



instrument

**2024
PRODUCT
INTRODUCTION**

Portable Electromagnetic Velocity Meter



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Company Profile

Weifang AOBO Instrument Technology Development Co., Ltd., founded in 2002, with registration capital of 10 million RMB, is a "High-Tech" and "Double-Software Certification" enterprise specialized in "flow measurement and intelligent measurement & control" industry, integrating R&D, production, sales and service.

The company has a core R&D team for computer software and technology, automatic intelligent control, HVAC engineering design and flow measurement. It has the ability to provide customers with specific solutions and complete sets of products according to their different needs, based on years of practical experience. Especially in the heating industry, by the customer's recognition, has a high reputation in the industry.

The products are mainly used in the measurement and control of "steam, liquid, gas, sewage and tap water"; and especially suitable for energy monitoring and energy-saving control in many industries, such as thermal power plants, thermal companies, residential heating, petroleum, chemical industry, papermaking, food, coating, printing & dyeing and HVAC.

Since its foundation, based on self-developed and leading technology, reliable quality, high-quality service and good reputation, our company has been warmly accepted by customers, and become a designated supplier for many central enterprises and listed companies.

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All of the catalogue and company information can be found at:

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I. Product Overview

The ABDT-EMFV1001 series of electromagnetic velocity meter is portable instrument flow designed for the flow velocity/rate measurement. It's professional for agricultural irrigation, hydrologic monitoring, rivers flow monitoring, municipal water.

The low-power design and full digital signal processing technology make measurement more stable and reliable. The range is wide and high accuracy. It widely applies to the measurement of flow velocity and rate for industry requires moving frequently such as agricultural irrigation, hydrology and water conservancy.



II. Main Feature

- No movable parts, no winding. No choked flow, no maintenance, avoid troubles of other calibration and testing;
- Micro-power design can last 80 hours when replace the battery(II -model, optional for level sensor);
- LCD big screen back light display shows measuring data clearly in sunlight and night;
- The instrument interface display velocity、 flow(II -model、 III-model), accumulative total(II -model、 III-model), level(III-model), flow direction, electric quantity, alarm information, running time, running status;
- Simple operation, wading rod measurement, wire measurement and sailing measurement are available choice.
- Auto power shut off.

III. Main Technical Parameters

- ✧Range: Velocity 0.005m/s~10m/s(resolution 5mm/s);
- ✧Accuracy: $\pm 1.0\%FR + 0.005m/s$;
- ✧Acquisition time: Auto 10S~900S adjustable, hand control time;
- ✧Power: 1.5V*5pcs NO.5 battery;
- ✧Display: LCD big screen back light display velocity, flow(II -model、 III-model), accumulative total(II -model、 III-model), level(III-model), flow direction, electric quantity, alarm information, running time, running status;
- ✧Physical interface: RS485(optional);
- ✧Conductivity: $>20\mu s/cm$;
- ✧Medium temperature: $0^{\circ}C \sim 60^{\circ}C$;
- ✧Ambient temperature: $-10^{\circ}C \sim 50^{\circ}C$;
- ✧Display digits: 3 digits(X.XXX);
- ✧Size: 204*100*35mm(Display);
- ✧Size: $\Phi 32 \times 460(mm)$ (Sensor);
- ✧Measuring rod: Normal 500mm×Sections (500mm×optional sections) or lifting accessories.

IV. Working Principle

The portable electromagnetic velocity/flow meter depends on the Faraday's law of electromagnetic induction. The conductive liquid cut the magnetic line and cause induced electromotive force when do the direction perpendicular to the magnetic field lines in the alternating magnetic field along the measuring pipe. So we install a pair of electrodes on the pipe wall which orthogonal with sounding pipe axis and magnetic line. The electrodes can detect the induced electromotive force. It should be directly proportional with the flow. Then the liquid's flow will be exported by the detection. The induced electromotive force signal will be converted to standard DC current signal(0~10)mA, (4~20)mA or (0~5)kHz

frequency output which was directly proportional with flow signal by amplification of converter. So the measurement comes out.

The velocity equation

$$E = KBD\bar{V} \quad (K \text{ is induced electric potential magnification});$$

E --- Induced potential (V);

$\bar{V}$ --- Mean velocity when the fluid cross the electrode surface in range;

B --- Magnetic induction intensity;

D --- Induction electric potential spacing.

V. Structure

The instrument structure divides into three parts: electromagnetic velocity sensor (III-model includes level sensor), flow display and wading rod(or suspension wire).

VI. Assemble and Introduction

6.1 Flow display terminals

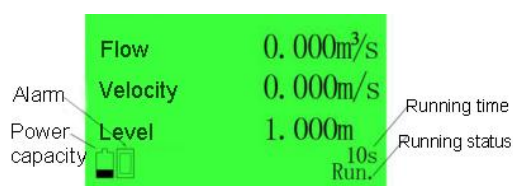
6.1.1 Display port

It uses for connecting the electromagnetic sensor. The outgoing line of electromagnetic velocity sensor has completed coupler plug. Please directly insert the plug and tighten the screws.



6.1.2 Display interface

II -Model、III-Model display interface:



I -Model display interface:



6.1.3 Battery and communication port

The battery is 5*1.5V alkaline battery(convenient buy from market). The bottom is communication port.

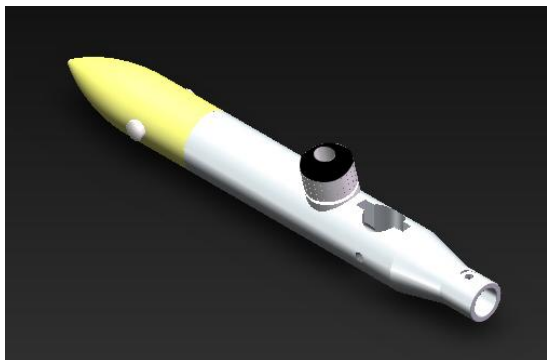


6.1.4 Switch Port

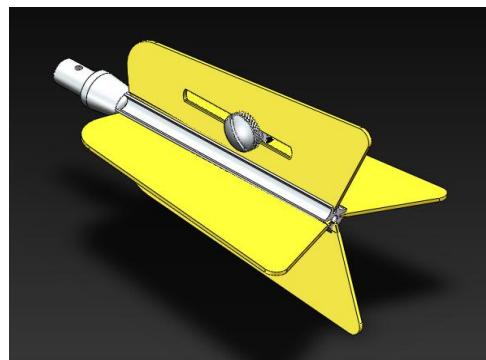
It uses for turning on and off.

6.2 Velocity sensor

The velocity sensor consists of velocity sensor and tail cable.



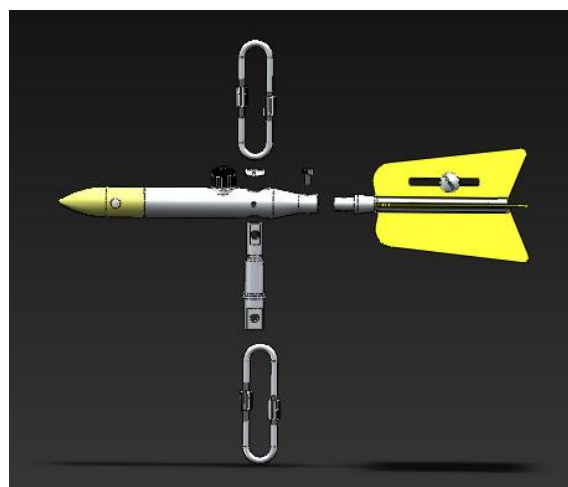
Velocity Sensor



The Ta



Suspension Loop



Axial Parts

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