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 ± 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.

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.

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

SPECIFICATIONS

Standard of execution	Electromagnetic flow meter
Nominal path (mm) (Customizable) Flow direction	Pipe type PTFE lining Tubular chloroprene rubber lining 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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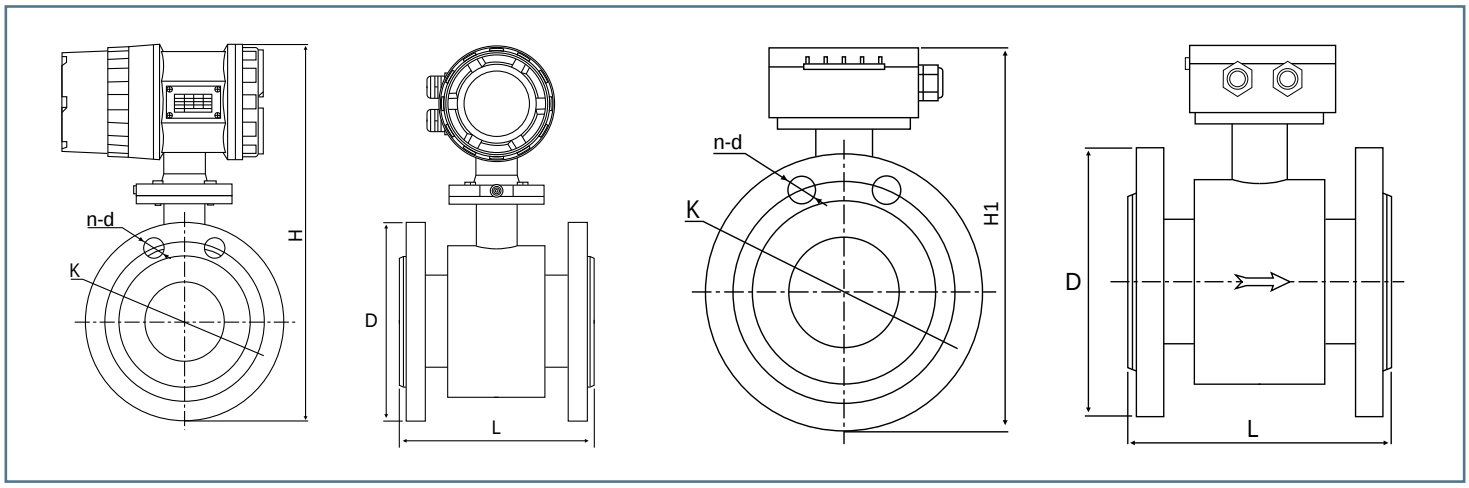
Installation size



Dimensions

Size		L	D	K	H	H_1
DN	In	(mm)	(mm)	(mm)	(mm)	(mm)
15	½"	200	95	65	199	242
20	¾"	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 (m/s)		0.3	0.4	0.5	1	2	3	4	5	6	7	8	9	10
Flow(m^3/h)														
Size (mm)	In													
15	½"	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	¾"	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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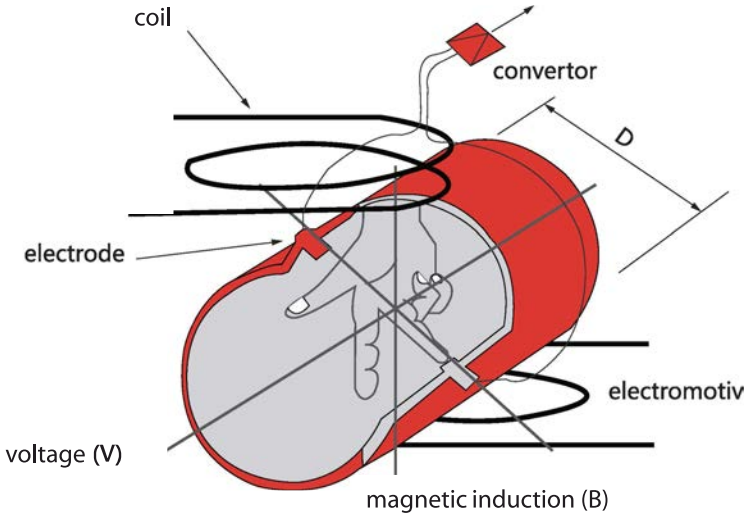
Electromagnetic Flow Meter Structure

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:

Q-- volume flow rate E-- inductive voltage

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 direcly 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

Electromagnetic Flowmeter

	Product Series	Installation Form	Normial Diameter	Electrode Type	Inner-lining Material	External Flange&Housing Material	Grounding Loop or Grounding Electrode	Rating Pressuer Level	Working Temperature	Convertor	Output Signal	Power	Protection Grade
MF1000	-□	□□	□	□	□	□	□	□	□	□	□	□	□
			*** E.g. : Inches | mm	**A**: SUS316L; **B**: Hastelloy Hb; **C**: Tantalum; **D**: Titanium; **E**: Hastelloy Hc; **F**: Tungsten Carbide	**A**: Neoprene; **B**: PTFE Teflon; **C**: Polyurethane; **D**: FEP Teflon	**A**: Stainless steel; **B**: Carbon Steel	**A**: Grounding Electrode (above 20") **B**: SS316L Grounding Loop (below 2") **C**: Grounding Electrode (non SS316L material for below DN50)	**A**: 4.0 MPa; **B**: 1.0 MPa; **C**: 0.6 MPa; **D**: 2.5 MPa;	**A**: <60°C; **B**: <180°C	**A**: Integrate Type; **B**:Remote	**A**: Pulse Output; **B**:4-20ma; **C**: Hart	**A**: 24VDC	**A**: IP65; **B**: IP68
		A: Clamping Type; **B**: Flanged Type											