

## True RMS 2-element AC voltage transducer

### Instructions

#### CE- VJ21A - \*\*MS3 -0.5

#### 1 Overview

This product is a true RMS measurement 2 phase AC voltage isolation transducer. Using the principle of electromagnetic isolation to sample the two-way AC voltage, isolated output a variety of standard signals such as 0 ~ 5V, 0 ~ 20mA or 4 ~ 20Ma after the true RMS conversion, its input and output are electrical isolation. There is a complete linear relationship between the output signal and the input signal. Products have an advantage of good accuracy, high isolation pressure, low temperature drift, small size, easy installation, etc., in line with international standards, it can be widely used in AC voltage signal real-time detection or monitoring, communications, electricity, railways, industrial control and other fields.

#### Features:

- Ø Easy installation and wiring;
- Ø High precision, low temperature drift;
- Ø High reliability;
- Ø Can be customized a variety of special products according to customer needs;

#### 2 Case Style

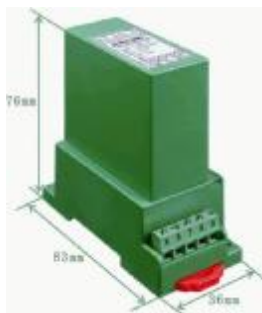
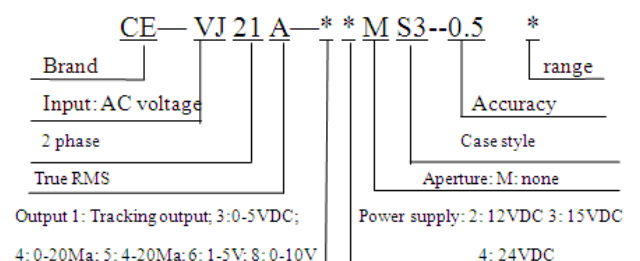


Figure 1, MS3 outline

#### 3 Part Number



#### 4 Specifications

Test conditions: power supply: +12V, room temperature: 25°C;  
 Input Range: 0~1~ 500V AC;  
 Output: 0-5V, 1-5V, 0-10V, 0-20mA, 4-20mA DC and so on;  
 Power supply: +12VDC,+15VDC,+24VDC, 85-265V AC/DC;

Accuracy: 0.5 class;

Load capacity:  $\geq 2K\Omega$  (voltage output),  $\leq 250\Omega$  (current output);

Temperature drift: 300ppm/°C;

Isolation voltage: 2500 V DC;

Response time:  $\leq 400$  ms;

Rated power consumption: 0.5W (voltage output); 1.5W (current output);

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

Surge immunity:

Power supply port three  $\pm 2KV$  (L-N /  $2\Omega$  / integrated wave);

Analog I / O port three  $\pm 2KV$  (L-N /  $40\Omega$  / integrated wave);

Impulse immunity: input/ power port  $\pm 2K$ ,

analog I / O port  $\pm 1KV$ ;

Input overload capacity: 2 times the rated voltage input value, 10 times a second;

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

Storage temperature: -40~+70°C.

#### 5 Connections Diagram

(For reference only, the actual application to the product wiring diagram shall prevail)

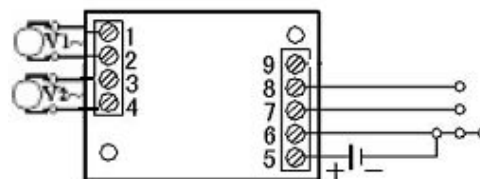


Figure 2, Voltage output wiring diagram of CE-VJ21A-3\*MS3, CE-VJ21A-6\*MS3 and CE-VJ21A-8\*MS3

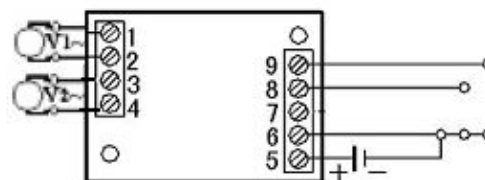
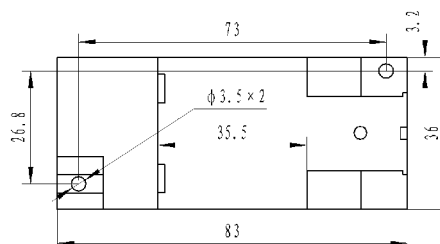


Figure 3, Current output wiring diagram of CE-VJ21A-4\*MS3, CE-VJ21A-5\*MS3

#### 6 Installations

DIN35 rail mounting or screw mounting, the installation size as shown in figure 4 (in mm).

Figure 4, MS3 installation dimensions



#### 7 Product's Service

## 7.1 Installation

### 7.1.1 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 3mm diameter hole in the fixed plate according to the screw hole position shown in Fig. 3;
- ② Use the screw  $\Phi 3$  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, connect the test circuit as shown.

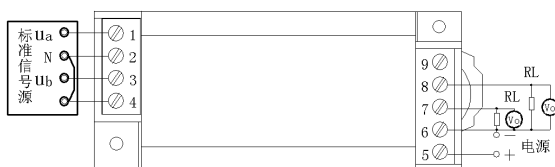


Figure 5, the voltage output product accuracy test wiring diagram

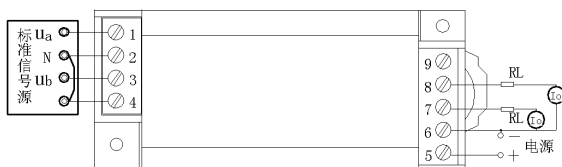


Figure 6, the current output product accuracy test wiring diagram

**Note:** The voltage output measured with the  $V_o$  table, the current output measured with the  $I_o$  table.

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

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

8.3 Power preheat 2min;

8.4 Voltage V input and monitoring methods:

- ① A high-precision high-voltage meter calibrator can directly input voltage V, and record the meter calibration instrument display data.
- ② If there is no high-precision voltage meter calibrator, but a common meter calibrator, use high-precision multi meter to monitor the output voltage V of the common meter.

8.5 Assuming the transmitter input is 0-300VAC, the output is 0-5VDC, given any input value V in the transducer range, the theoretical output value ( $V_z$ ) of the transducer is calculated as follows:

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

If the output is 0-10V,  $V_d = V \div 300 \times 10\text{V}$ ;

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

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

8.6 The monitoring table measures the DC voltage output value  $V_o$  or the current output value  $I_o$ , and calculates the error between its and the standard value according to the following corresponding formula:

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

$|V_o - V_d| \leq 50\text{mV}$  is normal, or excessive (0-10V output, 0.5);

$|I_o - I_y| \leq 80\mu\text{A}$  is normal, or excessive (4-20mA output, 0.5),

$|I_o - I_z| \leq 100\mu\text{A}$  is normal, or excessive (0-20mA output, 0.5);

8.7 Repeat 5 and 6 two operations, the resulting points in each phase error values are within the specified accuracy range, the transmitter accuracy level qualified.

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

## 9 Notes

1, please pay attention to the power supply on the product label, and the transducer uses the power level, otherwise it will cause product damage.

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 transducer, otherwise the company will no longer provide the product "three guarantees" (replacement, returns, repair) services.
- 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.

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