USER MANUAL

FT-AV(0-230)-D-1 Voltage Transmitter

FT-AV(X-XX)-D-1
A = AC Input
D = 9-36VDC Power Supply
X = lower Input measurement Range
XX = Upper Input measurement range
D = 9-36VDC Power Supply

ISO9001 ISO14000 ISO18000
Certified

Fastron Electronics

- **Power Semiconductors**
- **Electrical Measurement**
- **Process Control**

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FT-AV(X-XX)-D-1

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 obverse warning notices, incorrect use, or improper use may endanger personnel and equipment and course 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.

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 20MΩ, is conformed to

Q/72085584-0.1-2004

3. Electromagnetic Capability

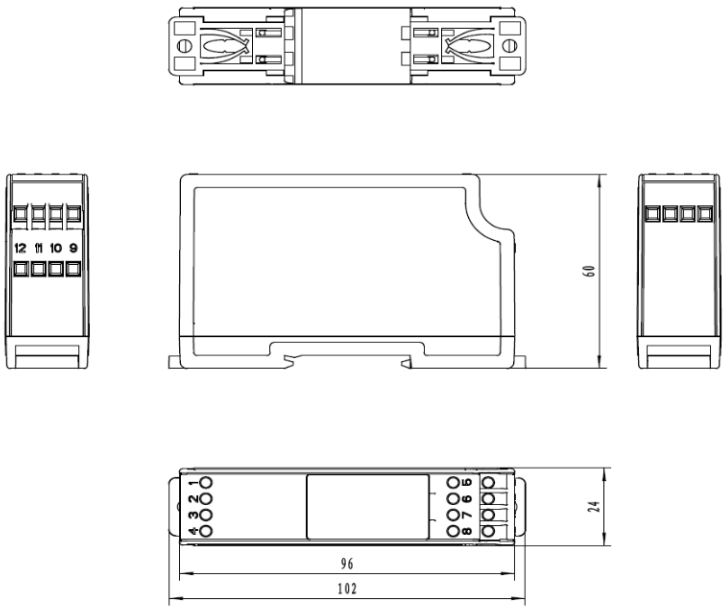
3.1. Electromagnetic field immunity test according to IEC 61000-4-3:1995

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

Product Description and Application

FT-AV(0-230)-D-1 uses a special isolation module to measure the AC voltage in the grid and circuit in real time, and convert it to 0mA~20mA or 4mA~20mA DC current (Iz) output; it has high precision, high isolation, low power consumption and low drift. , Wide temperature range, strong anti-interference ability, wide range of working power supply, etc. This product adopts a card-mounted structure, terminal wiring, easy installation, three isolations among input, output, and power supply. It is suitable for power supply equipment, power network monitoring automation systems, industrial control monitoring systems, etc.

Product Dimensional Drawing (unit: mm)



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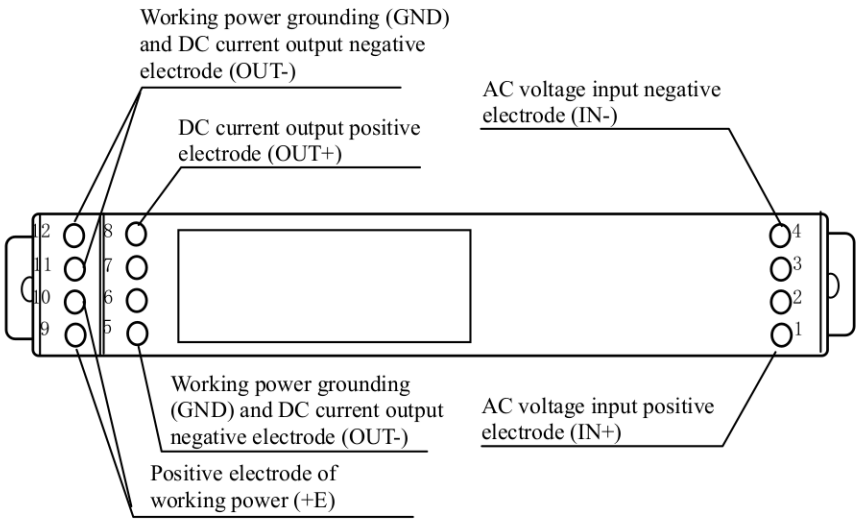
Product Terminal Identification Drawing



***The undefined terminals in the diagram can't be used.**

Key Technical Data:

1. Input: AC 0-10V, 0-50V, 0-100V…0-1000V;
   Output: DC 0-20mA, 4-20mA;
2. Accuracy level: 0.2;
3. Linear range: 0%~120% nominal input;
4. Frequency response: 25Hz~3kHz;
5. Response time: 300ms;
6. Input impedance: Ri＝Ux×1kΩ/V (Ux represents the input voltage under test);
7. Overload capacity: 2 times the nominal input voltage value, lasting for 1s, with an interval of 10s, repeating 10 times;
8. Load capacity: 300Ω;
9. Static power consumption/full power consumption: 0.6W/0.9W;
10. Power supply: DC +9V~+36V;

Isolation withstand voltage:

AC 2500V between input and output, 1min,

AC 2500V between power supply and input, 1min,

AC 2500V between power supply and output, 1min;

12. Output ripple: <10mV (effective value, when the output load is

250Ω);

13. Working temperature: -25℃~+70℃;

14. Storage temperature: -40℃~+85℃;

15. Temperature drift: 150×10-6/℃;

16. Surge (impact) immunity (see IEC61000-4-5): output end/power end 2KV 1.2/50μs, performance criterion A;

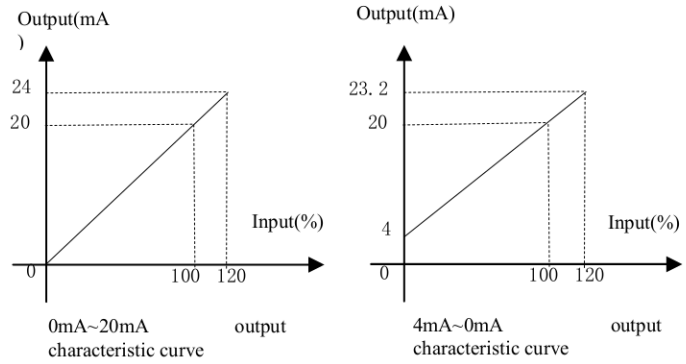
17. Electrostatic discharge immunity (see IEC61000-4-2): contact discharge 6KV, air discharge 8KV, performance criterion A;

18. Radio frequency electromagnetic field radiation immunity (see IEC61000-4-3): Test level 10V/m, performance criterion A;

19. Electrical fast transient pulse group immunity (see IEC61000-4-4): signal line port: ±2KV, auxiliary power port: ±2KV, performance criterion A;

20. Conducted immunity induced by radio frequency electromagnetic field (see IEC61000-4-6): test level 10V/m, performance criterion A.

Sensor input and output characteristic curve



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;

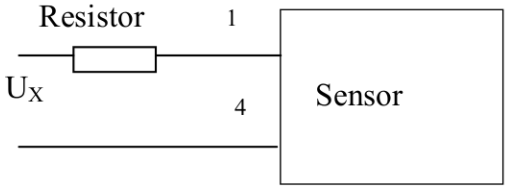
Step 3: Place whole mounting trough to the DIN mounting rail properly;

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≥2000V_{AC}, DC current output ripple＜10mV.

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.



3. Basic testing method for accuracy

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

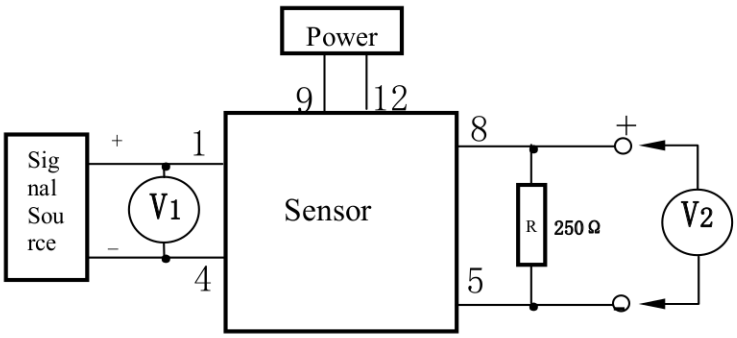
(2) The testing must to be done by under the following conditions;

Auxiliary power: DC +9V～+36V, ripple≤5mV

Ambient temperature: 25℃±5℃

Relative humidity: RH(45～75)%

Accuracy for Signal Power Source instrument: 0.05



Note: In the figure, a 250Ω standard resistance is used to convert the current output into a voltage output for easy measurement.

(3) warming up the sensor for 3 minutes

(4) using the input monitoring table V1 to monitor the output of the signal source and give an arbitrary input value Ur within the range of the sensor. Assuming that the input specification of the sensor is 100V and the output specification is 4mA~20mA, the expected output value Iz of the sensor is calculated by the following formula :

$Iz = (20mA - 4mA) \times Ur/100V + 4mA$

(5) using the output monitoring table V2 to measure the DC voltage value Uo at both ends of the standard resistance, and the basic reference error γ of the sensor is calculated as follows:

$\gamma = (Uo - Iz \times 250\Omega) / [(20mA - 4mA) \times 250\Omega] \times 100$

(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, otherwise 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℃, higher than this limitation will cause the product deformation. Please use and store carefully.

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