

Electromagnetic vortex flow transducers VEPS



ZAO "PromServis" was among the first producers of electromagnetic vortex flow transducers and flowmeters (produced since 1996) on the basis of an electromagnetic sensor system. VEPS transduces the frequency of the vortex, which occurs in the controlled environment during flow around the V-block set in the flow passage of the device, into the electric signal of the same frequency. The vortex frequency depends on the liquid flow speed and it is described linearly in the specific range. VEPS signal detection concept obeys electromagnetic induction law, that's why it can be used only with conductive liquids.

Today ZAO "PromServis" produces different types of electromagnetic vortex flow transducers (DN 20 - DN 300).

According to the type of the electric signal output we produce the following types of transducers: transducers with frequency output, transducers with pulse output as well as transducers with 4-20mA current universal output.

According to the flow passage diameter primary transducers are divided into small diameter transducers (DN 20-50), medium diameter transducers (DN 80-150), large diameter transducers (DN 200-300).

The main advantage of VEPS is its relatively simple design and low cost, metrological characteristics are sufficient for commercial accounting (accuracy $\pm 1,5\%$, dynamic range - 32, calibration period - 4 years). VEPS doesn't use amplitude signal parameters which results in operating stability.

VEPS is registered in State Register of Measuring Instruments, № 14646-05.

VEPS transducers design is protected by patent of invention №2350911 " Vortex electromagnetic liquid meter sensor".

Since 2007 we produce a VEPS version with overhead magnetic system (VEPS VRM) which has better operational characteristics:

- the device is less susceptible to ferromagnetic particle settling in the flow passage at the place of magnet installation. Even if ferromagnetic particle settling occurs, it doesn't lead to electrode shorting and functional loss;
- metrological characteristics of a new VEPS version are the same as those of a previous ones;
- the rack of a signal-shaping amplifier body is made from plastic, it has less heat conducting property in comparison to a steel rack so a signal-shaping amplifier case is less susceptible to thermal response and it improves the work of electronics.

VEPS nominal diameters (DN): 20; 25; 32; 40; 50; 80; 100; 150; 200; 250; 300 mm.

DN, mm	Flow-rate value, m ³ /h		
	Q _{min}	Q _t	Q _{max}
20	0,3	0,5	8
25	0,4	0,63	10
32	0,5	1,0	16
40	0,8	1,6	25
50	1,0	2,0	32
80	2,5	5,0	80
100	5,0	10	160
150	12,5	25	400
200	25	40	630
250	32	63	1000
300	50	100	1600

VEPS transducers have the following versions:

- VEPS-PB1-01 - electric signal pulse output. External power supply. Power supply and signal transmission to the secondary equipment set is carried out by a three-conductor line.
- VEPS -PB1-02 - electric signal pulse output. External power supply. Power supply and signal transmission to the secondary equipment set is carried out by a two-conductor line.
- VEPS -PB1-03 - converses flow-rate value into unified current signal 4-20 mA (0-5mA or 0-20 mA- supplied on special order). External power supply.
- VEPS -PB1-04 - electric signal pulse output. External power supply. Power supply and signal transmission to the secondary equipment set is carried out by a three-conductor line.
- VEPS -PB2-01 - electric signal pulse output. Built-in self-contained power supply.

Controlled environmental conditions:

- Temperature Range.....5 to150 °C;
- Process Pressure Limit.....up to 1,6 MPa
- ionic conductivity..... at least 5×10⁻⁴ sm/m;
- viscositydensity ratio..... up to 1,5×10⁻⁶ m2/s;

Relative accuracy range at flow-rate and volume conversion into electric signal output:

- at $Q_t \leq Q \leq Q_{max}$ ± 1,0 %;
- at $Q_{min} \leq Q < Q_t$ ± 1,5 %.

GOST 14254-96 - IP65 Protection Rating

- Resistance to mechanical stress - GOST R 52931-N1
- Average time between failures - no less than 75000 hours
- Average lifetime - 15 years

Operating Condition:

- Ambient Temperature Range:
- VEPS-PB1-01, VEPS-PB1-02, VEPS-PB1-03, VEPS-PB1-04 - 30 to +50 °C;
- VEPS-PB2-01 -10 to +50 °C;
- relative humidity at t= +35 °C and lower up to 95% (No Condensation)
- barometric pressure - 84 to 106,7 KPa

Calibration interval - 4 years

Warranty period - 4 years