True RMS three-phase three-wire AC voltage transducer

Istructions

CE-VJ41A-**MS3-0.5

CE-VJ31A-**MS3-0.5

1 Overview

This device is a 3-phase AC voltage isolation transducer. It is applied the principle of electromagnetic isolation, and true RMS measurement. After True-RMS (True-RMS) conversion, it can measure three-phase AC voltage non-sinusoidal alternating signal RMS, isolate and linearly output standard voltage or current signal. The product is widely used in non-standard waveform distortion sine wave real-time signal detection and monitoring.

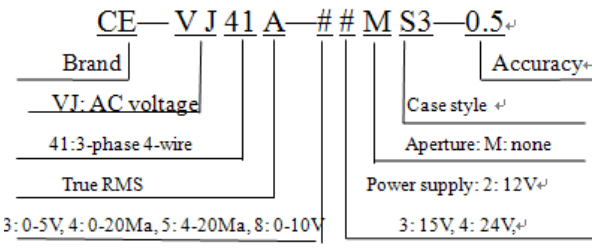
Features:

- Ø Each phase voltage is true RMS measurement;
- Ø High precision, low temperature drift;
- Ø Small size, easy to install on-site;
- Ø High reliability, can be more than 2KV surge.

2 Case Style

Figure 1, MSK outline

3 Part Number



4 Specifications

Test conditions: room temperature: 25°C;

Input Range: 0 ~ 1V ~ 500VAC;

Output: voltage: 0 ~ 5V DC, 0 ~ 10VDC;

Current:0 ~ 20mA, 4-20mA;

Frequency: 0 ~ 5KHZ, 0 ~ 10KHZ;

Power supply: 12VDC, 15VDC, 24VDC;

Accuracy: 0.5;

Load capacity: ≥2KΩ (voltage output), ≤250Ω (current output);

Temperature drift: ≤350ppm/°C;

Isolation voltage: ≥2500 V DC;

Response time: ≤350 mS

Rated power consumption: 0.5W (voltage output); 2W (current output);

Output ripple: ≤10m;

Frequency range: 45~65Hz （up to 5K, please specify when ordering);

Surge immunity:

Power port level ± 0.5KV (L-N/2Ω/integrated wave)

Analog I / O port.± 0.5KV (L-N/40**Ω**/ integrated wave);

Impulse immunity: input/ power port ± 2K,

analog I /O port ± 1KV;

Input overload capacity: Voltage: 2 times the nominal value;

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

Storage temperature: -55 ~+65°C; humidity: ≤95 % (no dew).

5 Connections Diagram

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

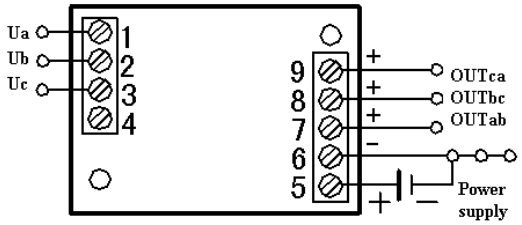


Figure 2, CE-VJ31A DC power supply, AC three-phase three-wire input, voltage or current output wiring diagram

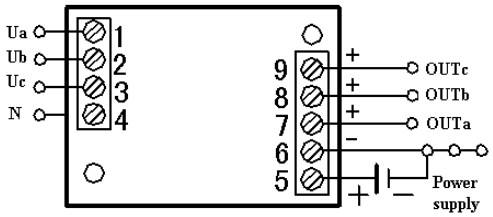


Figure 3 CE-VJ41A DC power supply, AC three-phase three-wire input, voltage or current output wiring diagram

6 Installations

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

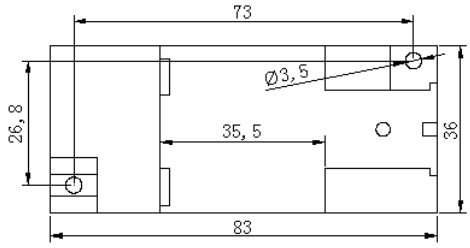


Figure 4, installation dimensions

7 Product's Service

7.1 Installation

7.1.1 DIN rail installation method:

①Fix the transducer 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.

7.1.2 Screw mounting method:

①3mm diameter hole in the fixed plate according to the screw hole position shown in Fig. 3;

② Use the screw Φ3 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 ≥ 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.

7.5 The transducers output 0-20mA (or 4-20mA), the RL standard is ≤ 250Ω, and 0-5V voltage output RL standard is ≥ 2KΩ, can guarantee the output accuracy and linearity over the entire rated input range.

8 Example of product accuracy level verification

Take the VJ41A (three-phase four-wire) voltage output of the transducer as an example.

8.1According to the definition of the transducer terminal, connect the test circuit as shown.

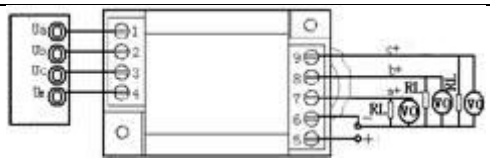


Figure 5 voltage product accuracy test wiring diagram

Note: The voltage output measured with the Vo table, the current output measured with the Io table.

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

- ◆ Power supply: nominal ± 5%, ripple ≤ 10mV;
- ◆ Ambient temperature: 25 ℃ ± 5℃;
- ◆ 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 Voltage V input and monitoring methods:

①A high-precision high-voltage meter calibrator can directly input voltage V, and record the meter calibration instrument display data.

②If 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 (Vz) of the transducer is calculated as follows:

$$Vz = V \div 300 \times 5V$$

If the output is 4-20mA, then Iy = 4+ V÷300×16mA;

If the output is 0-20Ma, then Iz = V÷300×20mA.

8.6 The monitoring table 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-Iy|≤80uA is normal, or excessive（4-20mA output, 0.5）;

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

8.7 Repeat 8.4 and 8.5 two operations, the resulting point |Vo-Vz| value ≤25mV or |Io-Iz|≤ 80uA, the transducer accuracy level is qualified.

Note: other technical indicators of the verification method detailed consultation with our company.

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 ℃. 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.