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Inline Type

Electromagnetic Flow Meter

M-FHC Series

... An Australian Meter

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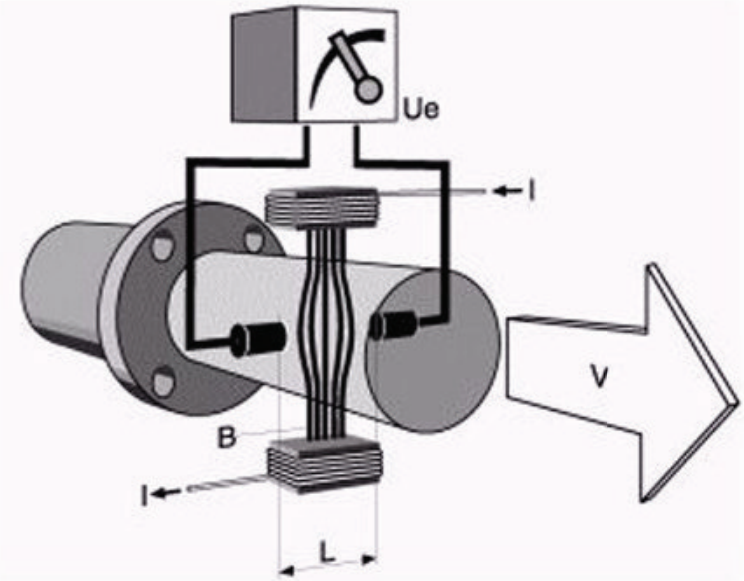
What is Electromagnetic Flow Meter?

Electromagnetic Flow Meter is a volumetric flow meter which does not have any moving parts and is ideal for wastewater applications or any dirty liquid which is conductive or water based. Magnetic flowmeters will generally not work with hydrocarbons, distilled water and many non-aqueous solutions. Magnetic flowmeters are also ideal for applications where low pressure drop and low maintenance are required.

Measuring Principle

The measuring principal of the electromagnetic flow meter is based on the faraday's law of electromagnetic induction, whereby a voltage is induced by an electrical conductor pasing through a magnetic field.



$$Ue = k.B.L.V$$ Where

Ue = Induced Voltage
k = Instrument Constant
B = Magnetic Field Strength
L = Electrode Gap
V = Flow Velocity

The conductive medium would act as the electrical conductor when flowing through the meter tube, the induced voltage is proportional to the average flow velocity. The induced Voltage is picked up by a pair of electrodes and transmitted to a flow transmitter to produce output signal.

General Specification

Accuracy	+/- 0.5% (+/- 0.2% Optional)
Repeatability	+/- 0.2%
Full Scale Range Setting	0.1m/s to 10m/s
Fluid Conductivity	> 5uS/cm
Power Consumption	< 20W
Fluid Temperature	-25°C to 180°C
Ambient Temperature	-10°C to 60°C
Relative Humidity	5% to 90%

Technical Specification

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a) Integral Type

b) Remote Type

Sensor

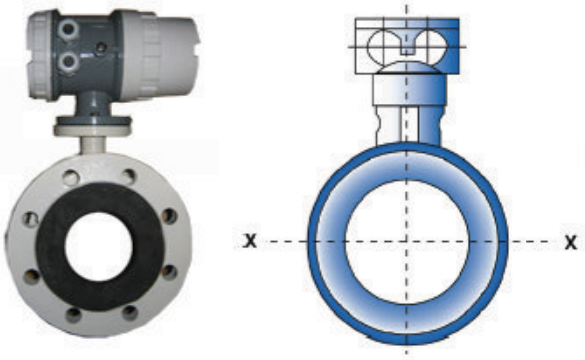
Model	MFHC 311
Size	DN6 - DN2000
Type	Flange - DIN2501 / ANSI / JIS
Pressure Rating	PN40 / PN16 / PN10 / PN6
Flow Direction	Bi-directional (Forward / Reverse)
Protection Class	IP65 / IP67 / IP68
>> Material	
Measuring Tube	SS304
Liner	Hard Rubber (Standard) / PTFE / PFA / Others On Request
Signal Electrode	SS316L (Standard) / Hastelloy C / Tantalum / Titanium
Flange	Carbon Steel (Standard) / SS304 (Optional)
Housing	Cast Aluminium with Epoxy Painting

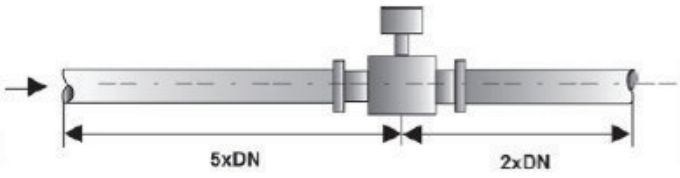
Converter

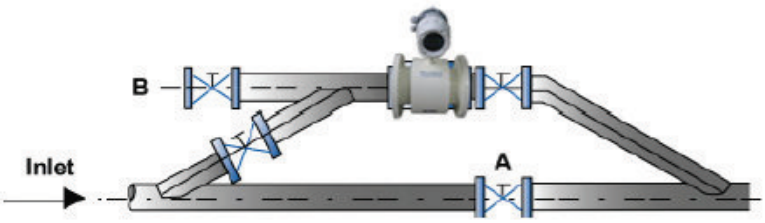
Type	Integral	Remote
Model	C8	R8
Power Supply	85VAC - 250VAC / 20VDC - 30VDC	
Display	Flow Rate, Flow Unit, Flow Totalizer, Total Flow Unit, Alarm	
Output	Current (4-20mA), Frequency, Digital Pulse, Alarm	
Communication	MODBUS / HART / RS485 (Optional)	
Housing Material	Cast Aluminium with Painting	
Protection Class	IP67	IP65
Cable Connection	M20 x 1.5	

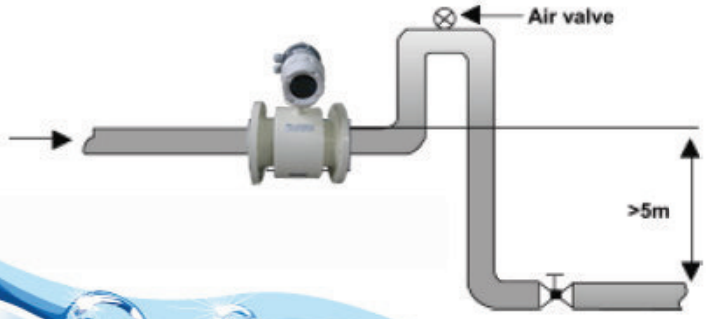
Installation

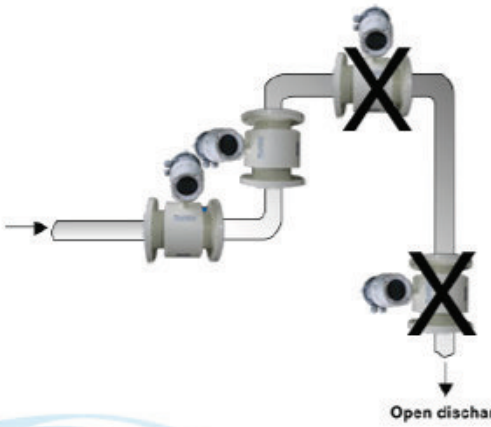
*NOTE: Pipe must be completely filled at all times.











Ordering Information

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(Example)

MFHC311 — **Model**
MFHC 311

80 — **Meter Size**

6mm - 1/4"	350mm - 14"
15mm - 1/2"	400mm - 16"
20mm - 3/4"	450mm - 18"
25mm - 1"	500mm - 20"
32mm - 1 1/4"	600mm - 24"
40mm - 1 1/2"	700mm - 28"
50mm - 2"	800mm - 32"
65mm - 2 1/2"	900mm - 36"
80mm - 3"	1000mm - 40"
100mm - 4"	1200mm - 48"
125mm - 5"	1400mm - 56"
150mm - 6"	1600mm - 64"
200mm - 8"	1800mm - 72"
250mm - 10"	2000mm - 80"
300mm - 12"	

B2 — **Electrode Material (B)**
2 - SS316L
3 - Hastelloy B
4 - Hastelloy C
5 - Titanium
6 - Tantalum
7 - Platinum

C2 — **Lining Material (C)**
1 - Polychloroprene Rubber (DN40~DN1800)
2 - PTFE (DN10~DN1200)
3 - Polyurethane Rubber (DN50~DN1800)
4 - PFA (DN10~DN1200)
5 - Hard Rubber (All Sizes)

D1 — **Pressure Rating (D)**
1 - PN40 (DN6~DN80)
2 - PN16 (DN100~DN150)
3 - PN10 (DN200~DN1000)
4 - PN6 (DN1200~DN2000)
5 - Customized

0 — **Power Supply (E)**
0 - 220VAC (Standard)
1 - 24VDC
2 - 110VAC

0 — **Accessories (F)**
0 - No (Standard)
1 - Grounding Ring
2 - Protect Flange (SS304)
3 - Others
4 - Conductive Rubber
5 - Grounding Electrode

0 — **Electrode Configuration (G)**
0 - Standard
1 - Scraping

H2 — **Flow Meter Configuration (H)**
2 - Compact/Integral Type (C8)
4 - Remote/ Separate Type (R8)

0 — **Signal Output (I)**
0 - 4~20mA (Standard)
1 - 0~10mA
3 - 1kHz
4 - Adjustable

0 — **Flange / Shell (K)**
0 - Standard Flange
1 - SS Flange
2 - With Companion Flange
3 - Sensor with SS Shell

L1 — **Protection Class (L)**
0 - IP65 (Standard)
1 - IP67
2 - IP68
3 - Explosion Proof

0 — **Temperature Range (M)**
0 - Standard Temperature (<=90°C)
1 - Moderate Temperature (<= 120°C)
2 - High Temperature (<=180°C)

0 — **Accuracy (N)**
0 - (+/-) 0.5 RS (Standard)
2 - (+/-) 0.2 RS

Ordering Code (Example):

MFHC311 - 80 - B 2 C 2 D 1 H 2 L 1

Flow Table

Meter Size (mm)	Flow Velocity (m/s)						
	0.5 (Min Flow)	1	2	3	4	5	10 (Max Flow)
	liter/ min						
3	0.20	0.40	0.80	1.20	1.60	2.00	4.00
4	0.40	0.80	1.60	2.40	3.20	4.00	8.00
6	1.00	2.00	4.00	6.00	8.00	10.00	20.00
8	1.50	3.00	6.00	9.00	12.00	15.00	30.00
10	2.25	4.50	9.00	13.50	18.00	22.50	45.00
	m3/hr						
15	0.4	0.6361	1.2723	1.9084	2.5445	3.1807	6
20	0.6	1.1309	2.2618	3.3927	4.5236	5.6545	11
25	1.0	1.7670	3.5341	5.3011	7.0681	8.8352	17
40	2.5	4.5236	9.0472	13.5708	18.0944	22.6180	45
50	4.0	7.0681	14.1363	21.2044	28.2725	35.3407	70
65	6.0	11.9452	23.8903	35.8355	47.7806	59.7258	110
80	10.0	18.0944	36.1889	54.2833	72.3777	90.4722	180
100	15.0	28.2725	56.5451	84.8176	113.0902	141.3627	280
150	35.0	63.6132	127.2265	190.8397	254.4529	318.0662	630
200	60.0	113.0902	226.1804	339.2706	452.3608	565.4509	1100
250	90.0	176.7034	353.4068	530.1103	706.8137	883.5171	1700
300	130.0	254.4529	508.9059	763.3588	1017.8117	1272.2646	2500
350	180.0	346.3387	692.6774	1039.0161	1385.3548	1731.6935	3400
400	230.0	452.3608	904.7215	1357.0823	1809.4430	2261.8038	4500
450	290.0	572.5191	1145.0382	1717.5573	2290.0763	2262.5954	5700
500	360.0	706.8137	1413.6274	2120.4411	2827.2547	3534.0684	7000
600	510.0	1017.8117	2035.6234	3053.4351	4071.2468	5089.0585	10000
700	700.0	1385.3548	2770.7096	4156.0645	5541.4193	6926.7741	13800
800	910.0	1809.4430	3618.8861	5428.3291	7237.7721	9047.2152	18000
900	1150.0	2290.0763	4580.1527	6870.2290	9160.3053	11450.3817	22900
1000	1420.0	2827.2547	5654.5095	8481.7642	11309.0189	14136.2737	28000
1200	2040.0	4071.2468	8142.4936	12213.7405	16284.9873	20356.2341	40000
1400	2780.0	5541.4193	11082.8386	16624.2578	22165.6771	27707.0964	55000
1600	3620.0	7237.7721	14475.5442	21713.3164	28951.0885	36188.8606	72000
1800	4580.0	9160.3053	18320.6107	27480.9160	36641.2214	45801.5267	91000
2000	5660.0	11309.0189	22618.0379	33927.0568	45236.0758	56545.0947	113000

Information required for Flow Meter Sizing:-

1. Type of Liquid - Consider suitability of Liner & Electrodes
2. Conductivity => 5uS/cm
3. Max./ Min. Temperature
4. Max./ Min. Pressure
5. Max./ Min. Flow Rates
6. Percentage of Solid Content

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exclusive partner

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