Electromagnetic Flow Meter

MS FL 0117





FEATURE

- Full bore type
- Suitable for conductive liquids
- Universal Power Supply 85 to 265 VAC
- Bi directional Flow rate
- Material option depending upon process data
- Local Indication through COG Display
- Easy maintenance as no moving parts
- Simple & cost effective construction
- Outstanding accuracy
- Inbuilt Relay status output (High / Low / Batch)
- 4 to 20 mA, Rs 485 & Pulse output
- Integral grounding

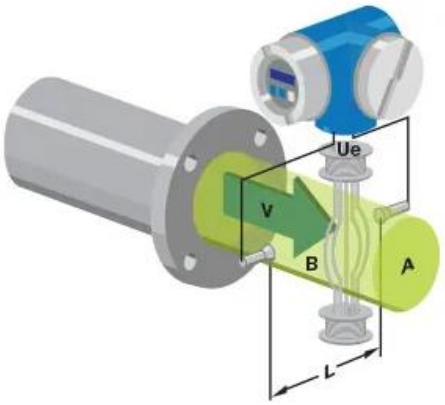
DESCRIPTION

MicroSet`s MS FL 0117 are micro-controller based full bore type electromagnetic flow meters specially used for various industrial applications. These flow meters accurately measure the flow rate of conductive liquids & slurries in closed pipes. Due to its simple & rigid design, the flow meter is an obstruction-less & maintenance-free instrument in place of conventional mechanical flow measuring devices. The use of 'pulsed DC' technology offers highest ability & better measuring accuracy in the form of electrical signal 4-20 mA DC linearly proportional to volumetric flow. The instrument is based on Faraday's law electromagnetic induction. A magnetic field is generated by the instrument in the flow tube. The fluid flowing though this

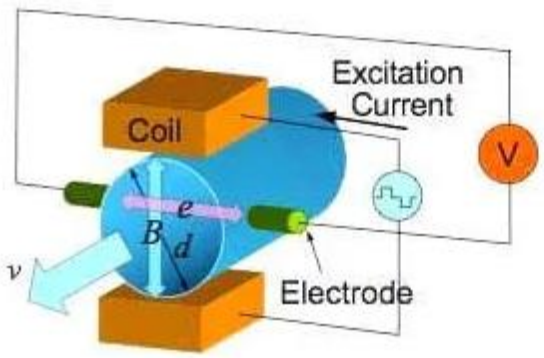
magnetic field generates a voltage that is proportional to the flow velocity. Corresponding electrical output is provided with respect to measuring flow range

PRINCIPLE

Electromagnetic Flow Meters, simply known as mag flow meter is a **volumetric flow meter** which is ideally used for waste water applications and other applications where conductive liquids are present that experience low pressure drop.



Magnetic flow meters works based on Faraday's Law of Electromagnetic Induction. According to this principle, when a conductive medium passes through a magnetic field B, a voltage E is generated which is proportional to the velocity v of the medium, the density of the magnetic field and the length of the conductor



$B \propto N \cdot Iex$
B: Magnetic Flux Density
N: Number of Coil Turns
Iex: Excitation Current

$e = k \cdot B \cdot v \cdot d$
e: Electromotive Force
k: Constant
v: Mean Flow Velocity
d: Internal Diameter

In a magnetic flow meter, a current is applied to wire coils mounted within or outside the meter body to generate a magnetic field. The liquid flowing through the pipe acts as the conductor and this induces a voltage which is proportional to the average flow velocity.

TECHNICAL SPECIFICATION

Media	: Liquids (Conductive)
Conductivity	: > 10 µs/cm
Viscosity	: 200 cp max
Excitation	: Pulsed DC
Line Size	: 15 NB to 1000 NB
Type of Output	: 4 to 20mA DC, Modbus RS 485 & Pulse Output
Display	: COG Backlit
Engineering Unit	: User Programmable (m3 /Hr by default)
Calibration Range	: As per requirement (Factory calibrated for std. 2m/s velocity)
Accuracy	: +/- 0.5% of M.V. (for 20 to 100% flow)
Linearity	: +/- 0.5% of M.V.
Repeatability	: +/- 0.2% of M.V.
Temperature Coefficient	: +/- 0.05% per °C
Process Temperature	: -20 to 85° C max for UPVC & Rubber Lining -20 to 100°C for PTFE Lining
Process Pressure	: 10 kg/cm2 max (higher on request)
Lining	: No Lining / Hard Rubber / EPDM / PFA /PTFE
Flange	: UPVC / MS / SS316
Electrode	: SS 316L / Hastelloy C / Platinum / Titanium / Tantalum / Nickel
Coil Housing	: UPVC/ MS / SS 304 / SS316
Power Supply	: 85 to 265 VAC, 50 / 60 Hz
Power Consumption	: < 10 VA
Response Time	: < 1 Sec
Electronics	: Integral / Remote
Enclosure Protection	: IP67
Process connections	: Flanged ANSI # 150 flanged, (Other on Requirement)
Mounting	: In-Line Horizontal / Vertical
Operating Conditions	: Temperature -20 to 55° C / RH 5 to 95% non-condensing

Note: For process conditions other than above consult MicroSet.

Options:
Add on GSM Communication Module on request

DIMENSION

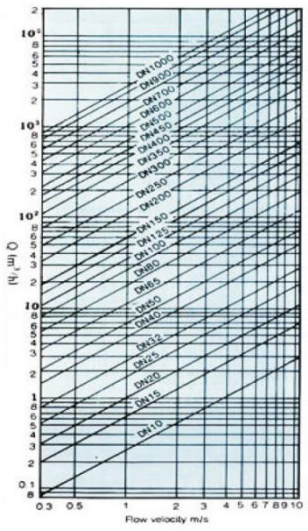


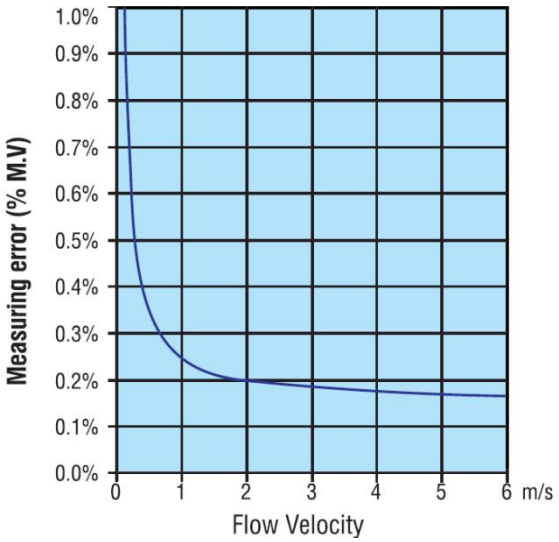
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DIMENSIONAL DETAILS OF FLANGE AS PER ANSI 150 # B-16.5 :

LineSize		Flange Diameter'D'	Diameter of RaisedFace 'R'	Diameter ofBoltHolecircle'DBC'	Diameterof Bolt Hole	No.of Holes	FlangeDistance'FD'	FlowRange(m^3/Hr) at0.03m/sto6m/s	
Inch	NB							Minimum	Maximum
1/2"	15	88.9	34.9	60.3	15.9	4	200	0.019	3.817
3/4"	20	98.4	42.9	69.8	15.9	4	200	0.033	6.785
1"	25	107.9	50.8	79.4	15.9	4	200	0.053	10.602
1 1/2"	40	127.0	73	98.4	15.9	4	200	0.135	27.143
2"	50	152.4	92.1	120.6	19.0	4	200	0.212	42.4115
2 1/2"	65	177.8	104.8	139.7	19.0	4	200	0.358	71.675
3"	80	190.5	127.0	152.5	19.0	4	200	0.542	108.573
4"	100	228.5	157.2	190.5	19.0	8	250	0.848	169.646
5"	125	254.0	185.7	215.9	22.2	8	250	1.325	265.071
6"	150	279.4	215.9	241.3	22.2	8	300	1.9085	381.703
8"	200	342.9	269.9	298.4	22.2	8	350	3.3929	678.584
10"	250	406.4	323.8	361.9	25.4	12	450	5.3014	1060.28
12"	300	482.6	381.0	431.8	25.4	12	500	7.6340	1526.81
14"	350	533.4	469.9	476.2	28.6	12	500	10.3908	2078.16
16"	400	596.9	533.4	539.7	28.6	16	600	13.5716	2714.33
18"	450	635.0	584.2	577.8	31.7	16	600	17.1766	3435.33
20"	500	698.5	692.1	635.0	31.7	20	600	21.2057	4241.15
24"	600	812.8	692.1	749.3	34.9	20	600	30.5362	6107.25

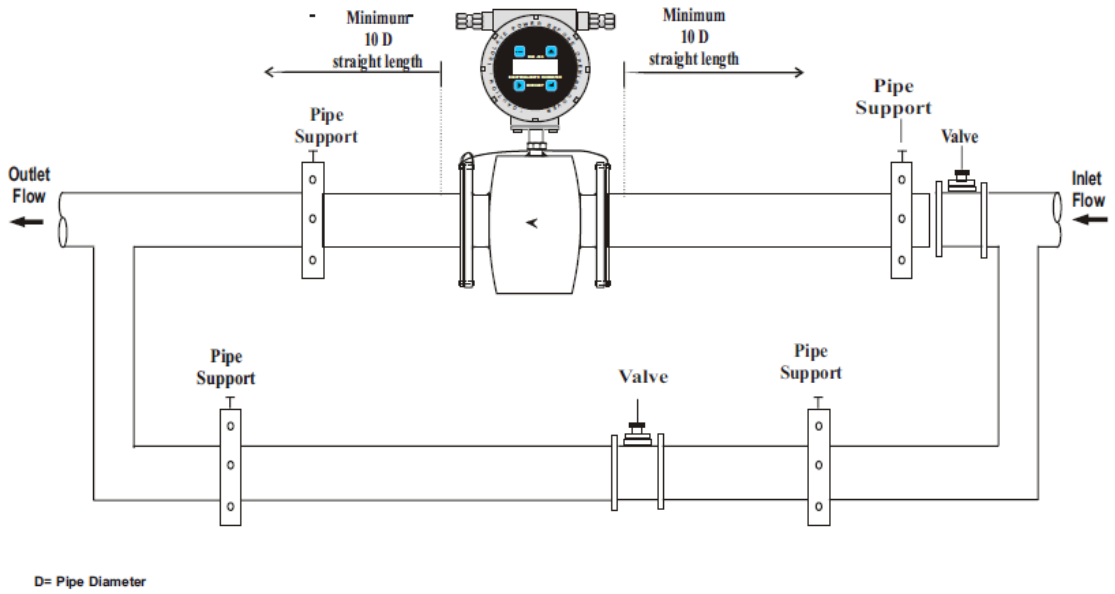
FLOW NOMOGRAPH





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INSTALLATION DRAWING



NOTE

- For Line size above 600NB consult factory.
- Installation Diagram for reference
- Standard factory calibrations for 0.2 to 2 m/s velocity.
- Flow meter should be selected with the help of Nomograph recommended full scale velocity.

Note : Due to continuous improvement in product, specifications & looks may vary