



Mianyang Weibo Electronic Co.,Ltd

*Designing, Manufacturing and Supplying WB Series Electric Isolated
Sensor and Digital Electrical Sensor since 1989*

**USER MANUAL
WBV412M05-D AC voltage sensor**

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ISO9001 ISO14000 ISO18000

Certified

WBV412M05-D AC Voltage Sensor

Safety claim

The information in the safety claim of the equipment documentation is intended to ensure that equipment is properly installed in order to maintain it in a condition.

It is assumed that everyone who will be associated with the equipment will be familiar with the contents of that safety section, or this safety guide.

When electrical equipment is in operation, dangerous voltages will be present in certain parts of the equipment (e.g. the input terminal). Failure to observe warning notices, incorrect use, or improper use may endanger personnel and equipment and cause personal injury or physical damage. Before working in the terminal strip area, the equipment must be isolated. Proper and safe operation of the equipment depends on appropriate shipping and handling, proper storage, installation and commissioning, and on careful operation, maintenance and servicing.

The operating manual for the equipment gives instructions for its installation, commissioning, and operation. However, the manual cannot cover all conceivable circumstances or include detailed information on all topics. In the event of questions or specific problem, do not take any action without proper authorization. Contact the appropriate WB technical or sales office and request the necessary information. This product conforms to RoHS and CE standard.

Standard application

1. Accuracy

Accurate degree is conformed to IEC688:1992

2. Safety

2.1 Overload capability

Overload capability is conformed to IEC688:1992

2.2 Isolation voltage

Can be endured testing voltage is conformed to
Q/72085584-0.1-2004

2.3 Insulation impedance

The insulation impedance is no less than 20M Ohm, is conformed to Q/72085584-0.1-2004

3. Electromagnetic Capability

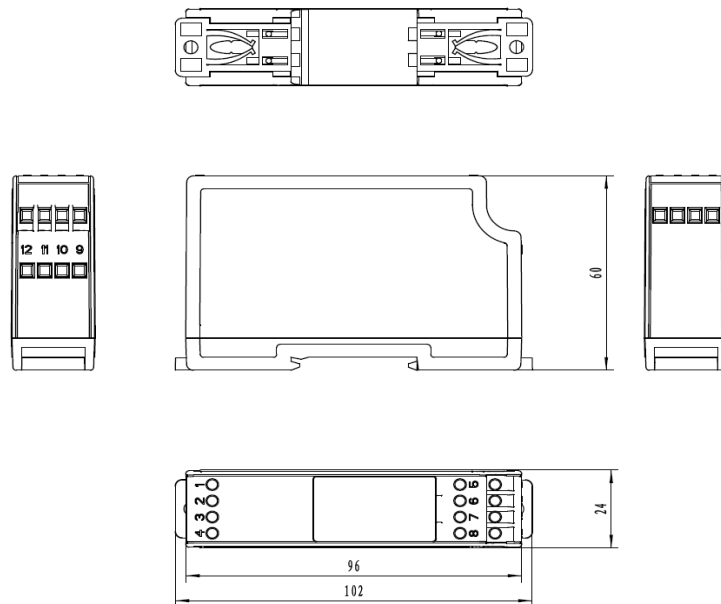
3.1. Electromagnetic field immunity test according to IEC 61000-4-3:1995

3.2 Power frequency magnetic field immunity test according to IEC 61000-4-8:1993

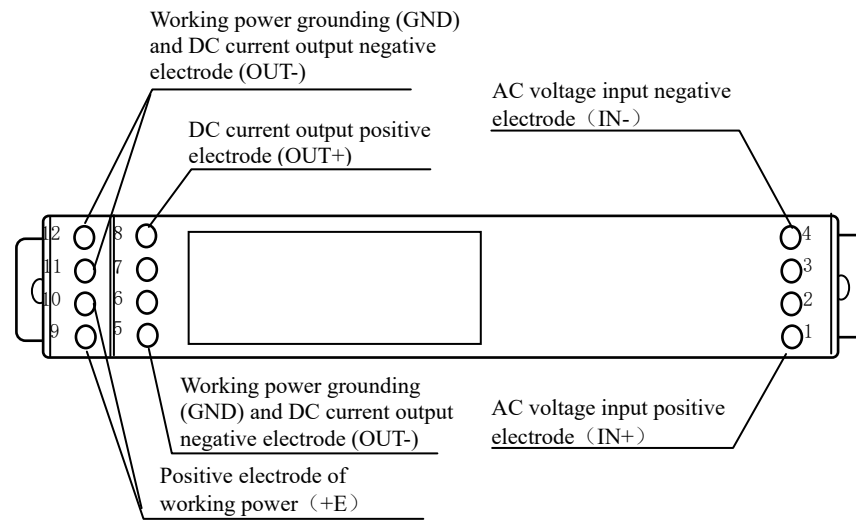
Product Description and Application

WBV412M05-D uses a special isolation module to measure the AC voltage in the grid and circuit in real time and convert it into DC voltage (U_z) output. It has advantages of high precision, high isolation, low power consumption, low drift, wide temperature range and anti-interference, strong ability, wide working power range and so on. This product adopts card-mounted structure, terminal wiring, easy installation, three isolation between input, output and power supply. It is suitable for power equipment, power network monitoring automation system, industrial control monitoring system, railway signal system, etc.

Product Dimensional Drawing (unit: mm)



Product Terminal Identification Drawing



***The undefined terminals in the diagram can not be used.**

Key Technical Data:

1. Input: 0-10V...0-1000V AC;
2. Output: 0-5V, 0-10V DC ;
3. Frequency range: 25Hz~5kHz ;
4. Accuracy : 0.2% ;
Input Impedance (R): Measurement $U_x \geq 10V$, $R_i = U_x \times 1k\Omega/V$;
Measurement $U_x < 10V$, $R_i = U_x \times 10k\Omega/V$;
5. Linear Range: 0~120% of nominal input ;
6. Responding Time: 300ms ;
7. Over Load Capacity: 2 times of nominal input, continuous;
8. Maximum Load(output current): 5mA ;
9. Auxiliary Power: +9V-+36V DC
10. Isolation Voltage(Input/Output) 2500Vdc, for 1 min
(Input/power supply) 2500Vdc, for 1 min
(Output/power supply) 2500Vdc, for 1min
11. Output Ripple: <10mv
12. Drifting by Temperature: $150 \times 10^{-6}/^{\circ}C$

13. Ambient Temperature: $-25^{\circ}\text{C} \sim 70^{\circ}\text{C}$
14. Mounting : DIN Rail 35mm Mounting.
15. Protection class: EMC standard: EN61326: 2006;
Safety standard: EN60100: 2001.

Instruction of Installation and Use

1. The product has adopted structure compliance with EN50022; suitable for DIN rail mounting NS35/7.5, NS35/15. Installation steps are as following (please reference to dimensional drawing):

Step 1: Immobilize one side of product's mounting trough to the DIN mounting rail;

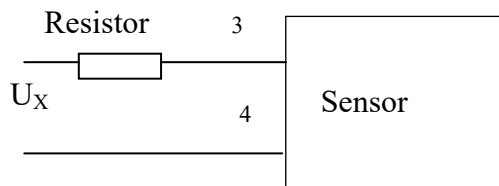
Step 2: Pull out the spring clasp;

Step 3: Place whole mounting trough to the DIN mounting rail properly;

Step 4: Release spring clasp to make sure the installation.

2. The product has calibrated before out of factory. After correctly wiring, it can be powered and used immediately. But for further precise signal sampling, user need to warm-up the product for 3 minutes before use.

- a) the auxiliary power requires isolation voltage $\geq 2000\text{V}_{\text{AC}}$, DC current output ripple $< 10\text{mV}$.
b) When sensor measuring voltage exceed 1000V, it needs dividing input voltage by using resistor which is provided by Weibo electronic. Different sensor uses special resistor.



- c) Measuring voltage $\leq 600\text{V}$, uses terminal 3 and 1;
d) Measuring voltage $> 600\text{V}$, uses terminal 3 and 4;

3. Basic testing method for accuracy

(1) According to the terminal definition table to connect the testing circuit;

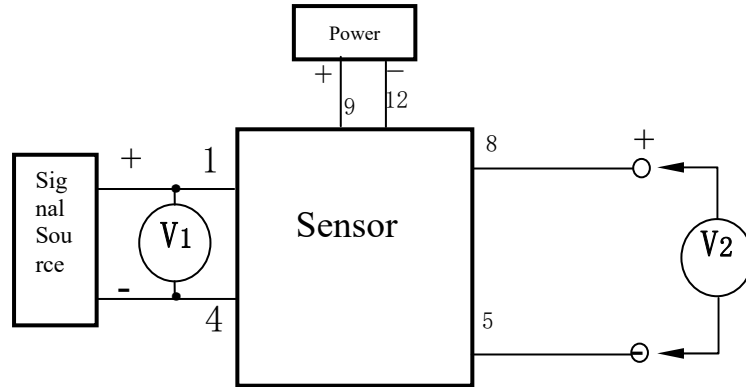
- (2) The testing must be done by under the following conditions;

Auxiliary power: DC +9V~+36V, ripple $\leq$ 5mV

Ambient temperature: 25°C $\pm$ 2°C

Relative humidity: RH(45~75)%

Accuracy for Signal Power Source instrument: 0.05



- (3) warming up the sensor for 3 minutes
(4) using output monitoring meter V1 to measuring the output of signal power source instrument, set a any input value which is within the measuring range of the sensor V_r . (for e.g. if input value is 100V, the output is 0-5V, the expected output value V_z should be calculated as:

$$V_z = (5V - 0V) \times V_r / 100V$$

- (5) using output monitoring meter V2 to measuring the output voltage V_o of the sensor, the basic introduced error γ of the sensor should be calculated as:

$$\gamma = (V_o - V_z) / (5V - 0V) \times 100$$

- (6) Repeating (4) (5), if calculated absolute value is less than the given accuracy value of the sensor, it shows the sensor's accurate grade is qualified.

Caution:

1. Pay attention to the auxiliary power information, especially the auxiliary power grade, and polarity, other wise will damage the product.
2. pay attention to the wire connection; wrong terminal connection will cause malfunction of the product and even damage the

- product;
3. Don't dismantle the product, and carry with care to avoiding bump and fall of the product;
 4. If the product has been using under the environment with strong magnetic field interference, please pay attention to the shield of input wire, and the output signal wire should be as short as possible. For product intensive installation, the space between each product should not be smaller than 10mm.
 5. Only use identified terminals.
 6. There is no lightning strike prevention circuit design in this product. For outdoor and hazardous environment using, please add protective alternatives.
 7. This product uses fire prevent ABS crust, its temperature withstand is only limited as +85°C, higher than this limitation will cause the product deformation. Please use and store carefully.