Supply Specifications

Parameter	Specification
DC Supply (Default)	DC 24V (Range: 18 to 28V)
AC Supply (Optional)	AC 220V (Range: 60 to 265V) - Custom order
DC 12V Supply (Optional)	DC 12V - Custom order
Power Input Protection	Reverse polarity protection, Overvoltage protection

NOTE: Power supply specification is factory-fixed. If AC220V or other supply specifications are required, please contact customer service for customization.

4.4 Output Configuration Specifications

Output Type	Configuration	Notes
4-20mA (Default)	No modification required	Factory default
0-10V	Solder 500 ohm resistor on R48 (1206 package)	Voltage output mode
RS485	Remove R1, R2; solder RS485 module	Terminal resistor 120 ohm not installed by default
CAN	Remove R1, R2; solder CAN module	Terminal resistor 120 ohm not installed by default

NOTE: Output type, range, and acquisition mode must be confirmed with the customer before ordering. Once solder configuration is set at factory, it cannot be easily changed in the field.

4.5 Environmental Specifications

Parameter	Specification
Operating Temperature	-20 ℃ to +60 ℃ (no condensation)
Storage Temperature	-25 ℃ to +85 ℃
Humidity	45% to 75% RH (non-condensing)
Altitude	≤5000 meter
Pollution Degree	Do not use in live or dusty environments. IP20

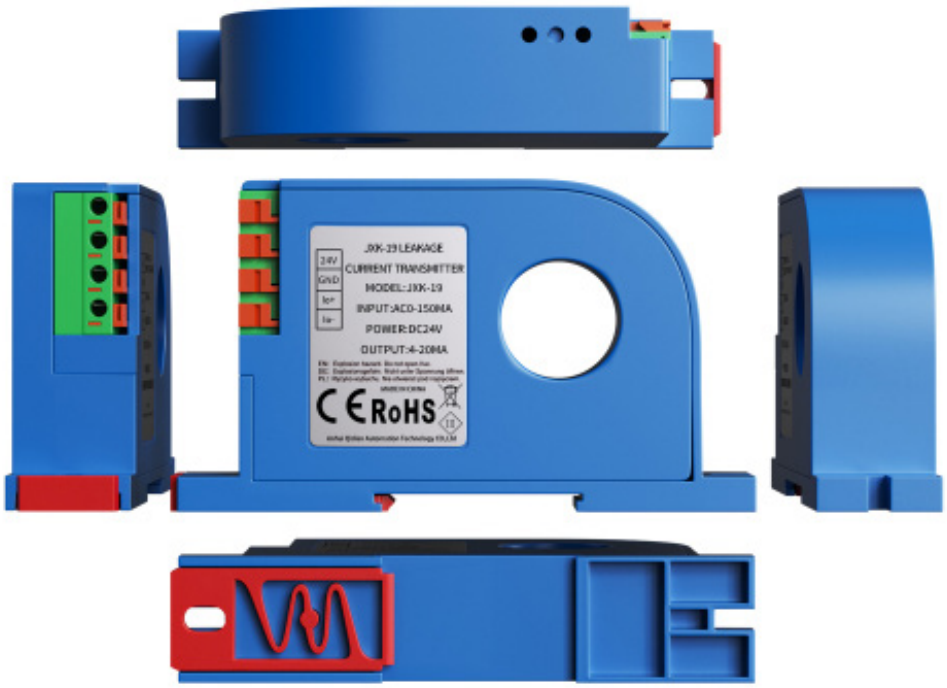
4.6 Mechanical Specifications

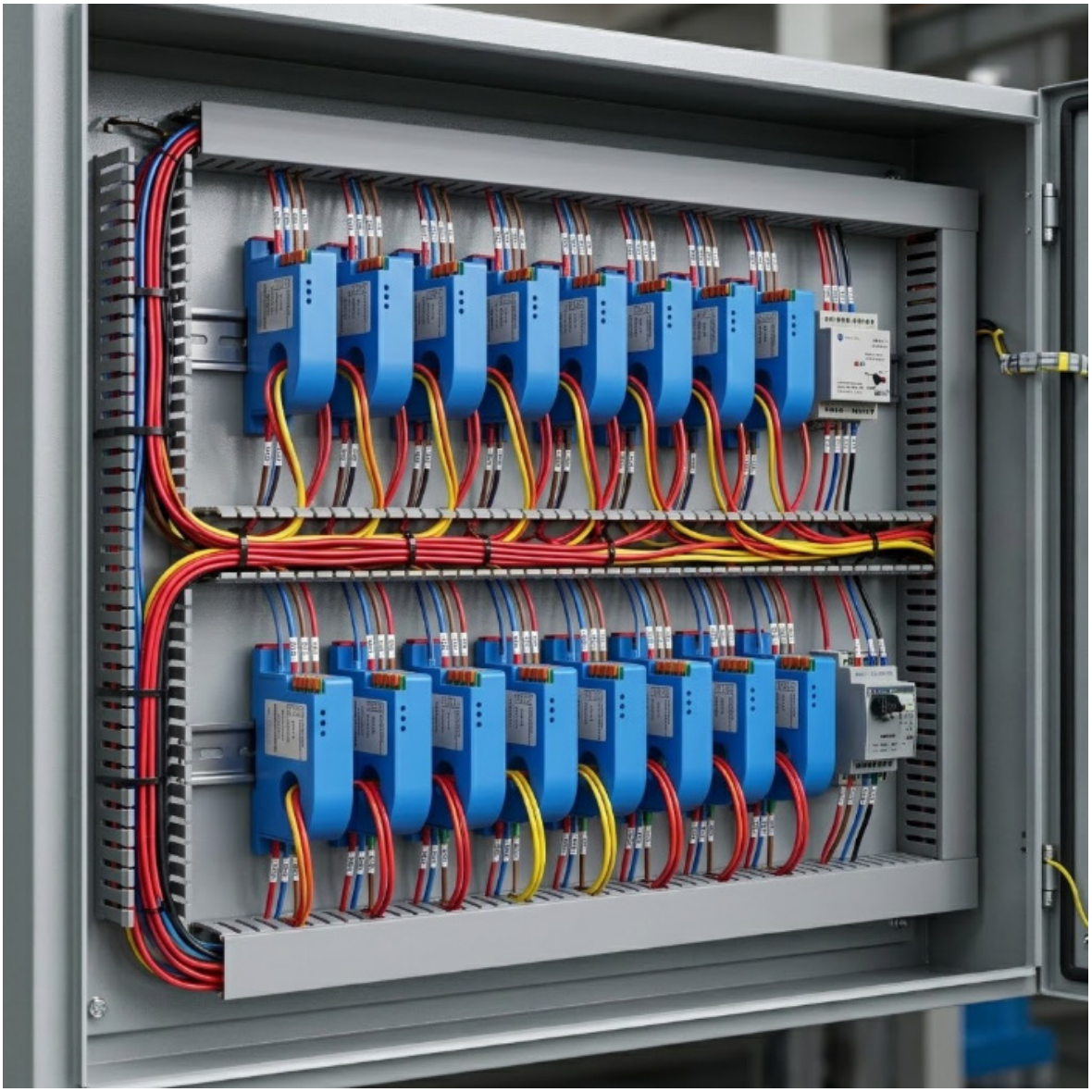
Parameter	Specification
Enclosure Material	ABS Fire-Retardant Plastic
Flammability Rating	UL 94 Material Flame Retardancy Ratings
Protection Degree (IP)	IP 20 - Recommended for indoor use
Mounting	Standard DIN Rail (35mm)

Through-Hole Diameter	22 mm (circular)
Minimum Installation Spacing	≥ 10 mm (concentrated installation)

5. Product Dimensions and Mounting

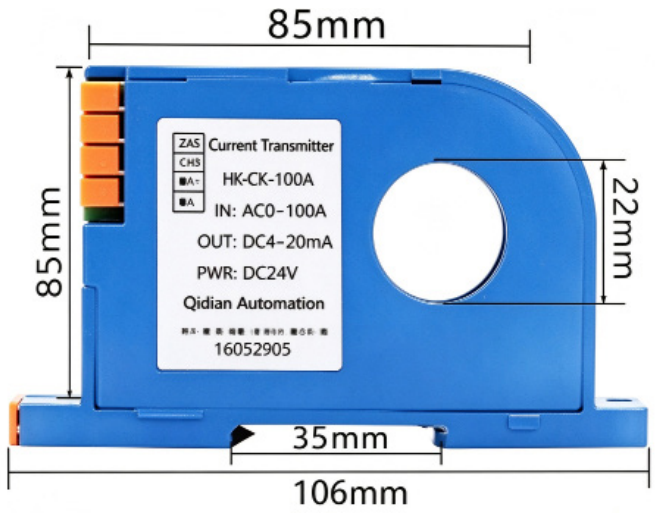
5.1 Physical Dimensions





5.2 Dimension Summary

Dimension	Value
Total Height	85 mm
Total Width	106 mm
Body Thickness	24 mm
Base Clip Width	35 mm
Rail Slot Depth	4 mm
Through-Hole Diameter	Phi 22 mm



5.3 Mounting Instructions

The JXK-10-22-Z is designed for standard DIN rail (35mm) mounting. Follow these steps:

1.Ensure the DIN rail is properly installed and level.

2.Align the rear mounting clip of the transmitter with the top of the DIN rail.

3.Press the device downward until it clicks into place on the rail.

4.Verify the device is securely locked and does not wobble.

5.For concentrated installations, maintain minimum spacing of 10 mm between units.

CAUTION:

•Do not force the device onto the rail. If resistance is felt, realign the clip.

•Ensure the magnetic ring is not subjected to mechanical stress during mounting.

•The product is an integrated structure - do not attempt to remove the cover or modify the housing.

6. Wiring and Connection Guide

6.1 Terminal Block Information

Specification	Value
Terminal Block Model	KF142R-5.08-4P
Number of Pins	4 pins (4-wire system)
Wire Gauge	Typically 0.5-2.5 mm2]
Terminal Type	Screw terminal

6.2 Terminal Pin Definition

Pin	Function	Signal Description
1	Power + / AC L	DC Power Positive / AC Power Line (Live)
2	Power - / AC N	DC Power Negative / AC Power Neutral
3	Signal + / RS485-B / CAN-L	Analog Output+ / RS485-B / CAN-Low
4	Signal - / RS485-A / CAN-H	Analog Output- / RS485-A / CAN-High

JXK-10-22-Z Ture RMS AC/DC Current Transducer

Analog Signal Output :



Electric Current Has No Direction.

DC24V/AC220V Power Supply: Pin 1 = P+, Pin 2 = P-.

Analog Output (4 – 20 mA, 0 – 10 V, etc.): Pin 3 = OUT+, Pin 4 = OUT-.

Digital Signal Output :



Electric Current Has No Direction.

DC24V/AC220V Power Supply: Pin 1 = P+, Pin 2 = P-.

Digital Signal Output (RS485, CAN): Pin 4 = RS485-A/CAN-H, Pin 3 = RS485-B/CAN-L.

6.4 Wiring Guidelines

Acquisition Input:

•Pass the measured current conductor directly through the 22mm circular aperture (through-hole).

•For single-pass measurement, the primary conductor passes once through the ring.

•For increased sensitivity, multiple turns may be used (contact factory for configuration).

Power Supply Connection:

•DC24V (Default): Connect positive to Pin 1, negative to Pin 2.

•AC220V (Optional): Connect Line (L) to Pin 1, Neutral (N) to Pin 2.

•WARNING: Power supply must be strictly connected according to the wiring diagram. Verify connections before powering on.

Analog Output Connection (4-20mA, 0-10V):

•Connect the positive terminal of the reading instrument to Pin 3 (OUT+).

•Connect the negative terminal to Pin 4 (OUT-).

•For 4-20mA output, ensure the load resistance is within the specified range.

Digital Output Connection (RS485, CAN):

•RS485: Pin 4 = A (Positive), Pin 3 = B (Negative)

•CAN: Pin 4 = H (High), Pin 3 = L (Low)

•NOTE: RS485/CAN output does not include terminal resistor (120 ohm) by default. For long-distance communication, install appropriate termination resistors as required by the bus topology.

7. Installation Procedure

7.1 Pre-Installation Checklist

Before installing the JXK-10-22-Z, verify the following:

Check Item	Requirement
Product Model	Verify against purchase order
Power Supply	Confirm DC24V/AC220V matches supply
Output Type	Confirm 4-20mA/0-10V/RS485/CAN matches system
Measurement Range	Confirm range matches application
Environment	Verify temperature, humidity, and cleanliness
DIN Rail	Verify standard 35mm DIN rail is installed
Spacing	Ensure ≥ 10mm spacing from adjacent devices
Conductor Size	Verify primary conductor fits through 22mm aperture

7.2 Installation Steps

Step 1: Environmental Preparation

Ensure the installation environment meets the following requirements: - No conductive dust, corrosive gases, strong impacts, or excessive vibration - Temperature within operating range (-20 ~ +60 ℃) - Adequate ventilation for heat dissipation

Step 2: DIN Rail Preparation

- •Verify the DIN rail is properly installed, level, and secure.
- •Ensure the rail surface is clean and free from debris.

Step 3: Mount the Device

- •Align the rear mounting clip with the top edge of the DIN rail.
- •Pivot the device upward and hook the clip over the rail.
- •Press the bottom of the device toward the rail until it clicks into place.
- •Verify secure attachment by attempting to gently pull the device downward.

Step 4: Pass Primary Conductor

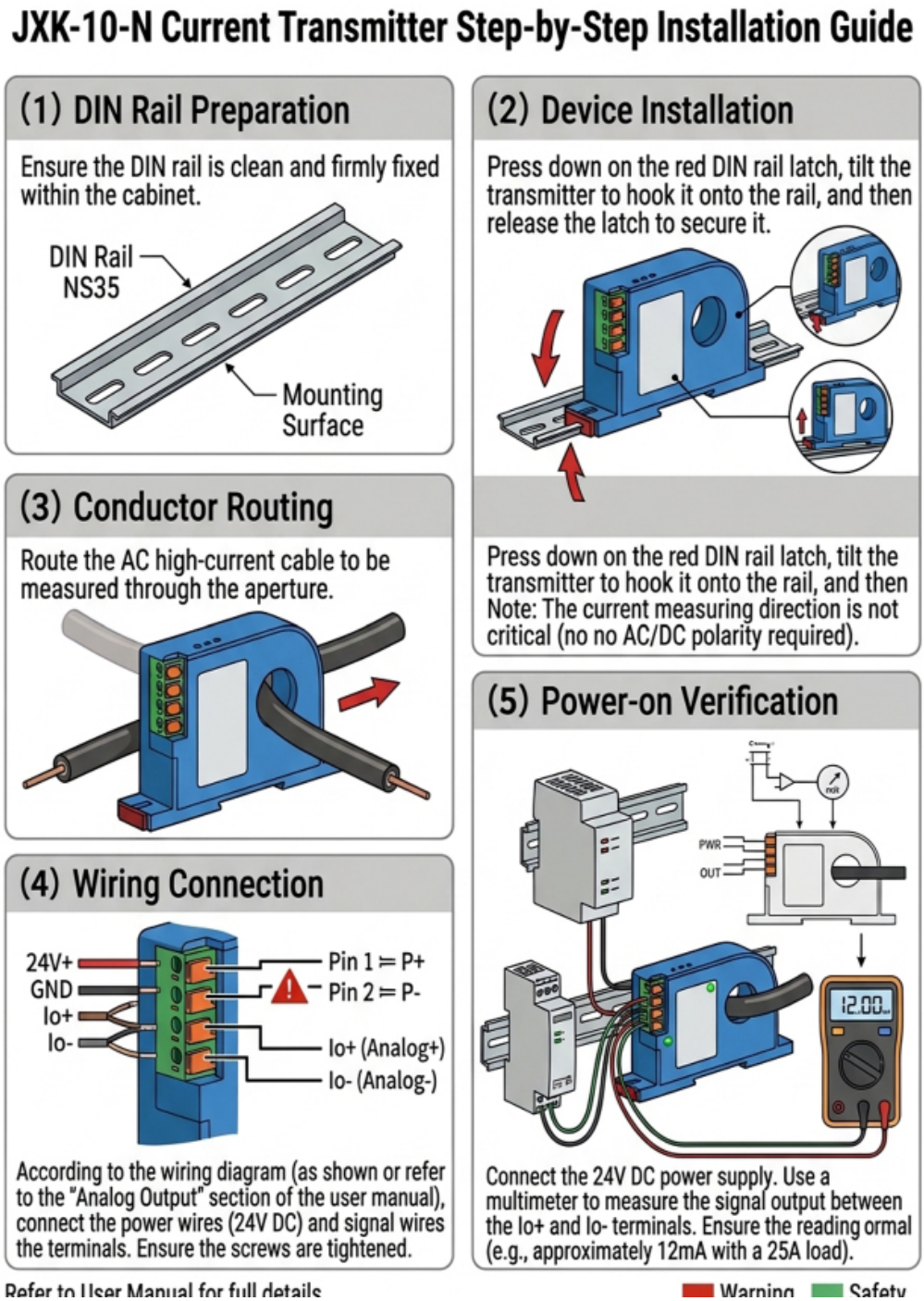
- •Pass the current-carrying conductor through the 22mm circular aperture.
- •Ensure the conductor is centered within the aperture.
- •For three-phase systems, ensure only the phase conductor being measured passes through the ring (not all three phases).

Step 5: Wiring Connections

- •Connect power supply wires to Pins 1 and 2.
- •Connect output signal wires to Pins 3 and 4 (according to output type).
- •Tighten terminal screws securely.
- •Double-check all connections before applying power.

Step 6: Power On and Verify

- •Apply power to the device.
- •Observe the status LED:
  - ◦Single blink per second = Total RMS (AC+DC) mode (Factory Default)
  - ◦Double blink per second = AC-Only mode
- •Verify output signal using a multimeter or data acquisition system.



7.3 Post-Installation Verification

After installation, perform the following checks:

Check	Method	Acceptance Criteria
Power Supply Voltage	Multimeter at terminals	Within specified range
Output Signal	Multimeter/DAQ at rated input	Within ±0.5% F.S.
LED Status	Visual inspection	Normal blinking pattern
Mechanical Security	Gentle pull test	Device does not dislodge
Insulation	Megger test (if required)	Meets isolation rating

8. Operation Guide

8.1 Status LED Indicators

The JXK-10-22-Z uses an LED indicator to show the current acquisition mode. The LED blinks with a 1-second cycle period.

LED Pattern	Acquisition Mode	Description
Single Blink / sec (On ~100ms, Off ~900ms)	Total RMS (AC+DC)	Factory Default. Retains DC and AC energy. Suitable for total RMS measurement.
Double Blink / sec (On ~100ms, Off ~100ms, On ~100ms, Off ~700ms)	AC-Only	Removes DC mean value. Measures only the AC component.

NOTE: After mode switching, the LED indication cycle restarts. Observe for at least 2 seconds to confirm the mode.

8.2 Mode Switching Procedure

The device supports two acquisition modes that can be switched using the button on the right side of the control board:

Step 1: Locate the button on the right side of the control board.

Step 2: Long-press the button for 3 seconds.

Step 3: Release the button. The LED will restart its indication cycle.

Step 4: Observe the LED pattern for at least 2 seconds to confirm the mode has changed.

8.3 Mode Selection Guide

Mode	Technical Definition	When to Use
Total RMS (AC+DC)	Measures the total RMS value including both DC and AC components. DC offset is preserved in the reading.	- Variable frequency drive (VFD) output- Rectifier circuits- Mixed AC/DC loads- Any application requiring total effective value
AC-Only	Subtracts the DC mean value within the measurement window, then calculates the RMS of the AC component only. Pure DC input reads near zero.	- Pure AC grid monitoring- Applications requiring AC-only measurement- Comparison with instruments that use AC-only definition- Removing DC offset interference

IMPORTANT NOTE:

•Mode selection affects readings significantly. Selecting the wrong mode will result in incorrect readings.

•Readings may differ from standard multimeters depending on the sampling method (True RMS vs. average responding), filter parameters, and whether the instrument measures AC-only or AC+DC.

•When comparing with a reference instrument, ensure both devices are set to the same mode (AC or AC+DC), bandwidth, and input waveform parameters. Check for front-end saturation.

•A double-blink LED indicator does NOT guarantee the reading will match any specific instrument.

8.4 Normal Operation Monitoring

During normal operation, monitor the following:

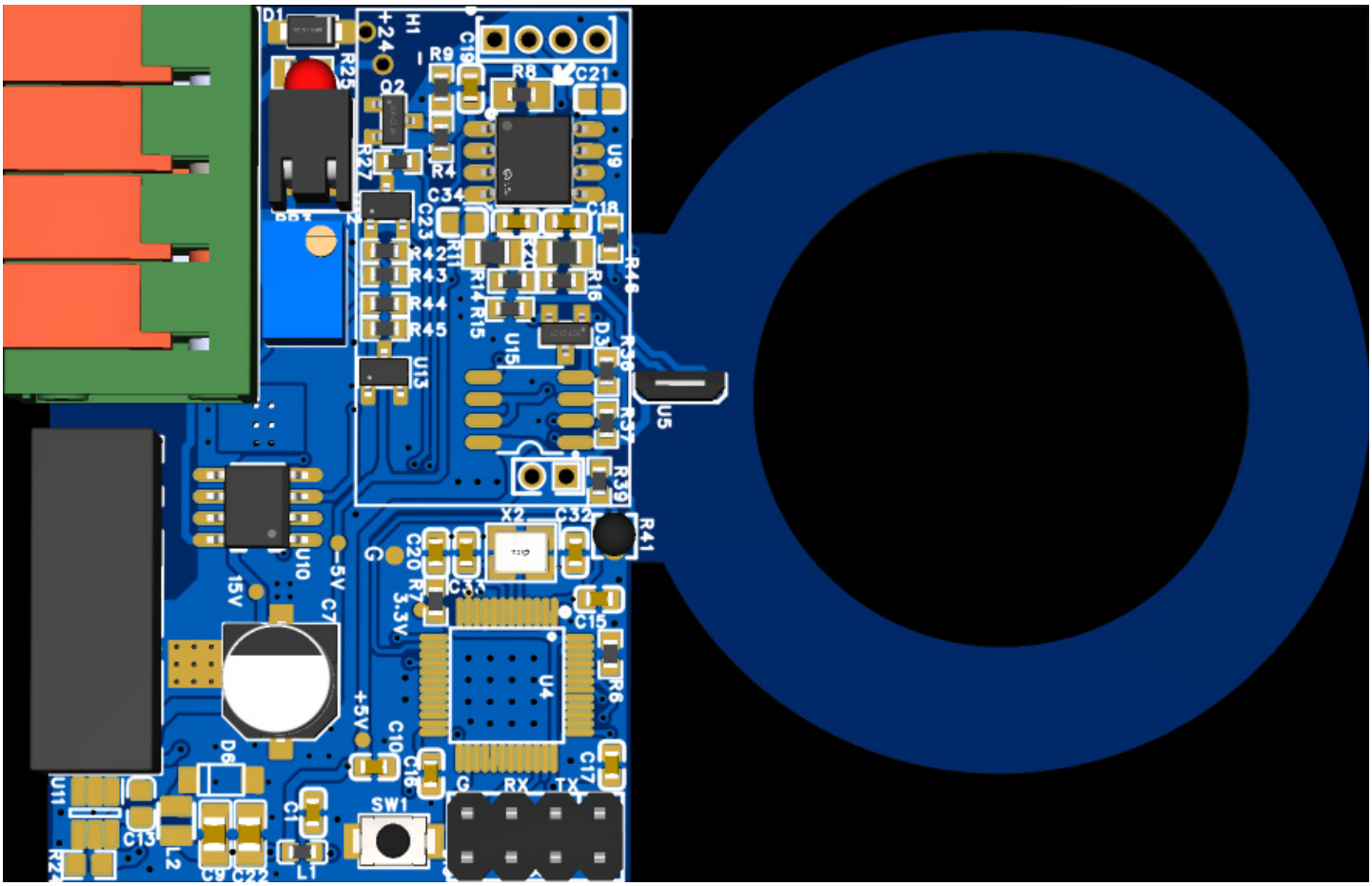
Item	Expected Condition	Action if Abnormal
LED Status	Normal blinking (1x or 2x per second)	Check mode setting, refer to Troubleshooting
Output Signal	Stable, within specification	If erratic, check wiring and input signal
Device Temperature	Warm to touch (normal)	If excessively hot, reduce load or check environment
Reading Stability	No sudden jumps or fluctuations	If unstable, check for EMI sources and grounding

9. Configuration Guide

9.1 Output Type Configuration

The output type is configured at the factory by soldering components on the control board. The following table summarizes the configuration methods:

Output Type	Configuration Method	Notes
4-20mA	No modification required	Factory default
0-10V	Solder 500 ohm resistor on R48 (1206 package)	Voltage output mode
RS485	Remove R1, R2; solder RS485 module	Contact factory for terminal resistor option
CAN	Remove R1, R2; solder CAN module	Contact factory for terminal resistor option



9.2 Range Configuration (R8 Resistor)

The measurement range is configured by changing the R8 resistor (0805 package) on the control board, followed by calibration using the calibration software.

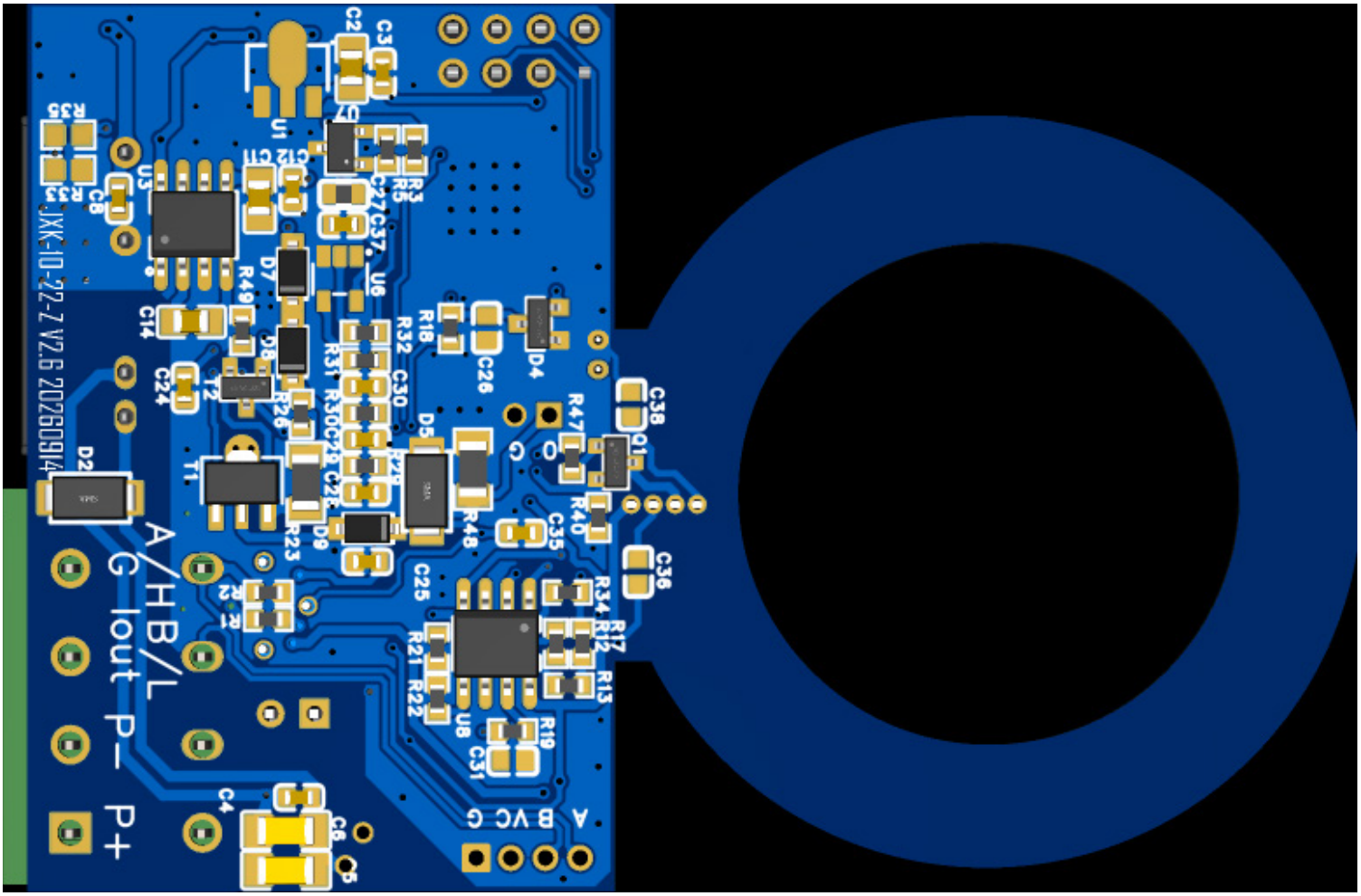
Range Resistor Formula:

Rf(kOhm) = 10 x (911.8 / RangeA - 1)

Range - Resistor Reference Table:

Customer Range	R8 Resistor (0805)	Notes
30 A	330 kOhm	-
50 A	200 kOhm	-
100 A	100 kOhm	Factory Default
200 A	39 kOhm	-
500 A	10 kOhm	-

NOTE: After modifying the R8 resistor, recalibration is required using the calibration Host Computer Software(V2.4). Contact factory service for calibration support.



9.3 Default Configuration Summary

Parameter	Default Value
Power Supply	DC 24V (18-28V)
Output Signal	4-20mA
Measurement Range	100A (R8 = 100kOhm)
Acquisition Mode	Total RMS (AC+DC)
RS485/CAN Terminal Resistor	Not installed (open)

NOTE: Power supply specification is factory-fixed. If different supply voltage is needed (AC220V or DC12V), please contact customer service when ordering.

10. Calibration Procedure

10.1 Calibration Overview

Each JXK-10-22-Z transmitter undergoes a comprehensive 5-stage calibration process at the factory before shipment. This ensures measurement accuracy and repeatability across the full operating range.

10.2 Factory Calibration Process

Stage	Procedure	Acceptance Criteria
1. Preparation	Visual inspection, soldering check, communication connection stability, LED status verification	All checks pass
2. Input Calibration	Zero point / Midpoint / Full-scale three-point calibration; ADC values stable	ADC stable within specification
3. Output Calibration	4mA low point / 20mA full-scale adjustment; multimeter measured values recorded	Output within ±0.5% F.S.
4. Parameter Storage	Parameters saved; power cycle; verify values match pre-power-off settings	Values consistent after power cycle
5. AC/DC Re-test	Full range test at 25%, 50%, 75%, 100%; no jumps, no periodic fluctuations	All points within specification

10.3 Field Recalibration (If Required)

If field recalibration is needed:

1. Contact Factory Support for calibration software (V2.4) and procedure guidance.
2. Required Equipment:
   - ◦Precision current source (for primary input)
   - ◦Precision multimeter (for output verification)
   - ◦Calibration Host Computer Software (V2.4)
   - ◦USB-to-RS485 adapter (for RS485 models)
3. Follow the calibration procedure documented in the calibration software help file.
4. Document results and update calibration certificate if applicable.

NOTE: Field recalibration should only be performed by qualified personnel. Improper calibration may affect measurement accuracy and void warranty.

10.4 Calibration Quality Notes

Aspect	Requirement
Magnetic Ring Installation	Must be properly seated against the ring and secured; displacement affects measurement
Contact Surface Insulation	PCB contact surface must be insulated with tape to prevent short circuits
Power Module Positioning	Must be positioned close to magnetic ring during soldering to prevent lifting during potting

11. Maintenance and Care

11.1 Routine Maintenance

The JXK-10-22-Z is a maintenance-free device under normal operating conditions. However, the following routine checks are recommended:

Maintenance Item	Frequency	Procedure
Visual Inspection	Quarterly	Check for physical damage, discoloration, or loose connections
Terminal Tightness	Annually	Verify terminal screws are tight; re-tighten if necessary
Insulation Resistance	Annually (recommended)	Megger test between terminals and housing (if applicable)
Calibration Verification	Annually (recommended)	Compare output against reference standard at multiple points
Environmental Check	Quarterly	Verify environment remains within specified limits

11.2 Cleaning Instructions

CAUTION:

- •Always disconnect power before cleaning.
- •Use a dry or slightly damp cloth to clean the exterior.
- •Do NOT use solvents, abrasive cleaners, or compressed air.
- •Do NOT immerse the device in liquid.

11.3 Storage Instructions

If the device needs to be stored for extended periods:

- •Store in original packaging or equivalent protective packaging.
- •Storage temperature: -25 to +85 degrees C.
- •Relative humidity: Less than 75% RH.
- •Protect from direct sunlight, moisture, and mechanical damage.
- •Recommended storage duration: Less than 2 years without recalibration verification.

11.4 Decommissioning and Disposal

When the product reaches end of life:

- •Follow local electronic waste disposal regulations.
- •Do not dispose of in household waste.
- •Remove and recycle valuable materials (copper, aluminum, precious metals) where facilities exist.
- •Destroy or securely erase any stored data if applicable.

12. Troubleshooting Guide

12.1 Quick Diagnostic Overview

When experiencing issues with the JXK-10-22-Z, follow this general diagnostic flow:

Step 1: Verify power supply voltage and polarity.

Step 2: Check all wiring connections (power, output, communication).

Step 3: Observe LED status indicator.

Step 4: Verify input signal is within range.

Step 5: Check environmental conditions.

Step 6: If issue persists, contact technical support.

12.2 Troubleshooting Table

Issue / Symptom	Possible Cause	Diagnostic Steps	Solution
1. No LED Indicator / LED Not Blinking	- No power supply - Reverse power connection - Blown internal fuse - Power supply voltage out of range	1.Check power supply voltage at Pins 1&2 2. Verify polarity 3. Check upstream fuse/ Breaker	1.Connect correct power supply 2.Reverse polarity if reversed 3. Contact factory if device appears damaged
2. No Output Signal	- Incorrect wiring - Output type mismatch - Device in wrong mode - Input signal below minimum	1. Verify output wiring (Pins 3&4) 2. Confirm output type matches configuration 3. Check LED mode 4. Verify input current exists	1. Rewire correctly 2. Contact factory for output reconfiguration 3. Switch mode using button 4. Verify primary conductor passes through ring
3. Output Signal Drift	- Temperature effects - Loose connections - Magnetic ring displacement - Input signal instability	1. Check connection tightness 2. Verify magnetic ring position 3. Monitor input signal stability 4. Check ambient temperature	1. Tighten connections 2. Secure magnetic ring 3. Stabilize input source 4. Perform recalibration if drift exceeds spec

Issue / Symptom	Possible Cause	Diagnostic Steps	Solution
4. Erratic / Unstable Readings	- EMI/RFI interference - Poor grounding - Loose wiring - Input signal harmonics	1. Check grounding and shielding 2. Verify wire routing (away from power cables) 3. Check terminal tightness 4. Analyze input waveform	1. Improve grounding/ shielding 2. Separate signal cables from power cables 3. Tighten all connections 4. Verify signal quality with oscilloscope
5. Reading Always High	- Range mismatch - Wrong mode selected - Calibration drift - Multiple turns unintentional	1. Verify R8 resistor value 2. Check LED mode 3. Compare with reference instrument 4. Check conductor passes once through ring	1. Replace R8 with correct value 2. Switch to correct mode 3. Recalibrate device 4. Ensure single pass through aperture
6. Reading Always Low	- Range too high for application - Partial conductor pass - Output load too high - Degraded Hall element	1. Verify range matches application 2. Check conductor fully passes through ring 3. Check output load impedance 4. Check device temperature	1. Select appropriate range model 2. Ensure full conductor passage 3. Reduce load or check specification 4. If overheating, improve ventilation
7. RS485 Communication Failure	- Missing termination resistor - Wiring polarity reversed (A/B) - Baud rate mismatch - Address conflict- Cable too long	1. Check A/B wiring polarity 2. Verify termination resistors 3. Confirm baud rate and protocol settings 4. Check cable length (<1200m typical) 5. Check for address conflicts	1. Swap A/B connections 2. Install 120 ohm terminators at bus ends 3. Match communication parameters 4. Assign unique addresses 5. Use shielded twisted pair cable
8. CAN Communication Failure	- Missing termination resistor - Wiring polarity (H/L) - Baud rate mismatch - Network topology issues - Power supply noise	1. Check H/L wiring 2. Verify termination resistors 3. Confirm baud rate settings 4. Check network topology 5. Check power supply quality	1. Swap H/L connections 2. Install 120 ohm terminators 3. Match CAN baud rate 4. Verify star or bus topology 5. Add power supply filtering
9. Intermittent Communication Loss	- Loose connections - EMI interference - Cable damage - Terminal resistor missing - Power supply ripple	1. Check all connections 2. Inspect cables for damage 3. Verify termination 4. Check power supply ripple 5. Monitor communication error counters	1. Tighten all connections 2. Replace damaged cables 3. Install proper terminators 4. Add filtering capacitors 5. Use shielded cable with proper grounding

Issue / Symptom	Possible Cause	Diagnostic Steps	Solution
10. Device Overheating	- Excessive ambient temperature - Output short circuit - Input overload - Poor ventilation- Direct sunlight	1. Check ambient temperature 2. Verify output is not shorted 3. Check input current within range 4. Verify spacing between devices 5. Check for direct sunlight	1. Improve ventilation/cooling 2. Remove short circuit 3. Reduce input current 4. Increase spacing ≥10mm 5. Relocate or add shading
11. Output Saturation (Clipping)	- Input exceeds range - Gain configuration error - Power supply voltage too low - Load resistance out of range	1. Verify input current within range 2. Check R8 resistor value 3. Check power supply voltage 4. Check load resistance	1. Reduce input or select higher range 2. Replace R8 resistor 3. Increase supply voltage 4. Reduce load resistance
12. High Frequency Noise in Output	- Insufficient filtering - EMI/RFI pickup - Ground loop - Cable too long without shielding - Switching power supply noise	1. Add low-pass filter 2. Use shielded cable 3. Check grounding scheme 4. Reduce cable length 5. Use isolated power supply	1. Add RC filter at output 2. Use shielded twisted pair 3. Implement single-point grounding 4. Shorten cable runs 5. Use linear power supply if possible

12.3 Symptom Quick Reference

Symptom	First Check	Second Check	Third Check
No response	Power supply voltage	Wiring connections	LED status
Wrong reading	Mode selection	Range configuration	Calibration status
Unstable reading	Connection tightness	EMI sources	Grounding
Communication issues	Wiring polarity	Termination resistors	Communication parameters
Overheating	Ambient temperature	Output load	Ventilation

13. Frequently Asked Questions (FAQ)

13.1 Product Basics

Q1: What is True RMS measurement and why is it important?

A: True RMS (Root Mean Square) measurement calculates the effective value of any waveform, including distorted, non-sinusoidal, or DC-offset waveforms. Unlike average-responding instruments that assume a pure sine wave, True RMS provides accurate readings for modern electronic loads (VFDs, LED drivers, switching power supplies) that generate harmonics and waveform distortion.

Q2: What is the difference between Total RMS and AC-Only modes?

A: - Total RMS (AC+DC): Measures the complete RMS value including both AC and DC components. Use this mode when the signal contains DC offset or when measuring total effective power. - AC-Only: Removes the DC mean value first, then calculates the RMS of the remaining AC component. Use this mode for pure AC measurements or when comparing with instruments that use AC-only definition.

Q3: Can I change the output type in the field?

A: The output type is configured by soldering components on the control board. While it is technically possible to change by rework, it is recommended to contact the factory for reconfiguration to ensure proper calibration and warranty coverage.

13.2 Configuration and Setup

Q4: How do I change the measurement range?

A: The range is changed by replacing the R8 resistor (0805 package) with the appropriate value per the Range-Resistor table in Section 9.2. After changing R8, recalibration is required using the calibration software. Contact factory support for calibration assistance.

Q5: Can multiple transmitters be connected to the same bus (RS485/CAN)?

A: Yes, both RS485 and CAN support multi-drop configurations. For RS485, ensure proper termination resistors (120 ohm) at both ends of the bus and unique node addresses. For CAN, ensure proper termination and arbiter addressing. Maximum cable length depends on baud rate (typically up to 1200m at low baud rates).

Q6: What PLCs are compatible with this transmitter?

A: The JXK-10-22-Z is compatible with all major PLC brands including: - Siemens (S7-200/300/400/1200/1500 series) - Allen-Bradley / Rockwell (CompactLogix, ControlLogix, MicroLogix) - Mitsubishi (FX, Q, iQ-R series) - Omron (NJ, NX, CJ series) - Schneider Electric (M340, M580, TM5 series) - Delta (DVP, FC series) - Beckhoff (EtherCAT controllers) - ABB (AC500, PM series) - Yokogawa (CENTUM VP, EJ100) - Honeywell (Experion, C300)

Both analog (4-20mA/0-10V) and digital (RS485/CAN) outputs are supported.

13.3 Installation and Environment

Q7: Can the transmitter be used outdoors?

A: The JXK-10-22-Z is designed for indoor use. For outdoor installation, additional environmental protection (IP65+ enclosure, UV protection, temperature control) is required. Contact factory for outdoor-rated configurations.

Q8: What is the minimum conductor size that can pass through the aperture?

A: The through-hole diameter is 22mm, accommodating conductors up to approximately 17mm diameter (excluding insulation). For bus bars or multiple stranded conductors, ensure the total cross-section fits within the aperture.

Q9: How does EMC interference affect performance and what can be done?

A: The transmitter incorporates inherent EMC immunity through its closed-loop Hall design and optical isolation. For additional EMC protection: - Use shielded twisted-pair cables for signal and communication wires - Keep signal cables separated from power cables (minimum 30cm) - Implement proper grounding at a single point - Install line filters if switching supplies are nearby - Use ferrite cores on cables if high-frequency noise is present

Q10: Can the output signals be connected in parallel?

A: - 4-20mA output: Can be connected in parallel only if the receiving devices have high input impedance (voltage mode). For current mode inputs, parallel connection is NOT recommended as it creates a current divider. - 0-10V output: Can be connected in parallel to multiple high-impedance inputs. - RS485/CAN output: Designed for multi-drop bus topology - multiple devices can share the same bus with proper addressing.

13.4 Performance and Accuracy

Q11: How often should the transmitter be recalibrated?

A: We recommend annual recalibration for critical applications. For less critical applications or stable environments, recalibration every 2-3 years may be sufficient. The specification validity period is 12 months from factory shipment under normal conditions.

Q12: What causes measurement drift and how to compensate?

A: Common causes of drift include: - Temperature changes (compensated internally but extreme changes may cause visible drift) - Aging of Hall elements (very slow, typically <0.1%/year) - Magnetic ring degradation (rare, usually due to mechanical damage or overheating) - Power supply instability

Compensation: Perform recalibration using the factory calibration procedure. Ensure stable power supply and operating temperature.

Q13: Why do my readings differ from my multimeter?

A: Differences may be caused by: - Sampling method: True RMS vs. average-responding multimeters measure differently - Bandwidth: Different frequency response characteristics - Mode selection: AC-only vs. AC+DC mode differences - Waveform: Non-sinusoidal waveforms expose measurement method differences - Input impedance: Loading effects on the source

To minimize differences, use a True RMS multimeter with comparable bandwidth and set both instruments to the same measurement mode.

13.5 Support and Service

Q14: What warranty coverage is provided?

A: The JXK-10-22-Z comes with a standard manufacturer's warranty (typically 12 months from shipment date). Warranty covers defects in materials and workmanship under normal use. Damage due to misuse, overvoltage, unauthorized modification, or environmental conditions outside specifications is not covered. See Section 15 for detailed warranty terms.

Q15: How do I register my product for warranty?

A: Product registration can be completed through: - Online registration form on our website - Email with purchase receipt and product serial number - Through your authorized distributor

Q16: What information should I provide when contacting support?

A: To expedite support, please have the following ready: 1. Product model (JXK-10-22-Z) 2. Serial number (from product label) 3. Hardware/Firmware version 4. Output type configuration 5. Measurement range 6. Power supply specification 7. Detailed fault description 8. Steps already taken to diagnose 9. Photos of installation and wiring 10. Environmental conditions at installation site

Q17: Can I return a defective product?

A: Yes, defective products can be returned under the RMA (Return Material Authorization) process. Contact support to initiate an RMA. You will receive a Return Authorization number and shipping instructions. Please package the device in original or equivalent protective packaging.

Q18: Do you provide loaner/replacement units?

A: For critical applications, we may provide replacement units subject to availability and warranty terms. Contact support to discuss options including: - Advance replacement (subject to credit approval) - Temporary loaner units (deposit required) - On-site support (for large installations)

Q19: Where can I find firmware updates?

A: Firmware updates are distributed through: - Our website download center - Direct email from factory support - Through authorized distributors

Always backup current configuration before updating firmware.

14. Warranty Information

14.1 Warranty Coverage

JXK Industrial Instruments warrants that the JXK-10-22-Z True RMS Current Transmitter will be free from defects in materials and workmanship under normal use for a period of 12 months from the date of shipment.

Covered Under Warranty: - Manufacturing defects in materials - Component failures under normal operating conditions - Performance degradation due to manufacturing defects

Not Covered Under Warranty: - Damage due to misuse, abuse, or negligence - Damage from operating outside specified limits (overvoltage, overload, temperature) - Damage from unauthorized modification or repair - Damage from improper installation or wiring - Cosmetic damage (scratches, dents) that does not affect function - Consumable items or normal wear and tear - Damage from acts of nature (lightning, flood, fire)

14.2 Warranty Claim Process

1.Contact Support: Reach out to technical support with product details and fault description.

2.RMA Authorization: Receive Return Material Authorization (RMA) number.

3.Ship Device: Package device securely and ship to designated service center with RMA number clearly marked.

4.Evaluation: Factory evaluates the returned unit within 5-10 business days.

5.Resolution: Repair, replace, or credit issued based on evaluation results.

14.3 Disclaimer

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. JXK INDUSTRIAL INSTRUMENTS SHALL NOT BE LIABLE FOR ANY INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.

15. Ordering Information

15.1 Ordering Parameters

When placing an order, please specify the following parameters:

Parameter	Options	Notes
1. Product Model	JXK-10-22-Z	Standard model
2. Power Supply	DC24V (Default) / AC220V / DC12V	Must specify; factory-fixed
3. Output Signal	4-20mA (Default) / 0-10V / RS485 / CAN / Custom	Must specify; solder configuration
4. Measurement Range	30A / 50A / 100A / 200A / 500A / Custom	Determines R8 resistor value
5. Special Requirements	Terminal resistor, custom range, special calibration	Must specify at order

15.2 Ordering Code Example

Example Ordering Code:

JXK-10-22-Z / DC24V / 4-20mA / 200A

This code specifies: - Model: JXK-10-22-Z - Power: DC 24V - Output: 4-20mA - Range: 200A (R8 = 39kOhm)

16. Contact Information

16.1 Technical Support

Channel	Details
Technical Support Hotline	+86 19715617532
Support Email	sales008@qd-zdk.com
Website	www.qidiansensor.com
Online Support Portal	https://www.qidiansensor.com/contactus.html
Support Hours	Monday - Friday, 9:00 AM - 6:00 PM (Local Time)

16.2 Sales and Ordering

Channel	Details
Sales Department	sales008@qd-zdk.com
Sales Hotline	+86 19715617532
Fax	+86 532 073336

16.3 Information to Provide When Contacting Support

To ensure the fastest possible resolution, please have the following information ready:

#	Information	Description
1	Product Model	JXK-10-22-Z
2	Serial Number	From product label
3	Hardware Version	V2.6
4	Firmware Version	RMS_current_V2.0
5	Output Configuration	4-20mA / 0-10V / RS485 / CAN
6	Measurement Range	e.g., 100A, 200A, 500A
7	Power Supply	DC24V / AC220V / DC12V
8	Fault Description	Detailed description of the issue
9	Diagnostic Steps Taken	What you have already checked
10	Photos	Photos of product, wiring, and installation