### MF1000 SERIES

## **Magnetic Flowmeter**



The Truflo MF1000 Series Flanged Magnetic Flow Meters provide long-lasting, reliable performance in even the most challenging applications. The MF1000 is a microprocessor-based flow transmitter that has been engineered for high performance, easy installation, commissioning and maintenance. The transmitter is truly robust, cost-effective and suitable for all-round applications and has a measuring accuracy of  $\pm$  0.5% of the flow rate. The all-welded construction provides a hermetic seal that protects against moisture and other contaminants. The sealed housing ensures maximum sensor reliability by protecting all internal components and wiring from even the most aggressive environments.





#### **FEATURES**

- Heavy Duty Industrial Design
- Full Port
- High Accuracy
- Excellent Chemical Resistance
- Excellent Abrasion Resistance
- User Friendly Programming
- 4 20mA current, Frequency Pulse, 485 communication

## **Measuring principle**

The Truflo MF1000 Series Electromagnetic Flow Meter consists of sensor & converter. The measuring tube is equipped magnet exciting coil. The converter provide current to magnet exciting coil and generate magnetic field which filled measuring tube, one or more pairs of electrode which are fixed in inner-wall of the measuring tube(verticale to field direction) detect and lead to induced electromotive force after contact liquid, then delivery to converter through cable and do signal processing. Insulation lining is fixed in inner-wall of the measuring tube, and make the measuring tube high resistant and nonmagnetic. Lining contacts with the measuring fluid, different causticity, abrasiveness and temperature of fluid choose different types of lining.

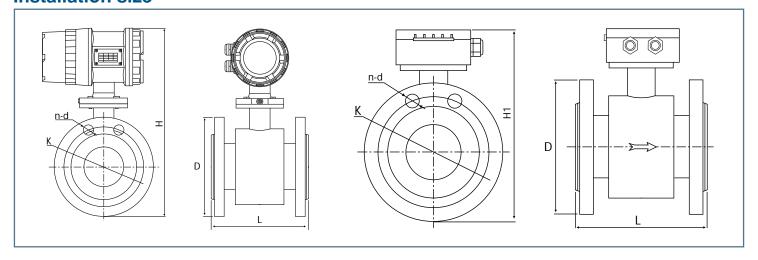
SPECIFICATI	ONS
Standard of execution	Electromagnetic flow meter
Nominal path (mm) (Customizable)	Pipe type PTFE lining Tubular chloroprene rubber lining
Flow direction	Positive, negative, net flow
Range ratio	20 : 1
Repeatability	±0.1%
Accuracy	±0.5% ±1.0%
Temperature	Conventional rubber lining : -20 - +60°C High-temp rubber lining : -20 - +90°C PTFE lining : -30 - +120°C High-temp PTFE lining : -20 - +160°C
Working pressure	½" ~ 2" 4.0MPa 3" ~ 12" 1.6MPa 14" ~ 24" 1.0MPa
Velocity range	0.5 - 10m/s
Signal output	4 - 20mA)   Frequency Pulse   RS 485
Communication output	RS48S, MODBUS, HART, Profibus-DP
Power supply	220VAC ±15%, 24VDC, Battery
Length of straight pipe	Upper reaches SDN, Lower reaches 2DN
Relative humidity	5% - 95%
IP grade	IP65 - IP68
Ambient temperature	-25 - 60°C

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### **Installation size**



# **Dimensions**

Si	ze	L	D	K	Н	H <sub>1</sub>	
DN	In	(mm)	(mm)	(mm)	(mm)	(mm)	
15	1/2"	200	95	65	199	242	
20	3/4"	200	105	75	304	247	
25	1.0"	200	115	85	312	255	
40	1 ½"	200	150	110	340	283	
50	2"	200	165	125	353	296	
80	3"	200	200	160	375	328	
100	4"	250	220	180	404	375	
150	6"	300	285	240	461	404	
200	8"	350	340	295	517	460	

### **Flow Rates**

Speed	l (m/s)													
Flow(m <sup>3</sup> /h)		0.3	0.4	0.5	1	2	3	4	5	6	7	8	9	10
Size (mm)	ln													
15	1/2"	0.2	0.3	0.4	0.6	1.3	1.9	2.5	3.2	3.8	4.5	5.1	5.7	6
20	3/4"	0.4	0.5	0.6	1.1	2.3	3.4	4.5	5.7	6.8	7.9	9	10	15
25	1.0"	0.6	0.7	0.9	1.8	2.5	5.3	7.1	8.8	11	12	14	16	20
40	1 ½"	1.4	1.8	2.5	4.5	9	14	18	23	27	32	36	41	45
50	2"	2.2	2.8	3.5	7.1	14	21	28	35	42	49	57	64	70
80	3"	5.4	7.2	9	18	36	54	72	90	100	120	140	160	110
100	4"	8.4	11	14	28	57	85	110	140	170	190	220	250	280
150	6"	20	25	32	64	120	190	250	310	380	440	500	570	630
125	8"	34	45	57	110	220	340	450	560	670	790	900	1000	1100

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### **Electromagnetic Flow Meter Structure**

MF1000 Intelligent Electromagnetic Flow Meter working principle is based on Faraday's law of electromagnetic induction law: When conducting liquid do the movement of cutting magnetic line in the magnetic field, conductor generate induced electromotive force. The induced electromotive force E is:

E - KBVD

K - Instrument constant

B - magnetic induction

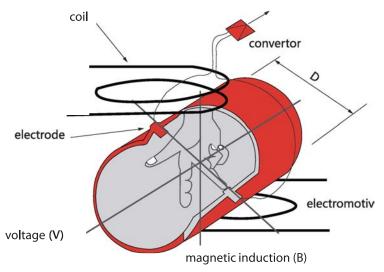
V - the average flow rate of cross-section in measuring tube

D - the inner diameter of tube cross-section in measuring tube

When measuring the flow rate, conducting liquid flows through the magnetic field which is vertical to the flow direction with speed V, the flow of the conducting liquid on measuring electrode induct the voltage which is direct proportion to the average flow rate, thus we can get the flow rate of the volume that through the tube as belowed formula:

Q=0.785DE / KB

In the formula:



From this formula we can get, when measuring tube's structure, magnetic induction of the magnetic field is certained, volume flow rate and induced electromotive force are in direct proportion. We can get volume flow rate through the tube by measuring inductive voltage. The inductive voltage signal is checked out through one or more pairs of electrodes which contacts directly with the liquid, and delivery to converter through cable and process intelligently. then LCD display can show or transfer to standard signal 4-20mA, frequency signal or Hart Agreement output.

### **Selection Table**

