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

DATESHEET

■ Product Features



✔RMS (Root Mean Square) measurement

✔Lightweight and easy to install

✔High accuracy and excellent linearity

✔Low temperature drift and wide bandwidth

✔Fast response and strong immunity to interference

✔Multiple signal outputs

✔Built-in dual-mode data acquisition: AC mode and mixed mode

■ Protection Features

●Input overload protection

●Output overcurrent protection

●Protection against prolonged output short circuits

●Maximum overvoltage protection for the operating power supply

●Reverse polarity protection for the operating power supply

Certification：

- CE：Complies with LVD 2014/35/EU, EMC 2014/30/EU

- RoHS 2.0：Directive 2011/65/EU amended by (EU)2015/863

- REACH：Compliant with Regulation (EC) No 1907/2006 (SVHC)

- FCC ： Part 15 Subpart B

Typical Applications:

1. Monitoring of inverters, UPS (uninterruptible power supplies), and energy storage converters (PCS)
2. Output current monitoring for variable-frequency drives and servo drives
3. Measurement of mixed DC and ripple currents in electroplating and electrolysis processes
4. Input and output current acquisition for charging stations and on-board chargers (OBC)
5. Current detection for welding equipment (spot welders, arc welding power sources)
6. AC output current monitoring for photovoltaic inverters and grid-tie cabinets
7. Output monitoring for laboratory power supplies and programmable DC power supplies
8. Current monitoring for industrial rectifier equipment and thyristor-based power control devices

Inapplicable Scenarios:

1. Cable outer diameter > 22 mm: The through-hole diameter is Φ22; the cable outer diameter must not exceed this diameter;
2. High frequencies > 5 kHz: The product's bandwidth is 0–5 kHz; measurement accuracy cannot be guaranteed above this frequency;
3. Lightning surges and high-current pulse transients: Suitable for measuring steady-state or slowly changing RMS values; does not capture microsecond-level transient waveforms;
4. Highly corrosive or highly conductive dust environments: The product requires an environment free of conductive dust and corrosive gases.

Performance Specifications

1.1 Key Performance Parameters

Parameter Items	Technical Specifications	Test Conditions/Remarks
Measurement Principle	Hall Effect / Control Loop	True RMS
Primary Side Measurement Range	0 to 1000 A	Full-scale range configurable
Accuracy	±0.5% of full scale	Includes linearity, hysteresis, and repeatability
Linearity	≤ 0.2% of full scale	Best-fit straight line
Bandwidth	0 to 5 kHz	-3dB point
Response Time	≤ 200 ms	90% step response
Temperature Drift	≤ 250 PPM/℃	Full-temperature compensation
Isolation	DC 2.5 kV / 1 min	Input-Output-Power Supply
Power Consumption	≤ 2 W	Under rated load
Aperture	Φ22 mm	Round through-hole

2. Functional Specifications

2.1 Measurement Range and Configuration Capabilities

- Measurement Range (URL/LRL):
  - Maximum Range (URL): 1000 A
  - Minimum Recommended Range: 10 A
  - Configurable Resistance Range: 30 A to 500 A
- Range Adjustment: Achieved by replacing the onboard resistor R8 (0805 package) and calibrating via a host computer.
  - Calculation Formula: ◦Rf(kΩ) = 10 × (911.8 ÷ I_range(A) − 1)
  - Standard Resistance Values:

Current Range	R8 Resistance (0805)	Notes
30 A	330 kΩ	—
50 A	200 kΩ	—
100 A	100 kΩ	Factory Default
200 A	39 kΩ	—
500 A	10 kΩ	—

2.2 Dual Acquisition Mode

The product features a built-in True RMS core algorithm and supports mode switching by pressing and holding the right button for 3 seconds:

Mode Name	Technical Definitions	Status Light Indications	Status Light Indications
Total RMS (Default)	AC + DC RMS. Retains the DC component to ensure that readings containing DC signals are not lost.	1 Hz single flash (on for 100 ms / off for 900 ms)	1 Hz single flash (on for 100 ms / off for 900 ms)
AC-only	Pure AC component. Removes the DC average, so readings from pure DC inputs approach zero.	1 Hz double flash (on for 100 ms / off for 100 ms / on for 100 ms / off for 700 ms)	1 Hz double flash (on for 100 ms / off for 100 ms / on for 100 ms / off for 700 ms)

2.3 Protection Functions

- Input side: Primary-side overcurrent protection.
- Output side: Overcurrent limit protection, prolonged short-circuit protection.
- Power supply side: Overvoltage limit protection, reverse connection protection.

3. Accuracy and Error Budget

• Overall Accuracy: ±0.5% F.S.

• Reference Conditions:

  ◦ Ambient Temperature: 23°C ± 2°C

  ◦ Relative Humidity: 45% to 75% RH

  ◦ Warm-up Time: ≥ 15 min

  ◦ Load: Rated Load

• Error Components: Includes zero drift, gain error, nonlinearity, and hysteresis.

• Specification Validity Period: 12 months from the date of manufacture (under specified storage and operating conditions).

4.Environmental & EMC

Specifications	**Specifications**	**Notes**
Operating Temperature	-20°C to +60°C	No condensation
Storage Temperature	-25°C to +85°C	—
Protection Rating	IP20	Recommended for indoor use
EMC Standards	2014/30/EU	Requires evaluation based on on-site conditions
Environmental Requirements	No conductive dust, no corrosive gases, no severe shocks or vibrations	—

5. Electrical & Interfaces

5.1 Power Supply and Power Consumption

• Power Supply Specifications:

  ◦ 24 V DC (default): 18–28 V

  ◦ 220 V AC: 60–265 V (customization required)

  ◦ 12 V DC: customization required

• Maximum Power Consumption: ≤ 2 W

• Protection Mechanisms: Reverse polarity protection, overvoltage limit protection.

5.2 Output Configuration

• Default Output: 4–20 mA

• Optional Outputs: 0–5 V, 0–10 V, 0–20 mA, RS485, CAN

Hardware Configuration Method:

Output Formats	**Configuration Steps**	**Notes**
4–20 mA	No changes required	Factory Default
0–10 V	Solder a 500Ω / 1206 resistor to R48	Voltage Output Mode
RS-485	Remove R1 and R2; solder the 485 module	Contact customer service to specify the terminating resistor
CAN	Remove R1 and R2; solder the CAN module	Contact customer service to specify the terminating resistor

5.3 Wiring Definitions (KF142R-5.08-4P)

Pins	**Function Definition**	**Signal Descriptions**
1	P+ / L	DC Power Positive / AC Power Live Wire
2	P- / N	DC Power Negative / AC Power Neutral Wire
3	OUT+ / B / L	Analog Positive / RS485-B / CAN-L
4	OUT- / A / H	Analog Negative / RS485-A / CAN-H

Warning:

1. Never plug in or unplug the terminal blocks while the power is on.

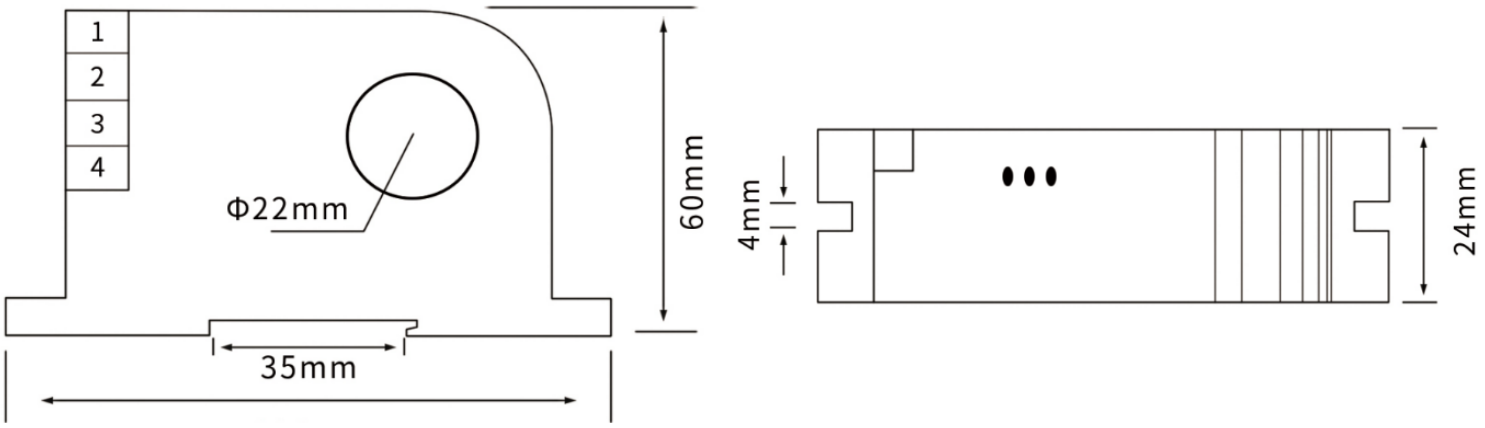
2. RS485/CAN do not include a 120Ω terminating resistor by default; be sure to verify impedance matching for long-distance communication.

3. The power input specifications are fixed at the factory; never mix AC and DC power supplies.

6. Mechanical and Environmental Specifications

6.1 Dimensions and Installation

- Mounting Method: DIN Standard Rail (35 mm)
- Dimensions:
  - Height: 60 mm
  - Width: 106 mm
  - Thickness: 24 mm
  - Base clip width: 35 mm
  - Rail slot depth: 4 mm
- Mounting Hole Specifications: Φ22 mm round through-hole
- Mounting Spacing: For clustered installations, maintain a spacing of ≥ 10 mm between modules to ensure proper heat dissipation and EMC performance.



6.2 Construction and Materials

- Housing Material: FR-ABS (flame-retardant ABS)
- Magnetic Core Material: High-precision silicon steel
- Construction: Integrated closed-loop design; not disassemblable.

7. Ordering Information

To ensure you receive the correct product, please specify the following parameters when placing your order:

1. Product Model: JXK-10-22-Z
2. Power Supply: 24 V DC (default) / 220 V AC / 12 V DC
3. Output Signal: 4–20 mA (default) / 0–10 V / RS485 / CAN
4. Measurement Range: e.g., 100A, 300A, 500A (affects the internal R8 resistance value)
5. Special Requirements: such as RS485/CAN terminating resistor requirements, non-standard ranges, etc.

Sample Order Code: JXK-10-22-Z / DC24V / 4-20mA / 200A