

## Three-phase AC current transducer

### user manual

#### CE-IJ31-\*\*BS3-0.2

#### 1 Overview

This device is high precision three-phase AC current isolation transducer, adopts the principle of electromagnetic isolation, can measure three-phase AC current signals, isolation and linear output a variety of optional standard signals. Widely used in real-time detection/monitoring of communication AC current signals in communications, power, railway, industrial control, etc.

#### Features:

- I Small size, installation and connection are convenient;
- I Precision is superior to class 0.2, low temperature drift;
- I High reliability;
- I Can be customized according to customer specific requirements.

#### 2 Case Style



Figure 1, BS3 style

#### 3 Part Number

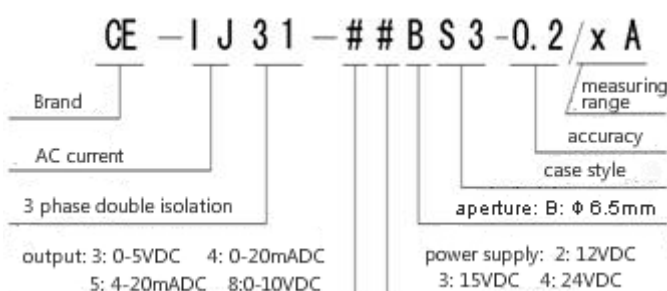


Figure 2, product model selection table

#### 4 Specifications

\* Test conditions: room temperature: 25°C.

\* Input range: 0~0.5AAC~30AAC.

\* Output: 0~20mA, 4~20mA, 0~10V, 0~5V etc.

\* Auxiliary power supply: 12VDC, 15VDC, 24VDC

\* Accuracy: class 0.2

\* Load capacity: Load  $\geq 2K\Omega$  (voltage output)

Load  $\leq 250\Omega$  (current output)

\* Temperature drift:  $\leq 200\text{ppm}/^\circ\text{C}$

\* Isolation voltage:  $\geq 2500\text{ V DC}$

\* Response time:  $\leq 250\text{ ms}$

\* Rated power consumption: voltage output  $< 0.5\text{W}$ ;  
current output  $< 2\text{W}$

\* Output ripple:  $\leq 10\text{mV}$ ;

\* Frequency range: 45Hz~65Hz;

\* Input overload capacity: 20 times of the measured current nominal value (exert one second, repeat five times, interval 300S);

\* Operating condition: Temperature:  $-10\sim 60^\circ\text{C}$ ;

Humidity:  $\leq 95\%$  (No dew)

\* Storage condition:  $-40\sim +70^\circ\text{C}$ .

#### 5 Connections Diagram

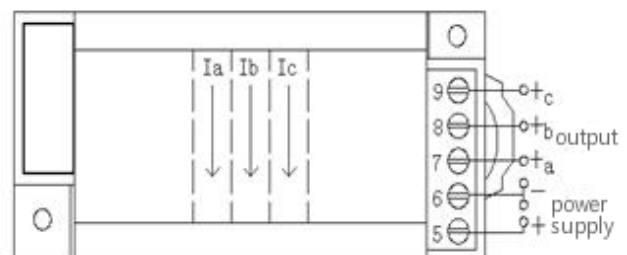


Figure 3, CE-IJ31-\*\*BS3 connection diagram

#### 6 Mounting Diagram

DIN35rail mounting size: card slot width 35.5mm;

Screw mounting size: 73 mm $\times$ 26.8mm;

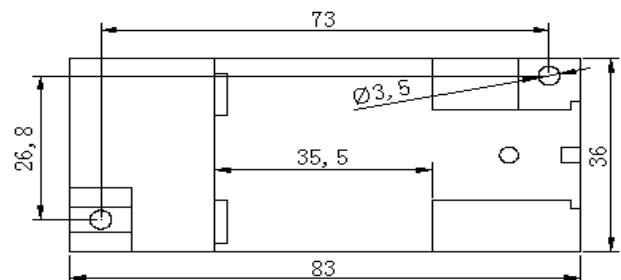


Figure 4, BS3 style installation dimension

#### 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:

- ①M3 screw hole in the fixed plate according to the screw hole position shown in Figure 4;
- ②Use the M3 screw to insert into hole and fix it.

7.3 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.

7.4、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 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.

7.5 The transducers current output is 0-20mA (or 4-20mA), load resistance  $R_L \leq 250\Omega$ , and 0-5V voltage output load resistance  $R_L \geq 2\text{K}\Omega$ , 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 to connect the circuit according to the figure 4:

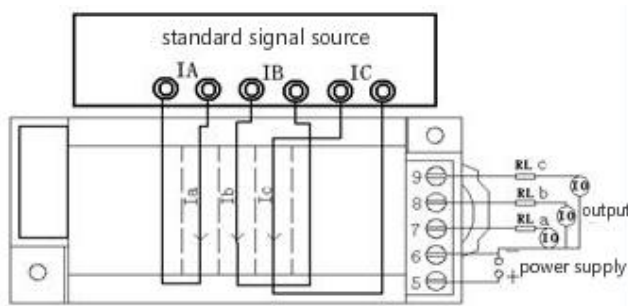


Figure 5, IJ31 voltage/current output product accuracy test wiring diagram

**Note: diagram is current output connection measurement, voltage output load resistance parallel measurement.**

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:

- ①A high-precision high-current meter calibrator can directly input AC current I, and record the display data of the meter calibration instrument.
- ②No 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 0-30AAC,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:

$$V_z = I \div 30 \times 5V$$

If output is 4-20mA, then  $I_z = 4 + I \div 30 \times 16\text{mA}$ ;

If output is 0-20mA, then  $I_z = I \div 30 \times 20\text{mA}$ ;

8.6 Measure the DC voltage output value  $V_o$  or current output value  $I_o$  with an output monitoring table:

$|V_o - V_z| \leq 10\text{mV}$  is normal, otherwise exceeding (0-5V output, class 0.2)

$|I_o - I_z| \leq 32\mu\text{A}$  is normal, otherwise exceeding (4-20mA output, class 0.2)

$|I_o - I_z| \leq 40\mu\text{A}$  is normal, otherwise exceeding (0-20mA output, class 0.2)

8.7 Repeat operations 4 and 5, average of all the get points  $|V_o - V_z|$  is  $\leq 25\text{mV}$  or  $|I_o - I_z| \leq 80\mu\text{A}$ , 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 of 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 The input value showed on the transducer label refers to the RMS value of the ac signal..

9.5 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.

9.6 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.

9.7 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.

9.8 The transducers use flame-retardant ABS plastic shell package, which limit temperature tolerance is +75 °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.

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