

## Single phase AC current transducer

**CE-IJ01-\*\*\*S\*-\***

**CE-IJ01A-\*\*\*S\*-\***

### 1 Overview

This device is a treble isolation single phase AC current isolation transducer, use the principle of electromagnetic isolation, can detect/monitor the AC current signal in real time, and isolate output standard signal. Input、output、auxiliary power supply are complete isolation from each other, the linearity of input and output signals is superior to the precision. Can widely used in telecommunications, electricity, railways, industrial monitoring and other fields.

Features:

- l High precision, superior to accuracy grade;
- l Low temperature drift, good stability;
- l Input、output、auxiliary power supply are complete isolation, good resistance to interference;
- l Can measure the true RMS.

### 2 Case Style

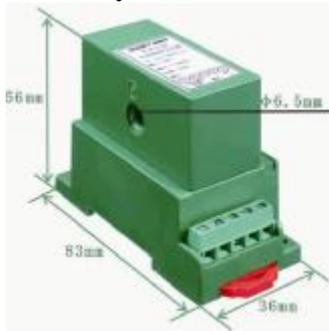


Figure 1, BS2 case style



Figure 2, ES3 case style



Figure 3, MS1 case style

Figure 3, MS1 case style (terminal input)

### 3 Part Number

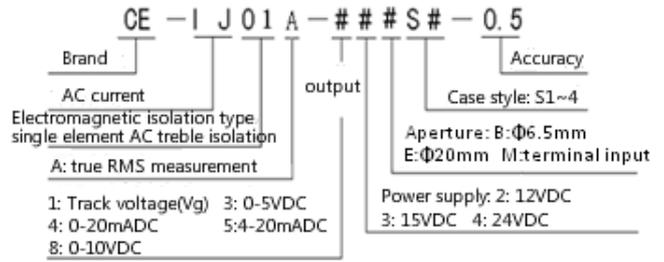


Figure 4, product model selection table

### 4 Specifications

- \*Test conditions: power supply: +24V, room temperature: 25°C;
- \*Input range: 20A~500AAC (ES3casestyle), 0~30AAC (BS2case style), 0~5A AC (MS1case style);
- \* Output range: 0-5V/1-5V/0-20mA/4-20mA/0-10V;
- \* Auxiliary power supply: 12VDC, 15VDC, 24VDC, 220VAC (can be customized);
- \*Accuracy: class 0.5, class 0.2;
- \*Load capacity:  $\geq 2K\Omega$  (voltage output),  $\leq 250\Omega$  (current output),  $\leq 500\Omega$ (current output, can be customized);
- \* Temperature drift:  $\leq 200\text{ppm}/^\circ\text{C}$ ;
- \* Isolation voltage: 2500V DC;
- \* Response time:  $\leq 300\text{Ms}$ ;
- \* Rated power consumption:  $\leq 0.4\text{W}$  ( $\leq 20\text{mA}$ );
- \* Output ripple:  $\leq 10\text{mV}$ ;
- \* Frequency range: 45~65Hz (the highest is 5K, need to specify when ordering);
- \* Surge impact immunity: Power port three-level 2000V (L-N/2 $\Omega$ / integrated wave) Analog I/O port three-level 2000V (L-N/40 $\Omega$ / integrated wave);
- \*Input overload capacity: 20 times of the measured current nominal value (Maximum 500A) (exert one second, repeat five times, interval 300S) ;
- \* Operating condition: Temperature: -10~60°C; Humidity:  $\leq 95\%$ (No dew)
- \* Storage condition: Temperature: -55~65°C; Humidity:  $\leq 95\%$ (No dew)

### 5 Connections Diagram

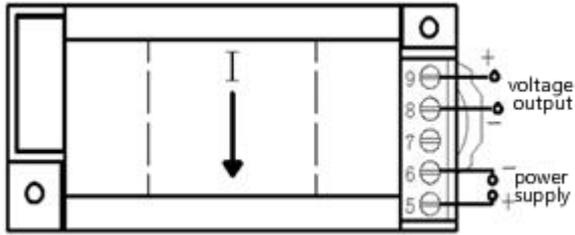


Figure 5, connection diagram of BS2 case style, ES3 case style

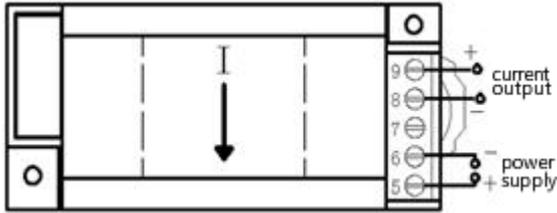


Figure 6, connection diagram of BS2 case style, ES3 case style

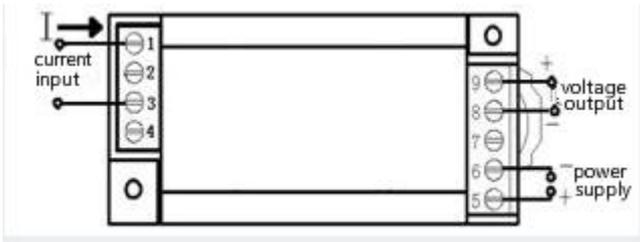


Figure 7, connection diagram of MS1 case style

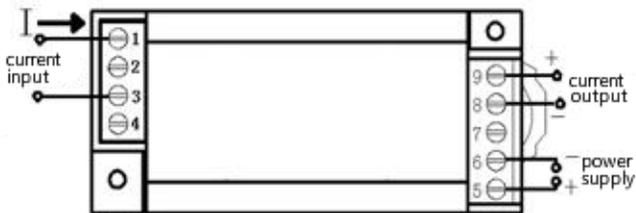


Figure 8, connection diagram of MS1 case style am

## 6 Mounting Diagram

DIN35rail mounting size: card slot width 35.5mm;  
Screw mounting size: 73 mm×26.8mm.

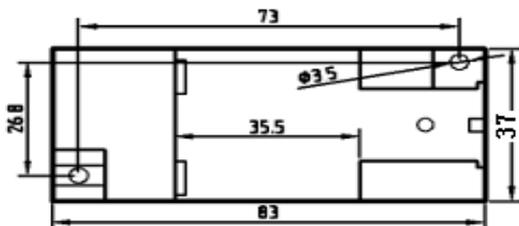


Figure 9, installation dimension

## 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 (as show in the bottom of figure1 the red spring pin);

- 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 screw hole in the fixed plate according to the screw hole position shown in Figure 9;

- ② Use the M3 screw to insert into hole and fix it.

7.3 Products has been accurately calibrated according to the "product standard" before delivery. Apply power after determine the correct wiring.

7.4 The maximum wire diameter of the terminal block is 2mm (16-26AWG). Remove the 4mm ~ 5mm insulation layer from the end of the mounting wire and insert it into the terminal block. Then tighten the screw.

7.5 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 supply, 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.

7.6 The transducer's output is 0-20mA (or 4-20mA),  $R_L \leq 250\Omega$ ; voltage output is 0-5V,  $R_L \geq 1\text{K}\Omega$ ; Under this output condition 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 to connect the circuit as shown:

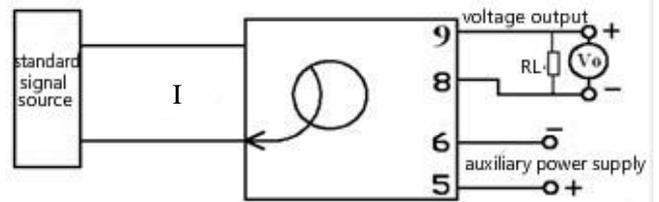


Figure 10. voltage output products connection diagram

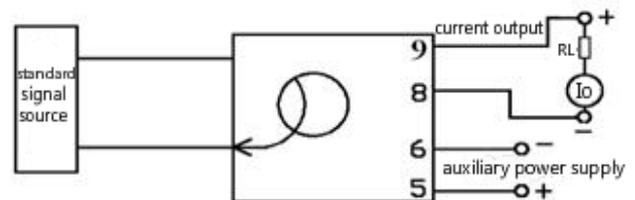


Figure 11 current output products connection diagram

**Note:** Use  $V_o$  meter to measure the voltage output, use  $I_o$  meter to measure the current output.

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:  $25\text{ }^\circ\text{C} \pm 5\text{ }^\circ\text{C}$ ;
- ◆ Relative humidity: RH (45 ~ 80)%;
- ◆ The accuracy of the signal source and measuring instrument 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 a 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 Suppose transducer's input is 0-300AAC, output is 0-5VDC, any given input value I within the range of the transducer, then the expected theoretical output value of the transducer ( $V_z$ ) is calculated in the following formula:

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

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

If 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 current output value  $I_o$  with an output monitoring table:

$|V_o - V_z| \leq 25\text{mV}$  is normal, otherwise exceeding (0-5V output, class 0.5);

$|I_o - I_z| \leq 90\text{uA}$  is normal, otherwise exceeding (4-20mA output, class 0.5);

$|I_o - I_z| \leq 100\text{uA}$  is normal, otherwise exceeding (0-20mA output, class 0.5);

8.7 Repeat operations 8.4 and 8.5, average of all the get

points  $|V_o - V_z|$  is  $\leq 25\text{mV}$  or  $|I_o - I_z| \leq 90\text{uA}$ , then the accuracy of the transducer is qualified.

**Note:** please consult with our company for the verification method of other technical indicators.

## 9 Notes

9.1 Please pay attention to the power supply information on the product label, and the power supply grade used by the transducer, otherwise it will cause damage to the product.

9.2 Integrated structure of the transducer, non-removable, and should avoid collision and fall.

9.3 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.

9.4 Can 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.

9.5 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.

9.6 Don't damage or modify the product label and logo. Don't disassemble or modify the transmitter, otherwise the company will no longer provide the product "three guarantees" (replacement, returns, repair) services.

9.7 The transducers use flame-retardant ABS plastic shell package. which limit temperature tolerance is  $+75\text{ }^\circ\text{C}$ . The shell will be deformed with high-temperature baking, and will affect product performance. Do not use or store the product near the heat source. Do not bake the product in a high-temperature oven.

9.8 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. The terminal block wiring wire diameter  $\leq$   
1.4mm, otherwise it may cause terminal screw slipped.