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

True RMS Current Transmitter (Closed-loop Type)

Document Info	Details
Product Model	JXK-10-22-Z V2.6
Product Type	True RMS Current Transmitter (Closed-loop)
Document No.	JXK-TSG-2026-001
Revision	V1.0
Release Date	October 2026
Applicable Outputs	4-20mA / 0-10V / RS485 / CAN
Measurement Range	10A ~ 1000A (configurable)
Power Supply	DC24V (18-28V) / AC220V (60-265V) / DC12V
Terminal Type	KF142R-5.08-4P (4-pin)

Table of Contents

1.Introduction
2.Safety Information
3.Quick Diagnostic Overview
4.Troubleshooting - Power & Basic Issues
5.Troubleshooting - Output Signal Issues
6.Troubleshooting - Communication Issues
7.Troubleshooting - Measurement Accuracy Issues
8.Troubleshooting - Environmental & Installation Issues
9.Calibration Recovery Procedure
10.Contact Support

1. Introduction

This Troubleshooting Guide provides step-by-step diagnostic procedures for the JXK-10-22-Z True RMS Current Transmitter. It is designed to help field engineers and system integrators quickly identify and resolve common issues.

Product Overview: The JXK-10-22-Z is a closed-loop Hall-effect current transmitter with True RMS measurement capability, dual acquisition modes (Total RMS AC+DC / AC-only), and multiple output formats (4-20mA, 0-10V, RS485, CAN). It features DIN rail mounting, 22mm aperture, and comprehensive protection functions.

Key Specifications:

- •Accuracy: 0.5% F.S
- •Linearity: 0.2% F.S
- •Bandwidth: DC 0~5KHz
- •Response Time: ≤200ms
- •Isolation Voltage: DC 2.5kV (1Min)
- •Temperature Drift: ≤250PPM/℃
- •Operating Temperature: -20C ~ +60C
- •Storage Temperature: -25C ~ +85C

2. Safety Information

WARNING! Before performing any troubleshooting procedures, observe the following safety precautions:

- •Ensure power is disconnected before inspecting or modifying wiring.
- •Use only properly rated test equipment (CAT III 1000V or higher).
- •Do not open the device enclosure — the JXK-10-22-Z is a sealed unit with no user-serviceable parts inside.

•Verify that the installation environment is free of conductive dust, corrosive gases, and strong vibration.
•When working with high-current circuits, wear appropriate PPE and follow lockout/tagout procedures.
•The device must be installed on a standard DIN rail with minimum spacing >=10mm between units.

Symbol Legend:

Symbol	Meaning
DANGER	Immediate hazard which could result in severe injury or death
WARNING	Potential hazard which could result in severe injury or death
CAUTION	Potential hazard which could result in minor injury or equipment damage
NOTE	Important information or special recommendation

3. Quick Diagnostic Overview

Before diving into specific troubleshooting tables, perform these universal checks:

Step	Check	Action
1	Power Supply	Verify supply voltage at terminals (should be within specified range)
2	Wiring Integrity	Check all terminal connections for tightness and correct polarity
3	Status LED	Observe LED flash pattern to confirm acquisition mode
4	Load Matching	Verify load resistance is within specifications
5	Environment	Check ambient temperature and presence of electromagnetic interference

If all universal checks pass and the issue persists, proceed to the relevant troubleshooting section below.

4. Troubleshooting - Power & Basic Issues

Issue #1: No Output Signal (Analog Output: 4-20mA / 0-10V)

Symptom:

Output signal is 0mA (or 0V for voltage output). No response to input current changes.

Possible Cause:

1. Power supply reversed or absent
2. Blown input fuse in receiving device
3. Open circuit in output wiring
4. Internal device failure

Troubleshooting Steps:

Step 1: Measure voltage at terminals 1(P+) and 2(P-). Verify supply is within range (DC18-28V or AC60-265V).
Step 2: Check polarity — terminal 1 must be positive, terminal 2 negative.
Step 3: Disconnect output wires at terminals 3/4. Measure resistance of output cable — should be <10 ohms (no open) and not shorted (not 0 ohms between + and -).
Step 4: Check receiving device (PLC/DAQ) input fuse and configuration. Step 5: If all above are normal, device may have internal failure.

Solution:

Fix 1: Connect power supply with correct polarity. The JXK-10-22-Z has reverse polarity protection, but prolonged reverse connection may cause damage.
Fix 2: Replace blown fuse in receiving equipment.
Fix 3: Repair or replace damaged cable. Ensure connectors are secure.
Fix 4: Replace or repair the receiving device.
Fix 5: Contact factory for RMA/repair. See Section 10.

Issue #2: No Status LED Indication

Symptom:

Status LED does not light up or flash. Device appears completely dead.

Possible Cause:

1. No power supply
2. Power supply voltage too low
3. Internal power circuit failure
4. LED module failure (rare)

Troubleshooting Steps:

Step 1: Measure voltage at power terminals (1-P+, 2-P-). Verify adequate supply voltage.
Step 2: Check if power cable is properly seated in KF142R terminal block.
Step 3: Try a known-good power supply to rule out supply failure.
Step 4: Check for visible signs of damage (burnt smell, discoloration).

Solution:

Fix 1: Restore proper power supply. Minimum operating voltage: DC18V.
Fix 2: Reseat terminal connections. Ensure wire strands are not frayed.
Fix 3: Replace power supply unit.
Fix 4: Contact factory for replacement. The device is sealed and not field-repairable. See Section 10.

Issue #3: Device Overheating

Symptom:

Device housing is hot to touch (>60C). Output may be erratic or stopped.

Possible Cause:

1. Ambient temperature exceeds specification (>60C)
2. Power supply voltage too high
3. Output shorted for extended period
4. Insufficient ventilation / units packed too tightly
5. Internal fault

Troubleshooting Steps:

Step 1: Measure ambient temperature at device location with calibrated thermometer.
Step 2: Measure supply voltage — should not exceed 28V DC or 265V AC.
Step 3: Check output wiring for short circuit condition.
Step 4: Check installation spacing — minimum 10mm between units.
Step 5: Measure device surface temperature with IR thermometer.

Solution

Fix 1: Improve ventilation or install heat shielding. Device operating range: -20C to +60C.
Fix 2: Adjust power supply output or install voltage regulator.
Fix 3: Repair short circuit in output wiring. The device has short-circuit protection but prolonged shorting generates heat.
Fix 4: Increase spacing between units. Ensure DIN rail mounting is secure.
Fix 5: If device overheats under normal conditions, contact factory for evaluation. See Section 10.

Issue #4: Output Signal Drift Over Time

Symptom:

Output reading gradually shifts from calibrated value. Drift increases with temperature changes.

Possible Cause:
1. Calibration drift (past expiry)
2. Temperature effects beyond specification
3. Magnetic interference from nearby equipment
4. Degrading Hall sensor or magnetic ring
5. Loose primary conductor connection

Troubleshooting Steps:
Step 1: Check last calibration date. Specification validity is typically 1 year.
Step 2: Monitor output while varying ambient temperature. Check if drift correlates with temperature changes (specification: ≤250ppm/℃).
Step 3: Inspect installation location for new magnetic sources (transformers, motors, VFDs) installed nearby.
Step 4: Verify primary conductor is properly seated in the 22mm aperture and not loose.
Step 5: Compare reading with a reference clamp meter at multiple load points.

Solution:
Fix 1: Recalibrate the device using the 3-point calibration procedure (see Section 9).
Fix 2: If drift exceeds 250PPM/C, the device may need replacement. Consider installing thermal shielding.
Fix 3: Relocate signal cables away from interference sources. Use shielded twisted-pair cables.
Fix 4: Tighten primary conductor connection. Ensure bus bar or cable passes cleanly through aperture.
Fix 5: If calibration cannot be maintained, contact factory for sensor evaluation. See Section 10.

Issue #5: Output Signal Unstable / Fluctuating
Symptom:
Output reading jumps or oscillates unpredictably. Not correlated with load changes.

Possible Cause:
1. Electromagnetic interference (EMI)
2. Loose wiring connections
3. Ground loop issue
4. Shielding not properly implemented
5. Input signal itself is noisy

Troubleshooting Steps:
Step 1: Use oscilloscope or DMM AC function to check for AC ripple on the output signal.
Step 2: Check all terminal connections for tightness. Inspect for oxidized wire ends.
Step 3: Verify shield cable is grounded at one end only (single-point grounding).
Step 4: Check if signal cables run parallel to power cables — they should be separated by at least 30cm.
Step 5: Disconnect the primary conductor (if safe) and observe output — should read zero/stable.

Solution:
Fix 1: Use shielded twisted-pair cables. Route signal cables away from power cables and VFDs.
Fix 2: Tighten all terminal screws. Replace oxidized wire ends.
Fix 3: Implement proper single-point shield grounding at the control panel side.
Fix 4: Re-route cables to avoid parallel runs with power conductors. Use metal conduit if necessary.
Fix 5: If the primary circuit is noisy, install line filters or surge protectors upstream.

Issue #6: Output Reading Too High (Above Expected Value)

Symptom:

Output signal corresponds to a higher current than actual measured input.

Possible Cause:

1. Incorrect range configuration (R8 resistor value)
2. Calibration offset (zero point shifted)
3. Magnetic ring damaged or displaced
4. Input current actually exceeds range
5. Wrong acquisition mode selected

Troubleshooting Steps:

Step 1: Verify the R8 resistor value matches the desired measurement range using the Range-Resistance table.
Step 2: Measure actual primary current with a calibrated clamp meter.
Step 3: Check status LED pattern — confirm correct mode (Total RMS vs AC-only).
Step 4: Inspect magnetic ring installation — must be snug against PCB with no gap.
Step 5: Verify the transmitter range setting matches the client's expected range.

Solution:

Fix 1: Replace R8 resistor with correct value per Range-Resistance table. Then recalibrate.
Fix 2: Perform zero-point calibration (see Section 9).
Fix 3: Reinstall magnetic ring properly. Ensure insulation tape is applied between ring and PCB.
Fix 4: If actual current exceeds rated range, install a transmitter with higher range.
Fix 5: Switch to correct acquisition mode using the button (hold 3 seconds). See product manual for mode details.

Issue #7: Output Reading Too Low (Below Expected Value)

Symptom:

Output signal corresponds to a lower current than actual measured input.

Possible Cause:

1. Load resistance too high (saturation)
2. Calibration span error
3. Partial short in output wiring
4. Power supply voltage marginal
5. Magnetic shunting from nearby ferrous materials

Troubleshooting Steps

Step 1: Calculate maximum allowable load: Rmax = (Vsupply - 10.5) / 0.02 ohms. Measure actual load resistance.
Step 2: Measure supply voltage at transmitter terminals under load.
Step 3: Inspect output cable for partial insulation damage / moisture ingress.
Step 4: Check for nearby ferrous materials (steel brackets, conduit) that may shunt magnetic field.
Step 5: Perform full 3-point calibration.

Solution

Fix 1: Reduce load resistance to within specification. Use a signal conditioner with high input impedance.
Fix 2: Perform span calibration (see Section 9).
Fix 3: Replace damaged cable section. Use waterproof connectors if moisture is present.
Fix 4: Relocate transmitter away from ferrous materials or install magnetic shielding.
Fix 5: Recalibrate using standard calibration procedure.

Issue #8: Output Saturated at Maximum (20mA / Full Scale)

Symptom:

Output stuck at 20mA (or full-scale voltage) regardless of input current. Input current varies but output does not change.

Possible Cause:

1. Input current exceeds transmitter range
2. Internal feedback circuit failure
3. Output transistor shorted
4. Calibration span set too high
5. Open circuit in feedback path

Troubleshooting Steps:

Step 1: Measure actual primary current — verify it is within the configured range.

Step 2: Disconnect power, measure output terminal resistance. Abnormally low resistance indicates internal short.

Step 3: Try a known-good transmitter in the same installation to isolate device vs. system issue.

Step 4: Check if the R8 resistor was recently changed (possible wrong value installed).

Solution:

Fix 1: Reduce input current to within range or install a higher-range transmitter.

Fix 2: Device requires factory repair. Contact support. See Section 10.

Fix 3: Replace faulty transmitter unit.

Fix 4: Verify R8 resistor value and recalibrate.

Issue #9: RS485 Communication Failure

Symptom:

SCADA/PLC cannot communicate with transmitter via RS485. No response to poll commands.

Possible Cause:

1. Wiring incorrect or loose
2. Baud rate / protocol mismatch
3. Device address conflict
4. Missing termination resistor
5. Cable too long or damaged
6. RS485 interface damaged

Troubleshooting Steps:

Step 1: Verify wiring: Terminal 3 = RS485-B/CAN-L, Terminal 4 = RS485-A/CAN-H. Check connections are tight.

Step 2: Confirm baud rate, data bits, parity, and stop bits match between transmitter and master.

Step 3: Check device address — ensure no two devices share the same address on the bus.

Step 4: Verify termination resistor (120 ohm) is installed if cable length >100m. Default: no termination resistor soldered.

Step 5: Measure cable resistance between A and B — should be >100 ohms (not shorted) and <10 ohms (not open).

Step 6: Check cable length — RS485 max recommended: 1200m. Longer cables may need repeater.

Solution:

Fix 1: Correct wiring per terminal definition. Tighten all connections.

Fix 2: Configure matching communication parameters on both devices.

Fix 3: Assign unique addresses to each device on the bus.

Fix 4: Solder 120 ohm termination resistor at both ends of long cable runs (request from factory when ordering).

Fix 5: Replace damaged cable. Use industrial-grade RS485 cable (twisted pair, shielded).

Fix 6: Install RS485 repeater for long-distance links.

Issue #10: CAN Communication Failure

Symptom:

CAN bus communication not established. CAN-H/CAN-L voltage levels abnormal.

Possible Cause:

1. CAN module not properly installed
2. CAN bus wiring error
3. Termination resistors missing or incorrect
4. CAN bus shorted or open
5. Bus overload / excessive nodes

Troubleshooting Steps:

Step 1: Verify CAN module is correctly soldered (R1, R2 removed, CAN module installed).
Step 2: Check CAN-H (Terminal 4) and CAN-L (Terminal 3) wiring. Measure voltage: CAN-H ~2.5V, CAN-L ~2.5V at rest.
Step 3: Measure resistance between CAN-H and CAN-L — should be 60 ohms (two 120 ohm terminators in parallel) at each end.
Step 4: Check for bus shorts — disconnect all devices and measure bus resistance incrementally.
Step 5: Verify number of nodes does not exceed CAN specification (typically 30 nodes max).

Solution:

Fix 1: Reinstall CAN module per manufacturing specification.
Fix 2: Correct CAN bus wiring. Use proper CAN cable (twisted pair, 120 ohm characteristic impedance).
Fix 3: Install 120 ohm termination resistors at both bus ends.
Fix 4: Repair cable damage. Remove faulty node from bus.
Fix 5: Reduce number of nodes or install CAN repeater.

Issue #11: Intermittent Communication / Dropouts

Symptom

Communication works intermittently. Packets lost occasionally. Response time varies.

Possible Cause

1. Loose cable connections
2. Electromagnetic interference on bus
3. Cable capacitance too high (long cable + wrong cable type)
4. Power supply ripple coupling onto communication lines
5. Bus topology issues (T-junctions, stubs)

Troubleshooting Steps

Step 1: Check all connections at terminals and bus connectors for tightness.
Step 2: Use oscilloscope to view CAN/RS485 signal quality — look for noise spikes or waveform distortion.
Step 3: Verify cable type — use proper communication cable (not power cable substitute). Measure cable capacitance per meter.
Step 4: Check power supply quality — measure AC ripple on DC supply with oscilloscope.
Step 5: Audit bus topology — minimize stub lengths. Use star or daisy-chain topology.

Solution

Fix 1: Tighten all connections. Use locking terminal blocks.
Fix 2: Use shielded cable, ground shield at one end. Increase separation from power cables.
Fix 3: Replace cable with proper communication-grade cable. Reduce cable length if possible.
Fix 4: Install line filter or isolated power supply for transmitter.
Fix 5: Redesign bus topology. Use proper bus couplers if T-junctions are unavoidable.

Issue #12: Wrong RMS Mode Reading (AC+DC vs AC-only Confusion)

Symptom:

Reading does not match expected value. Customer expects AC-only reading but device is in Total RMS mode (or vice versa).

Possible Cause:

1. Wrong acquisition mode selected
2. Customer misunderstanding of mode difference
3. Mode switch button malfunction

Troubleshooting Steps:

Step 1: Observe status LED: Single flash/sec = Total RMS (AC+DC); Double flash/sec = AC-only.

Step 2: Confirm with customer which mode their receiving system expects.

Step 3: Test both modes — press and hold button 3 seconds to switch. Observe LED change.

Step 4: For signals with DC offset, Total RMS will read higher than AC-only mode.

Solution:

Fix 1: Switch to correct mode using the button (hold 3 seconds on right side). Wait 2 seconds for LED to confirm.

Fix 2: Document the selected mode in the installation record. Inform the customer of the difference.

Fix 3: If button is unresponsive, the internal switch may be faulty. Contact factory. See Section 10.

Issue #13: Calibration Cannot Be Completed / Calibration Failure

Symptom:

Calibration procedure fails. Output does not respond to calibration adjustments. ADC values unstable.

Possible Cause:

1. Calibration software version mismatch
2. Communication link unstable during calibration
3. Input signal source not accurate enough
4. Device in wrong mode for calibration
5. Internal memory corruption

Troubleshooting Steps:

Step 1: Verify calibration software version matches device firmware (calibration host V2.4 recommended).

Step 2: Check communication stability — ensure no dropouts during calibration process.

Step 3: Verify reference standard (current source) accuracy is better than device specification (preferably 0.1% or better).

Step 4: Ensure device is in correct acquisition mode before calibration.

Step 5: Try power cycling the device and restarting calibration.

Solution:

Fix 1: Update calibration software to latest version. See factory for software download.

Fix 2: Use stable power supply and short cable runs during calibration. Retry procedure.

Fix 3: Replace or recalibrate reference standard. Use certified calibration source.

Fix 4: Select correct mode per product manual before starting calibration.

Fix 5: If calibration consistently fails after power cycle, device memory may be corrupted. Contact factory. See Section 10.

Issue #14: Temperature-Related Measurement Error

Symptom:

Measuremy went accuracy degrades significantlhen ambient temperature changes. Error increases proportionally with temperature.

Possible Cause
1. Temperature drift beyond specification
2. Device installed near heat source
. Thermal gradient across device
4. Calibration performed at different temperature than operating environment
5. Internal thermal sensor failure

Troubleshooting Steps
Step 1: Measure ambient temperature at device location during error occurrence.
Step 2: Compare reading at different temperatures — plot error vs. temperature curve.
Step 3: Check specification: temperature drift <=250PPM/C. Calculate if observed drift is within spec.
Step 4: Check installation — is device mounted near heaters, sunlight, or hot equipment?
Step 5: Verify calibration was performed at similar temperature to operating environment.

Solution
Fix 1: If drift exceeds 250PPM/C, device may need replacement. Request factory evaluation.
Fix 2: Relocate device or install thermal insulation/shielding.
Fix 3: Ensure uniform temperature across device. Avoid direct sunlight or drafts.
Fix 4: Recalibrate at operating temperature. Document temperature coefficient.
Fix 5: Contact factory for thermal sensor evaluation. See Section 10.

Issue #15: Installation-Related Faults
Symptom:
Various anomalies after new installation or relocation.

Possible Cause:
1. Magnetic ring not properly seated
2. Insulation not applied between ring and PCB
3. DIN rail mounting insecure
4. Units installed too close together (<10mm spacing)
5. Primary conductor not centered in aperture

Troubleshooting Steps:
Step 1: Power down and inspect magnetic ring installation — must be flush against PCB with no gap.
Step 2: Verify insulation tape is applied between magnetic ring and circuit board contact surface.
Step 3: Check DIN rail clip engagement — device should not wiggle or slide.
Step 4: Verify minimum 10mm spacing between adjacent units.
Step 5: Verify primary conductor passes through center of 22mm aperture without touching walls.

Solution:
Fix 1: Reinstall magnetic ring ensuring full contact with PCB. Replace if cracked.
Fix 2: Apply proper insulation tape. This prevents short circuits and magnetic shunting.
Fix 3: Secure DIN rail mount. Replace damaged clip if necessary.
Fix 4: Increase spacing or install thermal barriers between units.
Fix 5: Realign conductor. Ensure bus bar or cable is straight and centered in aperture.

Issue #16: Protection Function Activated (Input Overload / Reverse Power)
Symptom:
Device stops output after overload event or reverse power connection.

Possible Cause:

1. Input current exceeded maximum rating
2. Power supply connected with reverse polarity
3. Output shorted for extended period
4. Power supply voltage spike
5. Protection circuit latched

Troubleshooting Steps

Step 1: Verify input current is within rated range (max 1000A for this model).
Step 2: Check power supply polarity — terminal 1 = P+, terminal 2 = P-.
Step 3: Inspect output wiring for short circuit condition.
Step 4: Check for voltage transients (lightning, switching surges) in the power line.
Step 5: Disconnect power for 30 seconds, then reconnect — some protection circuits auto-reset.

Solution

Fix 1: Reduce input current to within range. Install current limiter if necessary.
Fix 2: Correct power supply wiring. The device has reverse polarity protection — brief reverse connection should not cause damage.
Fix 3: Repair output short circuit. Device has output short-circuit protection.
Fix 4: Install surge protector on power supply line.
Fix 5: After power cycle, if device still does not operate, internal protection may have triggered permanent shutdown. Contact factory. See Section 10.

9. Calibration Recovery Procedure

If calibration has drifted or needs to be restored, follow this 5-stage calibration procedure:

Stage 1: Preparation
- Verify appearance and soldering quality
- Ensure communication connection is stable
- Confirm status LED flashes normally

Stage 2: Input Calibration
- Perform zero-point, mid-point, and full-scale three-point calibration
- Verify ADC values are stable

Stage 3: Output Calibration
- Calibrate 4mA (low point) and 20mA (full scale)
- Verify with multimeter actual output values

Stage 4: Parameter Storage
- Store calibrated parameters to memory
- Power cycle (disconnect and reconnect power)
- Verify readings match before power-off values

Stage 5: AC/DC Verification
- Test at 25%, 50%, 75%, and 100% of full scale
- Verify no jumps or periodic fluctuations

Important Notes:

- Magnetic ring must be properly seated and fixed during calibration
- Insulation tape must be applied between ring and PCB
- Power supply module should be close to magnetic ring to prevent lifting
- After calibration, device should maintain consistency and repeatability

10. Contact Support

If your issue is not covered in this guide, or if the troubleshooting steps above do not resolve the problem, please contact our technical support team:

Support Channels

Channel	Details
Technical Support Hotline	Contact your local sales representative or factory direct line
Email Support	Send detailed description + photos to factory support email
Remote Diagnosis	Factory can guide you through remote diagnostic procedures via video call
RMA / Return for Repair	If device requires factory repair, contact support to obtain RMA number before shipping
Replacement Unit	For critical applications, factory can ship replacement unit while repairing faulty unit

Information to Provide When Contacting Support

To expedite troubleshooting, please provide the following information:

1. Product Model: JXK-10-22-Z (include version if known)
2. Document Serial Number: (from product label)
3. Output Type: (4-20mA / 0-10V / RS485 / CAN)
4. Measurement Range: (e.g., 100A, 500A)
5. Power Supply: (DC24V / AC220V / other)
6. Symptom Description: Detailed description of the issue
7. Troubleshooting Already Performed: List steps already taken
8. Photos: Photos of installation, wiring, and device label
9. Environment: Operating temperature, nearby equipment, cable length
10. Measurement Data: Actual readings from multimeter/clamp meter for comparison

Warranty Information

- The JXK-10-22-Z comes with a standard manufacturer warranty (see purchase agreement for terms)
- Warranty covers defects in materials and workmanship under normal operating conditions
- Damage due to misuse, incorrect wiring, or operation outside specifications is not covered
- Keep purchase documentation and RMA records for warranty claims