



Mianyang Weibo Electronic Co.,Ltd

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

USER MANUAL

WBI412M05 AC Current Sensor

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ISO9001 ISO14000 ISO18000

Certified

Quality Warranty

Any quality problem found in WB series products, we offer

Three years free charge of repair the products, and six months guaranteed free charge of change and return the products.

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WBI412M05 AC Current 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 would be associated with the equipment should 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 sales office and request the necessary information.

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

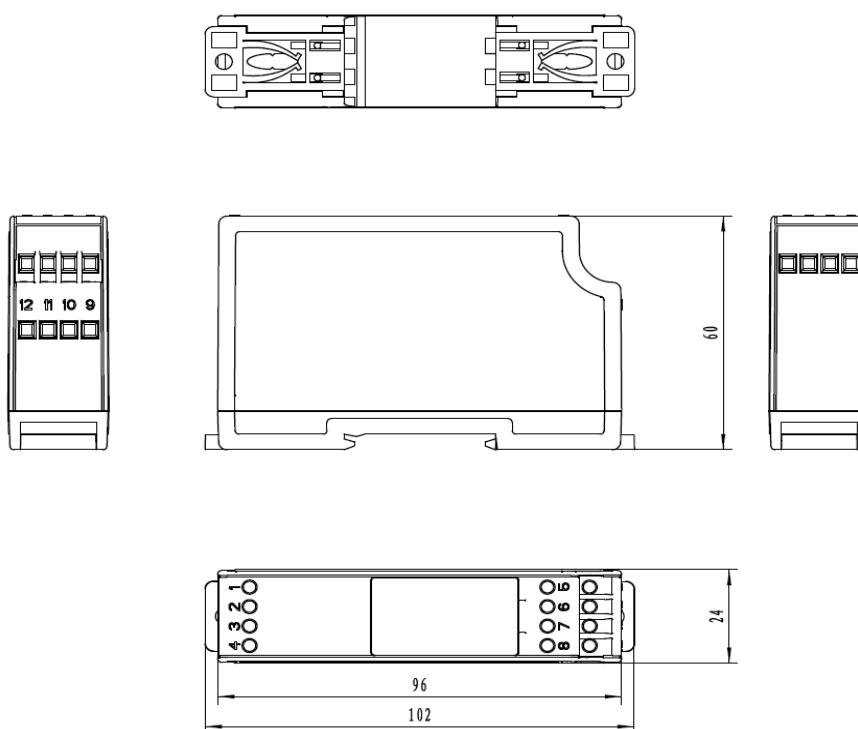
3.1 Electromagnetic field immunity test according to IEC 61000-4-3:1995

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

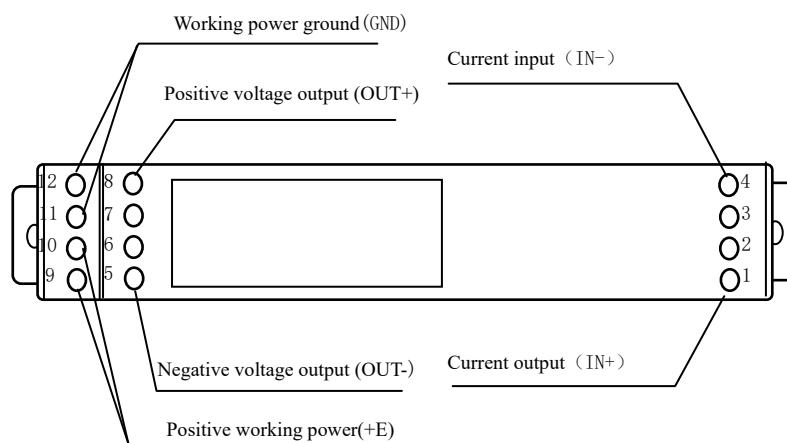
Product Description and Application

WBI412M05 uses a special isolation module to measure the AC current in the grid and circuit in real time and transform it into the DC voltage (U_z) output of the standard vertebra; with high precision, high isolation, low drift, low power consumption and wide temperature range. It has strong anti-interference ability and wide working power range. This product adopts card-mounted structure, terminal wiring, easy installation, input, output, power supply three isolation, suitable for power equipment, power network monitoring automation system, industrial control monitoring system, railway signal system.

Product Dimensional Drawing (unit: mm)



Terminals definition



Non-identified terminals cannot be used !

Key Technical Data:

1. Input: 0.5A, 1A, 2A, 3A, 4A, 5A AC;
2. Output: 0-20mA, 4-20mA DC
3. Accuracy : 0.2%
4. frequency range: 25Hz~3kHz
5. Input Impedance (R): measuring current < 100mA, input impedance 200Ω;
Measuring current ≥ 100mA, input impedance approximate zero
6. Linear Range: 0-120% of nominal input
7. Responding Time: 300ms
8. Over Load Capacity: 30 times of nominal input, for 5 seconds;
9. Output impedance (Output current): 6V
10. Auxiliary Power: +9V-+36V DC
11. Isolation Voltage(Input/Output): 2500Vdc, for 1 minute
12. Output Ripple: < 10mV
13. Drifting by Temperature: $1.0 \times 10^{-4}/^{\circ}\text{C}$
14. Ambient Temperature: -25°C ~ +70°C
15. Mounting : DIN Rail 35mm Mounting or screw mounting.
16. Protection class: EMC (Complying with EN61326:2006)
Safety standard(Complying with 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):

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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 needs to warm-up the product for 3 minutes before use.

The auxiliary power requires isolation voltage $\geq 2000V_{AC}$, DC current output ripple $< 10mV$, and multiple converters can share with one set auxiliary power together.

3. The Maximum volume of line for the sensor terminal is $2.5mm^2$; the insulation layer of the line should be peeled off about $8mm \sim 10mm$ and tightly twisted to connect with the sensor terminals.
4. For the less than 10A AC current measurement, it may adopt ampere-turn method for input and for this time, the resolution of the sensor increases and measuring range narrows, but other technical index may not be affected.
5. Basic testing method for accuracy

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

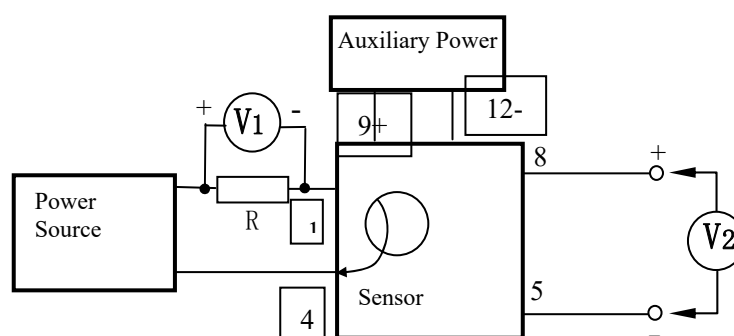
(2) The testing must to be done by under the following conditions;

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

Ambient temperature: $25^{\circ}C \pm 2^{\circ}C$

Relative humidity: RH($45 \sim 75$)%

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 any input value which is within the measuring range of the sensor I_r . (e.g. if input value is 50A, the output is $0V \sim 5V$, the expected

output value V_z should be calculated as: $V_z = 5V \times I_r / 50A$)

- (5) Using output monitoring meter V2 to measuring the output voltage V_0 of the sensor, the basic introduced error γ of the sensor should be calculated as: $\gamma = (V_0 - V_z) / 5V \times 100$
- (6) Repeating step (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 lightening strike prevention circuit design in this product. For out door and hazardous environment using, please add protective alternatives.
7. This product uses fire prevent ABS crust, its temperature withstand is only limited as $+85^{\circ}\text{C}$, higher than this limitation will cause the product deformation. Please use and store carefully.