

## Single-phase Bidirectional DC current transducer

### Instructions

#### CE-IB04-##ES3-1.0

#### 1 Overview

This device is a bidirectional DC current measurement isolation transducer. It is used Hall measurement principle and perforated input mode, with a very high isolation pressure function. The input bidirectional DC current signal can be converted to linear standard bidirectional DC signal output. It is widely used in new energy power generation monitoring, industrial control, DC power supply and other automated monitoring and control system.

#### Features:

- ☆ High stability, low temperature drift;
- ☆ High reliability, strong surge voltage suppression;
- ☆ Small size, easy to install.

#### 2 Case Style

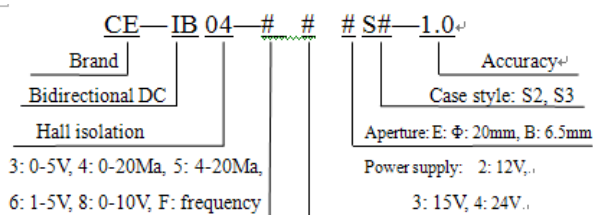


ES3 case

ES3 case Dimensions:

length × width × height = 83mm × 36mm × 76mm.

#### 3 Part Number



#### 4 Specifications

Accuracy: 1.0;

Auxiliary Power:

DC 12V, 15V, 24V or DC 11.5V-26V, wide power supply;

Input range: DC ±30A ~ ±300A;

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

Load capacity: voltage output load ≥ 2KΩ,

current output load ≤ 250Ω;

Temperature drift: ≤500PPm/°C;

Isolation voltage: 2500 V DC;

Response time: ≤200 mS;

Rated power consumption: ≤800mW;

Output ripple: ≤15mV;

Frequency range: none;

Surge impact immunity: power supply port four 4000V;

output port three 2000V;

Input overload capacity: 20 times for the nominal value of the measured current (maximum 500A, applied 1 second);

Operating temperature: -10~60°C;

Storage temperature: -40~70°C.

#### 5 Connections Diagram

(Please refer to the wiring diagram on the product for special products.)

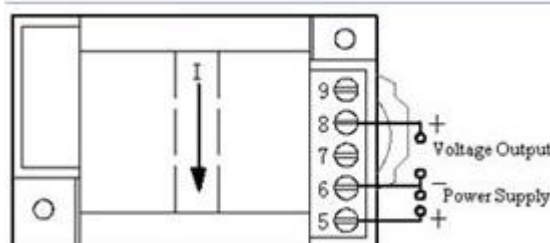


Figure 3, wiring diagram of voltage output

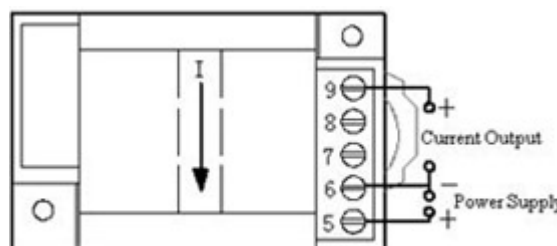
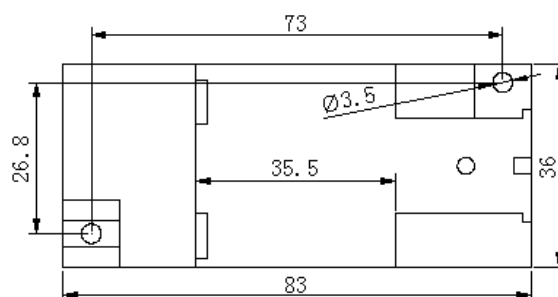


Figure 4, wiring diagram of current output

#### 6 Installations

DIN35 rail mounting or screw mounting installation, the installation size is shown in Figure 5 (in mm).



Figure

5 installation dimensions

#### 7 Product's Service

##### 1 Installation

##### 1.1 DIN rail installation method:

① Fix the transducer 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.

#### 7.1.2 Screw mounting method:

① 4mm diameter hole in the fixed plate according to the screw hole position shown in Fig. 5;

② Use the screw  $\Phi 3.5$  to insert into hole and secure it.

7.2 Products factory has been accurately set according to the "product standard". Apply power after determine the correct wiring.

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 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 definition of the transducer terminal to connect the test circuit as shown.

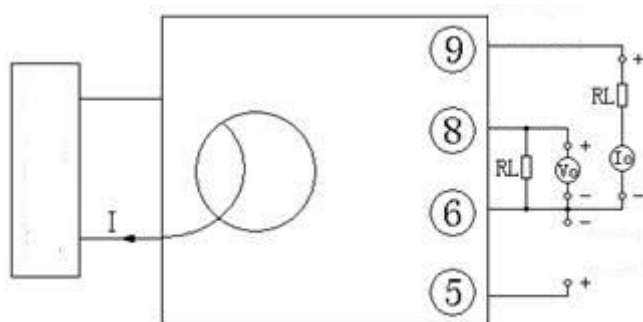


Figure 6, test wiring diagram of voltage or current output of product accuracy.

**Note:** The voltage output is measured with the  $V_o$  meter, and the voltage output is measured with the  $V_o$  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 is 0.05 above. of the signal source and measurement instrument.

#### 8.3 Power preheat 2min;

#### 8.4 Current I input and monitoring methods

① A high-precision high-current meter calibrator can directly input current as shown in figure 6, and record the display data of the meter calibration instrument.

② There is no high-current high-precision instrument calibrator, but 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 the transducer input is 0-300ADC, the output is 0-5VDC, given any input value I in the transducer range, the theoretical output value ( $V_z$ ) of the transducer is calculated as follows:

$$V_z = I \div 300 \times 5\text{V}$$

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

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

8.6 The monitoring table measures the DC voltage output value  $V_o$  or current output value  $I_o$ :

$$|V_o - V_z| \leq 50\text{mV normal, or excessive (0-5V output, 1.0);}$$

$$|I_o - I_z| \leq 160\mu\text{A normal, or excessive (4-20mA output, 1.0);}$$

$$|I_o - I_y| \leq 200\mu\text{A normal, or excessive (0-20mA output, 1.0);}$$

8.7 Repeat the NO.8.4 and NO. 8.5 operations, the resulting point value  $|V_o - V_z| \leq 50\text{mV}$  or  $|I_o - I_z| \leq 160\mu\text{A}$ , the transducer accuracy level is qualified.

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

### 9 Notes

9.1 Please pay attention to the wiring on product label and the output contact capacity.

9.2 Transducer for the integrated structure, not 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 given on the transducer label refers to the rms value of the ac signal.

9.5 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.

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 transducer, 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 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.

9.9 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.