

1-phase True RMS AC Current Transducer

CE - IJ03A - *S* - 0.5**

1 Overview

This product is true RMS measurement AC current transducer, can measure distortion or non-sine wave alternating current, The use of electromagnetic isolation principle. It can measure single-phase AC current non-sinusoidal alternating signal after RMS (True-MS) conversion, isolated and linear output standard voltage or current signal. The product is widely used in non-standard waveform distortion sine wave real-time signal detection and monitoring.

Features:

- I High accuracy, low drift;
- I High reliability, the maximum current up to 700A;
- I The use of standard rail mounting and screw mounting, easy to install;

2 Case Style



Figure 1, MS2 case



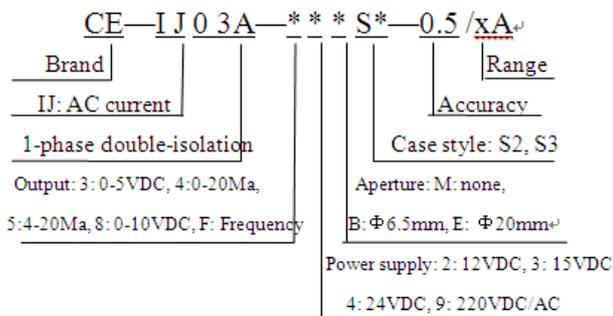
Figure 2, BS2 case



Figure 3, BS3 case (220V)



Figure 4, ES3 case



3 Part number

Figure 5, product selection table

4 Specifications

Test conditions: auxiliary power: +24 VDC, room temperature: 25°C;

Input range: 0~0.5-700AAC (more than 30A for ES3case style)

Output: 0~20mA, 4~20mA, 0~10V, 0~5V;

Power supply: 12VDC, 15VDC, 24VDC, 48VDC, 85-265VAC/DC

Accuracy: 0.5class;

Load capacity: ≥2KΩ (voltage output) ≤250Ω (current output);

Temperature drift: ≤300ppm/°C;

Isolation voltage: ≥2500 VDC;

Response time: ≤400 mS;

Rated power consumption: <1W;

Frequency range: 45Hz-400Hz; (1kHz error 1%)

Surge impact immunity:

Power port three level ±2KV (L-N/2Ω/ integrated wave)

Analog I/O port three level ±2KV (L-N/40Ω/ integrated wave);

Impulse immunity: input / power port ±2KV

Analog I/O port±1KV;

Input overload capacity: 20 times the nominal value of the measurement current (maximum 500A)

(Applying a repetition of five times a second, interval 300S);

Operating temperature: -10~60°C; humidity: ≤95% (no dew);

Storage temperature: -40~+70°C

5 Connections Diagram

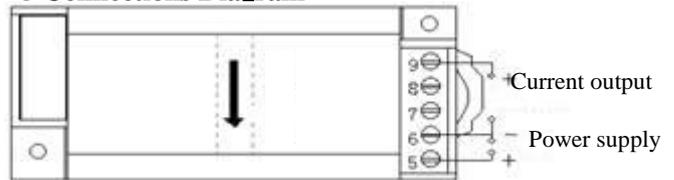


Figure 6, wiring diagram of current output with DC supply

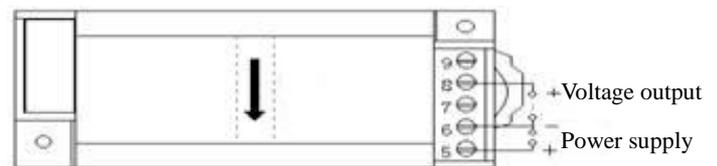


Figure 7, wiring diagram of voltage output with DC supply

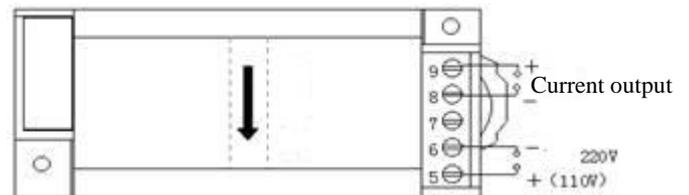


Figure 8, wiring diagram with AC supply



Figure 9, wiring diagram of frequency output of CE-IJ03A-F**S*

6 Mounting diagram

DIN35 rail mounting or screw mounting, slot width 35.5mm;

Screw installation size: 73 mm × 26.8mm;

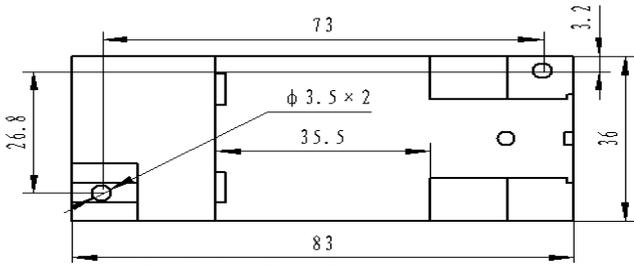


Figure 10, installation dimensions

7 Product's Service

7.1 DIN rail installation method:

- ① The transducer fixed on the side of the card slot and hook on the mounting rail;
- ② Pull the spring pin down;
- ③ Clip the transducer mount on the mounting rail;
- ④ Release the spring pin and clip the transmitter on the mounting rail.

7.2 Screw mounting method:

- ① M3 diameter hole in the fixed plate according to the screw hole position shown in Fig. 10;
- ② Use the screw smaller than $\Phi 3.5$ to insert into hole to secure it.

7.3 The maximum wire diameter of the terminal block is 1.3mm (16-26AWG). Remove the 4mm ~ 5mm insulation layer from the end of the mounting wire and insert it into the terminal block. Tighten the screw.

7.4 Product supply power requires the isolation voltage $\geq 2000\text{VAC}$, AC ripple $< 10\text{mV}$. Multiple transducers can share a common set of power supplies, but the power circuit can no longer be used to drive relays and other can produce spikes in the load, in order to avoid interference signal transmission to the transducer.

7.5 The transducers output 0-20mA (or 4-20mA), the RL standard is $\leq 250\Omega$, and 0-5V voltage output RL standard is $\geq 2\text{K}\Omega$, can guarantee the output accuracy and linearity over the entire rated input range.

8 Example of product accuracy level verification

8.1 According to the transducer terminal definition, connect the experimental circuit as shown.

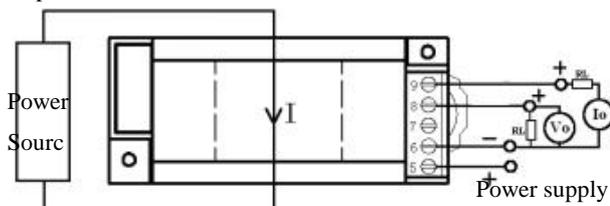


Figure 5, accuracy test wiring diagram of the voltage /current output

Note: The voltage output is measured with a V_o meter and the current output is measured with an I_o meter.

8.2 The test shall be carried out under the following environmental conditions:

- ┆ Power supply: nominal $\pm 5\%$, ripple $\leq 10\text{mV}$;
- ┆ Ambient temperature: $25^\circ\text{C} \pm 5^\circ\text{C}$;
- ┆ Relative humidity: RH(45~80)%;
- ┆ The accuracy of the signal source and measuring instruments is 0.05 class above.

8.3 Power preheat 2min;

8.4 Current I input and monitoring methods:

- ① A high-precision high-current meter calibrator can directly input AC current I, and record the display data of the meter calibration instrument.
- ② No high-current high-precision instrument calibrator, but there is an ordinary high-precision instrument calibrator. Use ampere-turn method to output small current (5A, 10A or higher), and input it to the transducer input coil. The precision ammeter is tandem connection to the calibrator output end to detect input current, and convert the input current I value according to the ampere-turn method.

8.5 Assuming that the transducer input is 0-300 AAC, the output is 0-5VDC, Give an input value I, within the range of the transducer, the expected theoretical output (V_z) of the transducer is calculated as follows:

$$V_z = I \div 300 \times 5V$$

If the output is 0-10V, $V_d = I \div 30 \times 10V$

If the output is 4-20mA, then $I_y = 4 + I \div 300 \times 16\text{mA}$;

If the output is 0-20mA, then $I_z = I \div 300 \times 20\text{mA}$;

8.6 Measure the DC voltage output value V_o or the current output value I_o with the output monitoring table and calculate the error between them and the standard value according to the following corresponding formula:

$$\begin{aligned} |V_o - V_z| &\leq 25\text{mV for normal, or excessive (0-5V output, 0.5);} \\ |V_o - V_d| &\leq 50\text{mV for normal, or excessive (0-10V output, 0.5);} \\ |I_o - I_y| &\leq 80\mu\text{A for normal, or excessive (4-20mA output, 0.5);} \\ |I_o - I_z| &\leq 100\mu\text{A for normal, or excessive (0-20mA output, 0.5);} \end{aligned}$$

8.7 Repeat 5 and 6 two operations, the resulting point error values are within the specified accuracy range, the transmitter accuracy level pass.

9 Notes

- 1 Please pay attention to the power supply information on the product label, the power supply grade use of the transducer, otherwise it will cause the product to be damaged.
- 2 Transducer for the integrated structure, not removable, and should avoid collision and fall.
- 3 The transducers are used in environments with strong electromagnetic interference. Standard precaution such as shielding the input and /or output lines should be observed. All lines should be

as short as possible. If a group of transducers are mounted together, keep a space more than 10mm between adjacent units.

4 The input value given on the transducer label refers to the RMS value of the ac signal.

5 Only use the effective terminal of the transducer. The other terminals may be connected with the internal circuit of the transducer, and can't be used for other purposes.

6 Transducer has a certain anti-lightning ability, but when the transducer input and output feeders exposed to extreme bad environments, must be taken lightning protection measures.

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8 The transducers use flame-retardant ABS plastic shell package, which limit temperature is +75 °C. The shell will be deformed with high-temperature baking, and will affect product performance. Do not use or save the product near the heat source. Do not bake the product in a high-temperature oven.

9 When measuring the voltage or current with the multi meter pen, please screw the terminal screw in the end, otherwise it may not measure the voltage or current output value.