3-phase power transducer

CE-C**-*4BS3-0.5

Istructions

1Overview

This device is an electrical isolation transducer of 3-phase active, reactive power, power factor, and true RMS measurement. Its input is isolated from output signal, and output linear standard analog signal. Through the internal switch can switch to active, reactive power and power factor measurement of 3-phase 3-wire and 3-phase 4-wire. The product can be widely used in electric power, communications, railway, industrial control and other fields.

Features:

- Ø True RMS measurement, the accuracy is better than 0.5;
- Ø The product has a 3-phase active or reactive power and power factor measurement function;
- Ø Can be free to set positive and negative power measurement or the inductive and capacitive polarity measurement of power factor;
- Ø Wide power supply: 12V/24V;
- Ø A variety of output range and mode to choose from, built-in function switch freely selected;
- Ø can be freely set three-phase four-wire or three-phase three-wire measurement mode;

2 Case Style

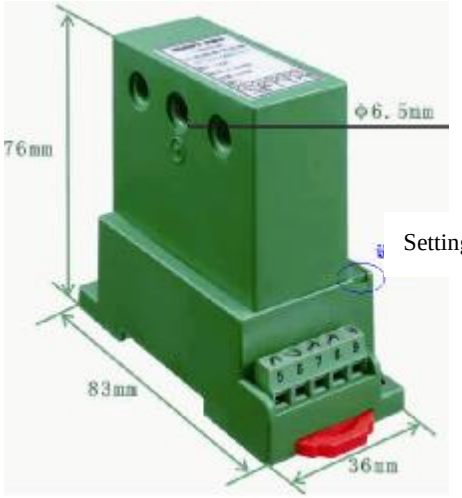

Figure 1 Appearance of the product

3 Part Number

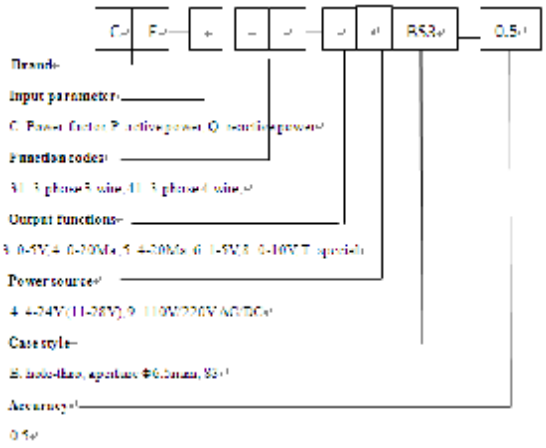

Figure 2, Selection Table

4 Specifications

Power supply: DC +11V～+28V (power consumption＜60mA);

Input range: voltage AC: 0~500V; current AC: 0~30A;

Power factor transmitter need to subjoin:

Power factor 0~1(unipolarity), 0.01L~1~0.01C (bipolarity);

Output: output a one-way voltage and current at the mean time, eight kinds of output of 0-5V/0-20mA or 1-5V /4-20mA or 2.5±2.5V/10±10mA or 3±2V /12±8mA can be set freely;

Output ripple: <10mV; Working temperature: -20℃～+70℃;

Accuracy class: 0.5 (with reference error);

Temperature drift: <300ppm/℃ Isolation voltage: DC 2500V;

Load capacity: voltage output≥500Ω, current output≤300Ω

(24V DC power supply can be up to 900Ω);

Response time: ≤300 mS;

Isolation voltage: DC 2500V;

Rated power consumption: ＜1.5W;

Frequency range: 40Hz～75Hz;

Surge immunity:

Power port four 4KV (L-N / 2Ω / integrated wave),

Output port two 2KV (L-N / 40Ω / integrated wave);

mpulse immunity: input/power port ± 2KV, analog I/O port ± 1KV;

Input overload capacity:

Continuous overload: 120%; short-term overload,

2 times the rated voltage input value, the application of 1 second;

20 times the rated current input, the application of 1S;

Storage conditions: -40 ~ +70 ℃.

5 Connections Diagrams

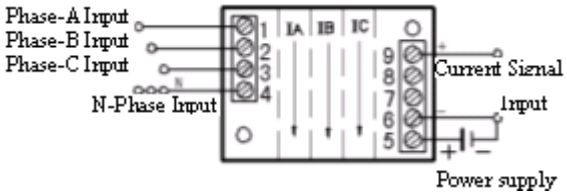

Figure 3, wiring diagram of P41/Q41/C41 (window input)

Note: When the three-phase four-wire products are for the

three-phase three-wire measurement through the internal DIP switch settings, the product wiring is required to B-phase voltage connected to the terminals NO.4, terminals NO.2 are not connected, B phase current is not connected.

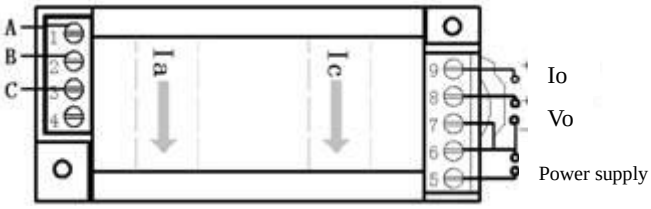

Figure 4, wiring diagram of P31/Q31/C31 (window input)

Note: the terminal NO. 6 and NO.7 are in common ground, the internal connectivity.

6 Installations

Rail mounting dimensions: 35mm; screw rail installation size: 76X57.8mm, as shown in Figure 5 (in mm).

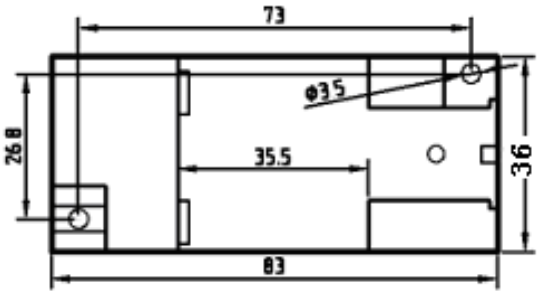

Figure 5 installation dimensions

7 Function Settings

As shown in Figure 1 to open the bottom case, there is a six-bit code switch on the internal PCB board. The bit 1 and 2 set measurement faction of active, reactive power and power facto, the bit 3 sets the output zero to 0V (0mA) or 1V (4mA), bit 4 sets for nonpolarity and polarity measurement to distinguish inductive capacitive, bit 5 is set to the negative power zero offset output, when zero value is 4mA or 1V, then nonpolarity measurement; When measured to negative power, output will be less than 4mA or 1V, the maximum bias output of negative power is to -20%, the minimum is to 0.8mA or 0.2V(This bit setting is disabled when the 4th bit switch is set to bipolar measurement）Switch status function specific settings are as follows:

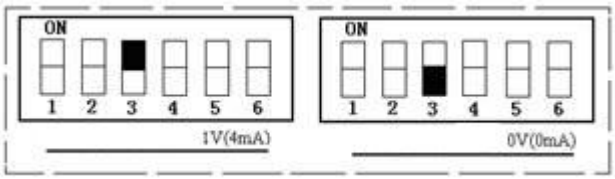

Figure 6, Zero output setting

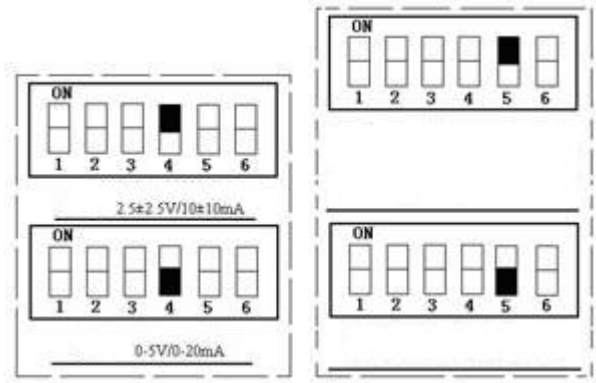

Figure 7, Polarity measurement settings

Figure 8 Negative power bias output

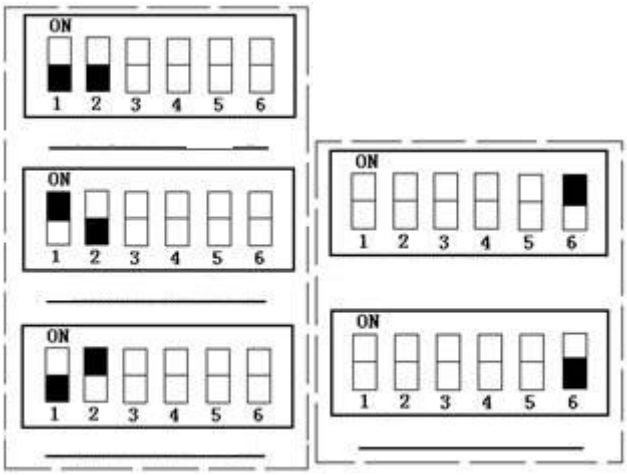

Figure 9 Measurement function settings

Figure10 3-phase 4-wire and 3-phase 3-wire settings

8 Input/output graphs

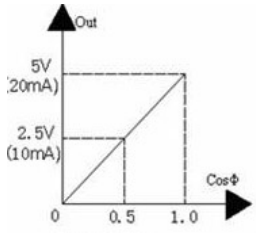

Fig 11, polarity

0-5V（0-20mA）output

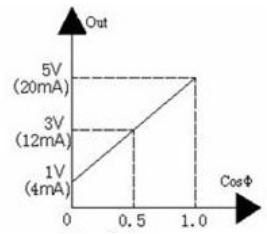

Fig 12, polarity

1-5V（4-20mA）output

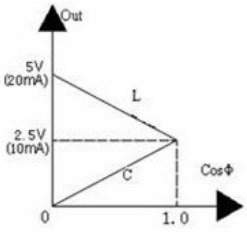

Fig 13, bipolarity

2.5±2.5V (10±10mA) output

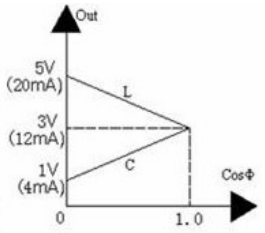

Fig 14, bipolarity

3±2V (12±8mA)output

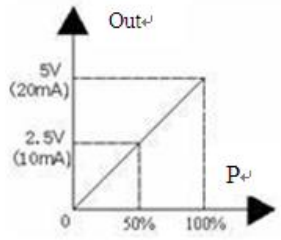

Fig 15, polarity

0-5V（0-20mA）output

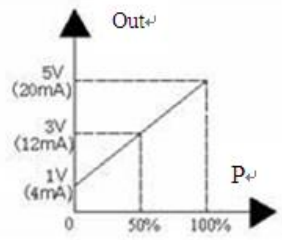

Fig 16, polarity

1-5V（4-20mA） output

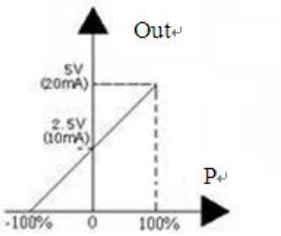

Fig 17, bipolarity

2.5±2.5V (10±10mA) output

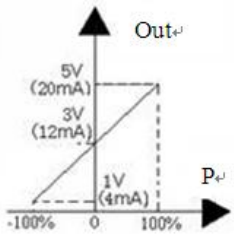

fig 18, bipolarity

3±2V (12±8mA) output

9 Product's Service

1 Installation

1.1 DIN rail installation method:

①The transducer fixed on the side of the card slot and hook on the mounting rail;

②Pull the spring pin down;

③Clip the transducer mount on the mounting rail;

④Release the spring pin and clip the transmitter on the mounting rail.

1.2 Screw mounting method:

①4mm diameter hole in the fixed plate according to the position of the screw hole shown in Fig. 13;

② Use the screw Φ3.5 to insert into hole and secure it.

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

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.

4 Product supply power requires the isolation voltage ≥ 2000VAC, AC ripple <10mV. 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.

5 The transducers output 0-20mA (or 4-20mA), the RL standard is ≤ 250Ω, and 0-5V voltage output RL standard is ≥ 1KΩ, can guarantee the output accuracy and linearity over the entire rated input range.

10Example of product accuracy level verification

1 According to the definition of the transducer terminals to connect the test circuit.

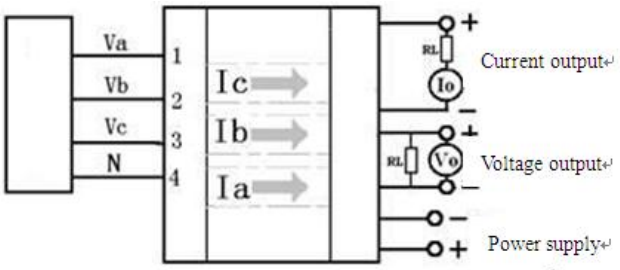

Fig .18

Note: The voltage output is measured with a voltmeter and the current output is measured with an Io meter.

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

◆Power supply: nominal ± 5%, ripple ≤ 10mV;

◆Ambient temperature: 25 °C ± 5°C;

◆Relative humidity: RH (45 ~ 80)%;

◆The accuracy of the signal source and measurement instrument is 0.05% above.

3 Power preheat 2min;

4 Using high-precision power signal source to input the value of voltage and current and the corresponding phase, and record the display data of calibrator, in order to ensure the veracity of the accuracy, please enter voltage and current signals more than 20%of the product rang. The current can be input using the ampere-turn method.

5 Example for conversion relationship of output and measured value: (Power factor products: Vo voltage output, Io current output, C power factor).

If the output is 0-5V, then C = Vo÷5V;

If the output is 4-20mA, then C = (Io-4 mA)÷16mA;

If the output is 0-2.5V-5V more than 2.5V, a advance power factor and inductive load, C = (5V-Vo)÷2.5V; When output is less than 2.5V, a lagging power factor and capacitive load, C = Vo÷2.5V;

If the output is 0-4mA-20Ma, when output 12mA, a advance power factor and inductive load, C = (20 mA -Io)÷8 mA; when output less than 12 mA, a lagging power factor and capacitive load, C = (Io-4 mA)÷8 mA.

6The monitoring meter measures the DC voltage output value Vo or

the current output value Io.

|Vo-Vz|≤25mV is normal, or excessive (0-5V output, 0.5);

|Io-Iz|≤80uA is normal, or excessive (4-20mA output, 0.5);

|Io-Iz|≤100uA is normal, or excessive (0-20mA output, 0.5);

7 Repeat the NO.4 and NO.5 operations, the resulting point value |Vo-Vz|≤25mV or |Io-Iz|≤80uA (100uA), the accuracy level of transducer is qualified.

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

11 Notes

1 Please pay attention to the power supply information on the product label, and the power supply used grade 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.

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, return, repair) services.

8 The transducers use flame-retardant ABS plastic shell package. which limit temperature is +75 ℃. 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.