JXK-10-22-Z True RMS Current Transmitter

Quick Start Manual

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1. Introduction

The **JXK-10-22-Z True RMS Current Transmitter** is a closed-loop measurement device designed to convert large industrial current signals into standard process signals. Based on the Hall effect principle, this transmitter utilizes an internal high-precision silicon steel magnetic ring and Hall elements to ensure high accuracy, excellent linearity, and low temperature drift. The input, output, and power supply are mutually isolated for enhanced safety and noise immunity.

Key Features

- **True RMS Measurement:** Accurate effective value measurement for complex waveforms.
- **Dual-Mode Acquisition:** Built-in AC Mode and Mixed Mode (AC+DC).
- **High Performance:** 0.5% accuracy, 0.2% linearity, and bandwidth up to 5kHz.
- **Robust Protection:** Input overload, output short-circuit, overvoltage, and reverse connection protection.
- **Versatile Output:** Supports 4-20mA, 0-10V, RS485, CAN, and custom signals.
- **Easy Integration:** Lightweight design with standard DIN rail mounting.

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2. What’s in the Box

NOTE: Before installation, verify the contents against the packing list and the product label to ensure the model and specifications match your order.

Item	Quantity	Description
Current Transmitter	1	JXK-10-22-Z True RMS Current Transmitter
Quick Start Manual	1	Installation and configuration guide
Packing List	1	Verification document

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3. Product Overview

Physical Dimensions

- **Total Height:** 60 mm
- **Total Width:** 106 mm
- **Body Thickness:** 24 mm
- **Base Clip Width:** 35 mm
- **Rail Slot Depth:** 4 mm
- **Through-hole Diameter:** Φ22 mm

Key Components

- **Acquisition Input:** 22mm circular ring for direct current measurement.
- **Terminal Block:** KF142R-5.08-4P (4-pin) for power and signal connections.
- **Status LED:** Indicates current RMS acquisition mode.
- **Mode Button:** Located on the right side of the control board for mode switching.

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4. Quick Installation

WARNING: The transmitter is an integrated structure. Do not disassemble, alter, or remove any labels. Avoid collision and dropping during handling.

Mounting Steps

1. **Inspect Environment:** Ensure the installation area is free from conductive dust, corrosive gases, strong impacts, or excessive vibration.
2. **Prepare DIN Rail:** Use a standard DIN rail.
3. **Mount Device:** Align the rear clip with the DIN rail and press firmly until the device clicks into place.
4. **Spacing:** For concentrated installations, maintain a minimum spacing of **≥10mm** between units to ensure proper heat dissipation and signal integrity.
5. **Verify:** Ensure the device is securely locked and does not wobble.

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5. Wiring & Connections

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

Terminal Definitions (KF142R-5.08-4P)

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

Wiring Guidelines

- **Acquisition Input:** Pass the measured current conductor directly through the 22mm circular ring.
- **Power Supply:**
  - **DC24V:** Connect to Pin 1 (+) and Pin 2 (-).
  - **AC220V:** Connect to Pin 1 (L) and Pin 2 (N).
- **Analog Output (4-20mA, 0-10V):** Connect load to Pin 3 (+) and Pin 4 (-).
- **Digital Output (RS485/CAN):**
  - **RS485:** Pin 4 = A, Pin 3 = B.
  - **CAN:** Pin 4 = H, Pin 3 = L.

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6. Basic Operation

Status LED Indicators

The LED blinks to indicate the active acquisition mode. Observe for at least **2 seconds** after mode switching.

LED Pattern	Acquisition Mode	Description
Blink 1x / sec	Total RMS (AC+DC)	**Factory Default.** Retains DC and AC energy. Suitable for total RMS measurement.
Blink 2x / sec	AC-Only	Removes DC mean value. Measures only the AC component.

Mode Switching Procedure

1. Locate the button on the **right side** of the control board.
2. **Long-press** the button for **3 seconds**.
3. Release the button. The LED indication cycle will restart.

Mode Selection Guide

- **Total RMS Mode:** Includes both DC and AC components. Use when measuring total effective power or when DC offset is relevant.
- **AC-Only Mode:** Subtracts the window mean before calculating RMS. Pure DC inputs should read near zero.
- **Verification:** When comparing with standard instruments, ensure both devices are set to the same AC/AC+DC mode, bandwidth, and input waveform parameters. Check for front-end saturation.

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7. Quick Configuration

Default Configuration

- **Power Input:** DC24V (Factory fixed).
- **Signal Output:** 4-20mA (Factory fixed).
- **RS485/CAN:** No terminal resistor (120Ω) installed by default.

Output Configuration

Output Type	Configuration Method
4-20mA	Factory default. No modification required.
Voltage 0-10V	Solder **500Ω** resistor on **R48** (1206 package).
RS485	Remove R1, R2; solder RS485 communication module.
CAN	Remove R1, R2; solder CAN communication module.

Range Configuration (R8 Resistor)

> **NOTE:** After modifying the R8 resistor, **recalibration is required**.

Formula: $Rf(k\Omega) = 10 \times (911.8 \div RangeA - 1)$

Customer Range	R8 Resistor (0805)	Notes
30A	330kΩ	—
50A	200kΩ	—
100A	**100kΩ**	**Default**
200A	39kΩ	—
500A	10kΩ	—

Calibration Overview (5 Stages)

1. **Preparation:** Inspect appearance, soldering, and communication stability. Verify LED status.
2. **Input Calibration:** Perform zero, midpoint, and full-scale three-point calibration. Ensure ADC values are stable.
3. **Output Calibration:** Adjust 4mA low point and 20mA full scale. Record multimeter measured values.
4. **Parameter Storage:** Save parameters, power cycle, and verify values match pre-power-off settings.
5. **AC/DC Re-test:** Test at 25%, 50%, 75%, and 100% of full range. Ensure no jumps or periodic fluctuations.

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8. Troubleshooting

Issue	Possible Cause	Solution
LED Not Blinking	No power supply or reverse connection	Check power wiring (Pin 1/2) and polarity. Verify supply voltage.
Output Signal Zero	Incorrect wiring or mode mismatch	Verify signal output wiring (Pin 3/4). Confirm AC/DC mode matches application.
Inaccurate Reading	Range mismatch or saturation	Verify R8 resistor value. Check if input current exceeds primary range.
Communication Failure	Missing termination resistor	Install 120Ω terminal resistor if required by bus topology.
Erratic Output	EMI or loose connections	Check grounding and shielding. Ensure terminal screws are tightened.

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9. Technical Specifications

Parameter	Value
Installation Method	DIN Standard Rail
Power Supply	DC24V (18-28V), AC220V (60-265V), DC12V
Primary Measurement Range	0 ~ 1000A
Rated Output	0-5V, 0-10V, 0~20mA, 4~20mA, RS485, CAN, User Specified
Accuracy	0.5%
Linearity	0.2%
Isolation Voltage	DC 2.5kV, 1Min
Temperature Drift	≤250 PPM/°C
Bandwidth	0 ~ 5kHz
Response Time	≤200ms
Power Consumption	≤2W
Operating Temperature	-20°C ~ +60°C
Storage Temperature	-25°C ~ +85°C

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10. Safety Information

WARNING: Failure to follow these instructions may result in equipment damage or personal injury.

1. **Environmental Conditions:** Do not install in environments with conductive dust, corrosive gases, or strong vibration.
2. **Integrated Structure:** The transmitter is non-dismountable. Do not open the housing.
3. **Wiring Safety:** Always verify wiring against the diagram before applying power. Incorrect polarity may damage internal protection circuits.
4. **Handling:** Avoid mechanical shock. Ensure the magnetic ring is seated correctly and insulation tape is present where the PCB contacts the ring.

5. **Power Module:** Ensure the power module is positioned close to the magnetic ring during soldering to prevent lifting during potting.

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11. Ordering Information

> **NOTE:** Please select specifications carefully based on your input signal, output requirements, and environmental conditions.

When ordering, please specify:

1. **Model:** JXK-10-22-Z
2. **Power Supply:** DC24V (Default), AC220V, or DC12V
3. **Measurement Range:** e.g., 0-100A, 0-500A
4. **Output Signal:** 4-20mA (Default), 0-10V, RS485, CAN, etc.
5. **Special Requirements:** Terminal resistors, custom ranges, or specific calibration needs.

Contact customer service for non-standard configurations.

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12. Appendix

Revision History

Version	Date	Description
V2.6	Oct 2026	Initial release of Quick Start Manual for JXK-10-22-Z

Contact Information

For technical support, calibration services, or custom ordering:

- **Website:** www.qidiansensor.com
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