EMFLOW
EST. 2002

EMFLOW - FLOW METER

EM-FLOW ENVIRONMENTAL TECHNOLOGY CO., LTD.

EMFLOW are not only concerned about products, services and solutions.

EMFLOW promise to implement sustainable development and benefit society with energy-saving and environmental protection.

1. Our Purpose: People-Oriented, Hard Work, Never Forget the Original Intention; Innovation and Forge Ahead.
2. Our Mission: To be a high-quality supplier of fluid control systems and plan maker, To contribute our wisdom and strength to the development of the cutting-edge technology of fluid control systems.
3. Our Vision: Explore the internal innovation spirit and creativity, pursuit, innovation and continuous improvement. se wisdom, foresight and hard work to make "EMFLOW" a world-renowned brand; Make the group company grow into a respectable "Four Satisfaction" enterprise.
4. Customer Satisfaction: Use high-quality products and refined services to add value to customers.
5. Employee Satisfaction: People-oriented, build a platform for all employees to realize their dreams, everyone is the CEO.
6. Partner Satisfaction: Mutual promotion, improvement, mutual benefit and win-win.
7. Shareholder Satisfaction: Enable the company to develop and grow. and retum profits.
8. Our Values: Create differentiated value-added services for customers, let everyone in the company has a sense of accomplishment.

EMFLOW specializes in pipeline fluid systems: R&D, production and sales of valves, pipe fittings, water meters, flow meters, etc. The products cover cast iron, cast steel, stainless steel, copper, plastics and other materials, which are widely used in hydropower stations,heat, buildings, water supply and drainage, petroleum, chemical industry, electric power, medical and other fields.

In recent years, EMFLOW has actively embraced the era of Internet of Everything, committed to IOT terminal control and artificial intelligence design, big data mining and development, and promoted smart hardware to move towards big data center and wisdom with excellent market foresight and technological innovation. The smart cities, smart heating, smart water and other fields are in progress.

In the early stage, the Internet of Things smart valves and smart water meters were developed to promote and apply smart control systems such as municipal heating and municipal water supply.

In terms of quality control, we have strict control procedures. From the raw materials entering the factory to the final product leaving the factory, after 24 quality inspection passes, each pass must ensure that the product quality is 100% qualified before it can flow into the next process, thus ensuring that the qualified rate of the finished products. EMFLOW products can well meet the Chinese standard like GB. JB, HB; American standard like API, ASME, AWWA, British and EU standards like BS, EN, ISO German standard DIN, Japanese standard JIS; Russian standard GOST and other standards.

QUALIFICATION CERTIFICATE






CONTENTS

EFM SERIES - ELECTROMAGNETIC FLOW METER

Description

EMFLOW magnetic flow meter, also known as electromagnetic flow meter or mag meter, is widely used because less obstruction, cost-effective and accurate measurement. Electromagnetic flow meter don't have any moving parts to wear down, reducing the need for maintenance or replacement. We offer flow meters with a range of liners, electrodes, and sizes, which can meet various conductive liquids.

Industries

- Effluent Treatment Plant
- Sewage Treatment Plant Water Supply Scheme
- Steel & Aluminum Industries
- Chemical & Fertilizer Industries
- Dairy Industries
- Sugar Industries
- Textile Processing Industries

Features

- No moving parts, no pressure loss.
- Self-diagnosis, empty pipe alarm, exciting alarm, high and low flow alarm.
- Infrared telecontrol keyboard.
- Recording time when power off, record power broken time automatically.
- Dual frequency excitation and stable zero point.
- Precision coil winding technology, makes magnetic field more uniform.
- Built-in reference electrodes, no need to connect ground ring.
- Measure forward and reverse direction flows.
- High accuracy: ±0.5% of reading. ±0.2% optional, velocity >0.5 m/s.

Applications

- Raw Water
- Potable Water
- Sea Water
- Waste Water
- Heat Exchanger Industrial
- Pulp & Beverages Acidic & Alkaline Solution
- Cooling Water
- Brine Solutions

Technical Data

Size	DN3-DN3000mm (1/8-120')	
Accuracy	±0.5% of reading at flow velocity ≥ 0.5m/s ±0.2% optional at flow velocity ≥ 0.5m/s	
Velocity	0.1-15 m/s	
Repeatability	≤0.17%	
Structure	Compact/remote, cable length 10m standard, 100m max	
Conductivity	>5μS/cm, demineralized water > 20μS/cm	
Protection Grade	Transmitter: IP65 standard, IP67 optional	
	Sensor: IP65 standard, IP68 (submersible, only available for remote type)	
Electrode	SS316L, Hastelloy C. Hastelloy B. Titanium, Tantalum, Platinum-iridium	
Power Supply	85-250 VAC (50/60 Hz), 20-36 VDC	
Power Consumption	<20W	4-20mA (load resistor 0~750 Ω)
	Analog	Forward & reverse flow output with a frequency range of 1~5000Hz
	Frequency	Two isolated open collector transistor (OCT) outputs for alarm signals
Protocol	Alarm	
Display	RS485 MODBUS RTU standard, HART, GPRS, PROFIBUS optional	
Ambient Temperature	LCD Display, 128X 128mm, three lines, 4 buttons	
Fluid Temperature	-20°C~60°C	
Liner Material	Compact: -20°C~80°C, Remote: -20°C~120°C	
	PTFE (-20°C-150°C, DN15-DN1600)	
	FEP (-20°C-120°C, DN3-DN1800)	
	PFA (-20°C~160°C, DN3-DN800)	
	Polyurethane (-10°C~60°C, DN40-DN1600)	
	Neoprene (-10°C-80°C, DN40-DN3000)	
	Hard Rubber (-10°C~80°C, DN 40-DN3000)	
	Ceramic (-20°C-180°C, DN15-DN200)	
Flange Standard	DIN, ANSI, JIS	
Sensor Material	Measuring tube: SS304	
	Flange & housing: carbon steel (standard), SS304/SS316 optional	
Transmitter Material	Aluminium alloy with epoxy painting	
Nominal Pressure	PN10/PN16/PN25/PN40	
	10K/20K/30K	
	150#/300#/600#	
	High pressure 42 MPa/ANSI 2500# can be customized	
Display	Instantaneous flow, total flow, velocity	
Function	High and low alarm, empty pipe alarm, empty pipe alarm, self-diagnosis	
Totalizer	Three built-in totalizers: forward flow, reverse flow and net flow	
Display Unit	L/s, L/m, L/h, m^3/s, m^3/m, m^3/h, UKG, USG	
Language	English, Chinese, Italian, Portuguese, French, Spanish, Korean	

Main Performance of Electrode Material

Electrode Material	Application
SS316L	Applicable to industrial and municipal water, wastewater and low corrosive mediums. Widely used in petroleum, chemical industries.
Hastelloy B	Strong resistance to hydrochloric acids below the boiling point. Resist against oxidable acids, alkali and non-oxidable salts, like vitriol, phosphate, hydrofluoric acids and organic acids.
Hastelloy C	Exceptional resistance to strong solutions of oxidizing salts and acids, like Fe+++, Cu++, Nitric acids, mixed acids.
Titanium	Titanium can withstand corrosive mediums such as seawater, chloride salt solutions, hypochlorite salts, oxidable acids (including fuming nitric acids), organic acids, and alkali. Not resistant to high purity reducing acids such as sulphuric acids, hydrochloric acids.
Tantalum	Highly resistant to corrosive mediums. Applicable to all chemical mediums except Hydrofluoric Acids, Oleum and Alkali.
Platinum-iridium	Applicable to all chemical mediums except for Ammonium salts and Fortis

Main Performance of Electrode Material

Electrode Material	Application
PTFE	Applicable to industrial and municipal water, wastewater and low corrosive mediums. Widely used in petroleum, chemical industries.
PFA	Strong resistance to hydrochloric acids below the boiling point. Resist against oxidable acids, alkali and non-oxidable salts, like vitriol, phosphate, hydrofluoric acids and organic acids.
Neoprene	Exceptional resistance to strong solutions of oxidizing salts and acids, like Fe+++, Cu++, Nitric acids, mixed acids.
Polyurethane	Titanium can withstand corrosive mediums such as seawater, chloride salt solutions, hypochlorite salts, oxidable acids (including fuming nitric acids), organic acids, and alkali. Not resistant to high purity reducing acids such as sulphuric acids, hydrochloric acids.
Hard Rubber	Highly resistant to corrosive mediums. Applicable to all chemical mediums except Hydrofluoric Acids, Oleum and Alkali.
Ceramic	Applicable to all chemical mediums except for Ammonium salts and Fortis

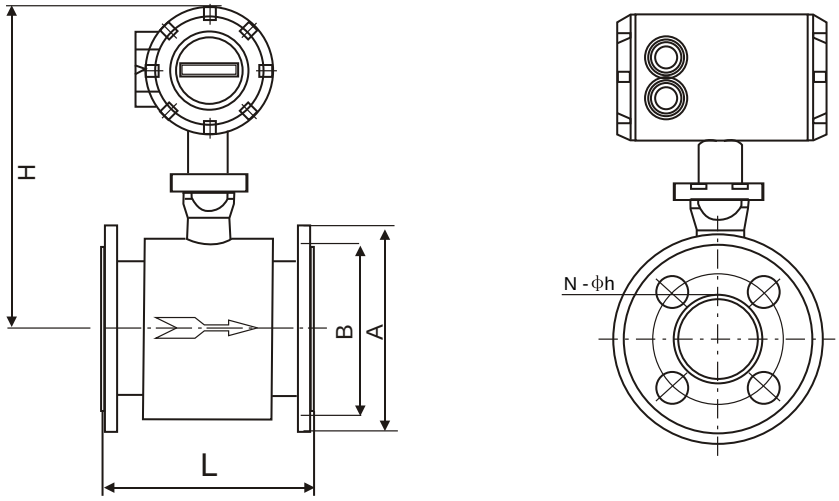
Technical Data

Size		Flow Range & Velocity Table							
mm	inch	0.1 m/s	0.2 m/s	0.5 m/s	1 m/s	4 m/s	10 m/s	12 m/s	15 m/s
DN15	1/2"	64	127	318	636	2.543	6.359	7.63	9.538
DN20	3/4"	113	226	565	1.13	4.522	11.304	13.56	16.956
DN25	1"	177	353	883	1.766	7.065	17.663	21.2	26.494
DN32	1 1/4"	289	579	1.447	2.894	11.575	28.938	34.73	43.407
DN40	1 1/2"	452	904	2.261	4.522	18.086	45.216	54.26	67.824
DN50	2"	707	1.413	3.533	7.065	28.26	70.65	84.78	105.98
DN65	2 1/2"	1.19	2.38	5.97	11.94	47.76	119.4	143.3	179.1
DN80	3"	1.81	3.62	9.04	18.09	72.35	180.86	217	271.3
DN100	4"	2.83	5.65	14.13	28.26	113.04	282.6	339.1	423.9
DN125	5"	4.42	8.83	22.08	44.16	176.63	441.56	529.9	662.34
DN150	6"	6.36	12.72	31.79	63.59	254.34	635.85	763	953.78
DN200	8"	11.3	22.61	56.52	113.04	452.16	1130.4	1356	1696
DN250	10"	17.66	35.33	88.31	176.63	706.5	1766.25	2120	2649
DN300	12"	25.43	50.87	127.2	254.34	1017	2543.4	3052	3815
DN350	14"	34.62	69.24	173.1	3461.9	1385	3461.85	4154	5193
DN400	16"	45	90	2261	452	1809	4522	5426	6782
DN450	18"	57	114	2861	572	2289	5723	6867	8584
DN500	20"	71	141	3533	707	2826	7065	8478	10598
DN600	24"	102	203	5087	1017	4069	10174	12208	15260
DN700	28"	138	277	6924	1385	5539	13847	16617	20771
DN800	32"	181	362	9043	1809	7235	18086	21704	27130
DN900	36"	229	458	1145	2289	9156	22891	27469	34336
DN1000	40"	283	565	1413	2826	11304	28260	33912	42390
DN1200	48"	407	814	2035	4069	16278	40694	48833	61042
DN1400	56"	554	1108	2769	5539	22156	55390	66468	83084
DN1600	64"	723	1447	3617	7235	28938	72346	86815	108518

Remark Recommend flow velocity range 0.5-15 m/s

Dimension

Size is from 1/2"-24", other sizes can be provided upon request.



1/2"-24" Compact Electromagnetic Flow Meter with ANSI 150# Drawing

Size	Flange Standard	Pressure Rate	H (mm)	L (mm)	ΦA (mm)	ΦB (mm)	N (mm)	Φh (mm)
1/2"	ANSI	150#	318	200	88.9	60.45	4	15.7
3/4"	ANSI	150#	323	200	98.6	69.85	4	15.7
1"	ANSI	150#	328	200	108	79.25	4	15.7
1 1/4"	ANSI	150#	333	200	117.3	88.9	4	15.7
1 1/2"	ANSI	150#	343	200	127	98.6	4	15.7
2"	ANSI	150#	363	200	152.4	120.7	4	19.1
2 1/2"	ANSI	150#	383	200	177.8	139.7	4	19.1
3"	ANSI	150#	398	200	190.5	152.4	4	19.1
4"	ANSI	150#	426	250	228.6	190.5	8	19.1
5"	ANSI	150#	449	250	254	215.9	8	22.4
6"	ANSI	150#	477	300	279.4	241.3	8	22.4
8"	ANSI	150#	538	350	342.9	298.5	8	22.4
10"	ANSI	150#	613	450	406.4	362	12	25.4
12"	ANSI	150#	678	500	482.6	431.8	12	25.4
14"	ANSI	150#	728	550	533.4	476.3	12	28.4
16"	ANSI	150#	784	600	596.9	539.8	16	28.4
18"	ANSI	150#	830	600	635	577.9	16	31.75
20"	ANSI	150#	887	600	698.5	635	20	31.75
24"	ANSI	150#	999	600	812.8	749.3	20	35.1

Remark Recommend flow velocity range 0.5-15 m/s

Introduction

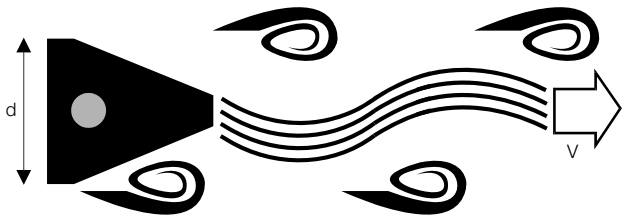
Vortex Flow meter works on the Karman vortex street principle that swirls generated by a bluff body in the pipe. The number of swirls are proportional to the volumetric flow in the pipe. Vortex flow meter widely used for gases, steam and liquid applications. It is ideal for measuring saturated and superheated steam in large facilities to improve steam production efficiency.

Principle

When the fluid in the pipeline passes the burble generator(triangular prism), burble will generate due to the acceleration of partial flow rate. The burble will arise alternatively in two burble lines, which is called Karman vortex.

The releasing frequency of Karman vortex depends on the size of triangle prim and flow rate of fluid. while independent of the medium feature parameter, such as the temperature, pressure, it can be indicated by the following formulas.

F=sR*v (1-1.27*d/D)	Q=3600*F/K	M=Q*P
F	The releasing frequency of Karman vortex (Hz)	
Sr	Strouhal number (unit: dimensionless)	
V	Medium flow rate (m/s)	
d	The width of triangle prim	
D	Vortex meter inner diameter (m)	
Q	Instantaneous volume flow rate (m^3/h)	
K	Vortex meter coefficient (unit pulse number/m^2)	
M	Instantaneous quality flow rate (kg/h)	
P	Fluid density (kg/m^2)	



Application

Applications in the chemicals and petrochemicals industries, for example, in power generation and heat-supply systems involve widely differing fluids: saturated steam, superheated steam, compressed air, nitrogen, liquefied gases, flue gases, carbon dioxide, fully demineralized water, solvents, heat-transfer oils, boiler feed water, condensate, etc.

Features

- Integrated pressure and temperature compensation.
- 4-20mA, pulse with HART or pulse with RS485 are selectable
- Wide temperature range up to highest temperature 350°C
- Adopt Japan OVAL technology and design
- Embedded sensor, 4 piezo-electric crystal encapsulated inside the sensor.
- No moving parts, no abrasion, non-wearing parts inside, fully welded SS304 body (SS316 selectable)

Parameters

Measured Medium	Liquid, Gas, Steam
Medium Temp.	-40 - +250°C; -40 - +350°C (high temperature type)
Nominal Pressure	0.6MPa, 1.0MPa, 1.6MPa, 2.5MPa, 4.0MPa
Accuracy	± 1.0% (Flange/Wafer/Thread/Tri-clamp) ± 1.5% (Insertion type)
Flow Range	Liquid:0.4 - 7.0m/s; Gas: 4.0 - 60.0m/s; Steam: 5.0 - 70.0m/s
Specifications	DN15 - DN300 (flange/wafer type) DN80 - DN2000 (insertion type) DN15 - DN100 (thread/sanitary type)
Material	SS304 (standard) - SS316 (optional)
Reynolds Number	Normal 2 x 10^4 ~ 7 x 10^6
Resistance Coefficient	Cd≤2.6
Vibration Acceleration Allowed	<0.2g
IEP ATEX	IIG Ex ia IIC T6 Ga
Ambient Temp.	-40°C - +65°C (Non ex-proof site) -20°C - +55°C (Ex-proof site)
Ambient Condition	Relative Humidity ≤85% Pressure 86 - 106kPa
Power Supply	DC12 - 30V or 3.6V lithium battery powered
Signal Output	4 - 20mA, Pulse
Communication	RS485 Modbus or HART

Table 1 Liquid and Air Flow Range Table (m^3/h)

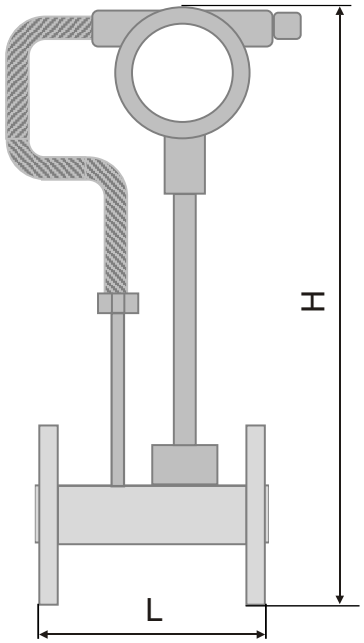
Nominal DN (mm)	Liquid (m^3/h)		Air (m^3/h)	
	Standard Range	Extended Range	Standard Range	Extended Range
15	0.8 - 6	0.5 - 8	6 - 40	5 - 50
20	1 - 8	0.5 - 12	8 - 50	6 - 60
25	1.5 - 12	0.8 - 16	10 - 80	8 - 120
32	2 - 20	1.5 - 25	15 - 150	10 - 200
40	2.5 - 30	2 - 40	25 - 200	20 - 300
50	3 - 50	2.5 - 60	30 - 300	25 - 500
65	5 - 80	4 - 100	50 - 500	40 - 800
80	8 - 120	6 - 160	80 - 800	60 - 1200
100	12 - 200	8 - 250	120 - 1200	100 - 2000
125	20 - 300	12 - 400	160 - 1600	150 - 3000
150	30 - 400	18 - 600	250 - 2500	200 - 4000
200	50 - 800	30 - 1200	4000 - 4000	350 - 8000
250	80 - 1200	40 - 1600	6000 - 6000	500 - 12000
300	100 - 1600	60 - 2500	10000 - 10000	600 - 16000
400	200 - 3000	120 - 5000	16000 - 16000	1000 - 25000
500	300 - 5000	200 - 8000	25000 - 25000	1600 - 40000
600	500 - 8000	300 - 10000	40000 - 40000	2500 - 60000

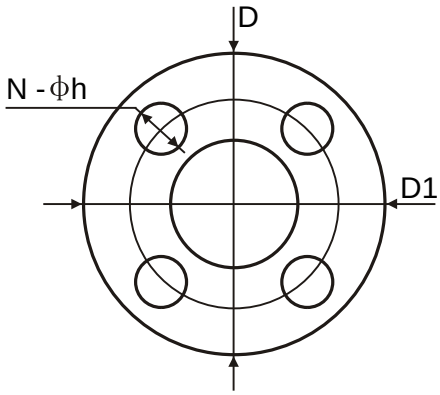
Table 2 Saturated Steam Mass Flow Range Table (kg/h)

Absolute Pressure (MPa)		0.2	0.3	0.4	0.5	0.6	0.7	0.8
Temperature (°C)		120.2	133.5	143.62	151.84	158.94	164.96	170.41
Density (kg/m³)		1.129	1.651	2.163	2.669	3.17	3.667	4.162
DN15	Qmin	5.645	8.255	10.815	13.345	15.85	18.335	20.81
	Qmax	56.45	82.55	108.15	133.45	158.5	183.35	208.1
DN20	Qmin	6.774	9.906	12.978	16.014	19.02	22.002	24.972
	Qmax	67.74	99.06	129.78	160.14	190.2	220.02	249.72
DN25	Qmin	9.032	13.208	17.304	21.352	25.36	29.336	33.296
	Qmax	135.48	198.12	259.56	320.28	380.4	440.04	499.44
DN32	Qmin	20.322	29.718	38.934	48.042	57.06	66.006	74.916
	Qmax	203.22	297.18	389.34	480.42	570.6	660.06	749.16
DN40	Qmin	22.58	33.02	43.26	53.38	63.4	73.34	83.24
	Qmax	338.7	495.3	648.9	800.7	951	1100.1	1248.6
DN50	Qmin	28.225	41.275	54.075	66.725	79.25	91.675	104.05
	Qmax	564.5	825.5	1081.5	1334.5	1585	1833.5	2081
DN65	Qmin	45.16	66.04	86.52	106.76	126.8	146.68	166.48
	Qmax	903.2	1320.8	1730.4	2135.2	2536	2933.6	3329.6
DN80	Qmin	67.74	99.06	129.78	160.14	190.2	220.02	249.72
	Qmax	1354.8	1981.2	2595.6	3202.8	3804	4400.4	4994.4
DN100	Qmin	112.9	165.1	216.3	266.9	317	366.7	416.2
	Qmax	2258	3302	4326	5338	6340	7334	8324
DN125	Qmin	169.35	247.65	324.45	400.35	475.5	550.05	624.3
	Qmax	3387	4953	6489	8007	9510	11001	12486
DN150	Qmin	225.8	330.2	432.6	533.8	634	733.4	832.4
	Qmax	4516	6604	8652	10676	12680	14668	16648
DN200	Qmin	390.15	577.85	757.05	934.15	1109.5	1283.45	1456.7
	Qmax	9032	13208	17304	21352	25360	29336	33296
DN250	Qmin	564.5	825.5	1081.5	1334.5	1585	1833.5	2081
	Qmax	19648	19812	25956	32028	38040	44004	49944
DN300	Qmin	677.4	990.6	1297.8	1601.4	1902	2200.2	2497.2
	Qmax	18064	26416	34608	42704	50720	58672	66592

Dimension

Size is from 1/2"-12", other sizes can be provided upon request.





Size (mm)	15	20	25	32	40	50	65	80	100	125	150	200	250	300
L (mm)	180	180	180	180	180	180	200	200	200	220	220	220	350	300
H (mm)	416	423	431	448	456	470	488	501	525	552	584	636	696	749
D (mm)	95	105	115	140	150	165	185	200	220	250	285	340	405	460
D1 (mm)	65	75	85	100	110	125	145	160	180	210	240	295	355	410
Φh (mm)	4	4	4	4	4	4	8	8	8	8	8	12	12	12
N (mm)	14	14	14	18	18	18	18	18	18	18	22	22	26	26

Feature

- High Accuracy: Accuracy better than 1%.
- Measure Range: Select different model sensors, can achieve DN15-DN6000mm pipe flow measurement.
- High Reliability: Adopt low voltage, multi-pulse radiating circuit. Accuracy, Lifetime and Reliability are better.
- High Anti-interference: Adopt double balanced signal differential transmission, receiving circuit, effective resist the drive, tower,Strong power lines and other source of interference.
- Powerful Memory Function: Automatic memory the cumulative flow of 512 days before, 128 months before, 10 years before. Automatic memory the power-on and off of 64 times before and the flow. Automatic memory the meter working condition of 32days before.
- Support Temperature Sensor: Connect with Temperature sensor, it can measure heat flow.
- Support SD card memory-1: Select SD card memory, it can realize mass storage by ultrasonic flow meter

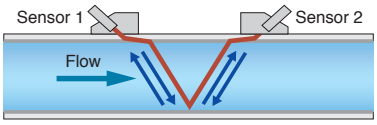
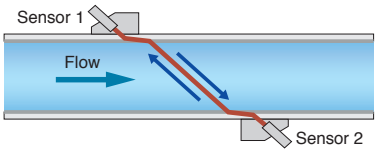
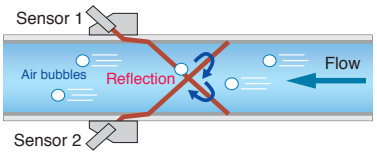
Product Introduction

- The UFM Ultrasonic Flow meter is widely used to measure different kinds of liquid.
- Transmitter and transducer install separately. Transmitter can install at indoor, Instrument cabinet, Dashboard.
- Transducer install on the pipes. Transmitter and Transducer connect by special cable.
- It can realize to measure flow. Connect with temperature sensor, it can measure heat flow.
- Widely used in Running water, Heating, Water conservation, Metallurgy, Chemical industry, Machinery, Energy etc.
- Used for production monitoring, water balance testing, thermal equilibrium network commissioning, energy monitoring.
- It is the most important flow measure instrument during manufacturing process.

Specification

Main unit	Accuracy	Better than ±1%
	Repeatability	Better than 0.2%
	Principle	Transit-time measuring principle
	Measurement Period	500ms
	Display	LCD with backlight, display accumulated flow/heat, instantaneous flow/heat, velocity, time etc.
	Output	Analogue output: 4-20mA current output. Impedance 0-1kW. Accuracy 0.1%.
		OCT output: Frequency signal (1~9999HZ)
		Relay output: over 20 source signal (no signal, reverse flow etc.)
		RS485 serial port
	Input	Three analogue input
		Three-wire PT100 resistor input (optional)
	Other functions	Automatically record the totaliser data of the last 64 days/64 months/5 years; The power-on time and corresponding flow rate of the last 64 power on and off events. Allow manual or automatic flow loss compensation
Pipe	Material	Steel, stainless steel, cast iron, cement pipe, copper, PVC, aluminum, FRP etc. Liner is allowed
	Size	15-6000mm
	Straight pipe section	In the upstream it must be beyond 10D, in the downstream it must be beyond 5D, in the upstream the length must be beyond 30D from the access of the pump. (D stands for pipe diameter)
Liquid	Types	Water, sea water, industrial sewage, acid & alkali liquid, alcohol, beer, all kinds of oils which can transmit ultrasonic single uniform liquid
	Temperature	Standard:-30C-90C, High-temperature:-30C-160C
	Turbidity	Less than 10000ppm, with a little bubble
	Flow Direction	Bi-directional measuring, net flow/heat measuring
Environment	Temperature	Main Unit:-30C-80C
		Transducer:-40C-110C, Temperature transducer: select on enquiry
	Humidity	Main Unit: 85% RH
		Transducer: water-immersible, water depth less than 3m
Cable	Twisted Pair Line, standard length of 20m, can be extended to 500m (not recommended); Contact the manufacturer for longer cable requirement. RS-485 interface, transmission distance up to 1000m	
Power Supply	AC220V or DC24V	
Power Consumption	Less than 1.5W	
Protocols	MODBUS, M-BUS, Fuji extended protocol and other factory protocol	

Measurement Composition

Type	Feature
 Clamp On Type	 • Installation without drying up, no pressure loss • Easy installation and maintenance • Mating clamp temperature sensor that can measure the temperature of the outside of tube to achieve heat measure
 Insertion Type	 • Installation without drying up, no pressure loss • Stable and reliable during long-term operation • Mating clamp temperature sensor that can measure the temperature of the outside of tube to achieve heat measure
 Pipe Type	 • Installation require drying off the pipe • High accuracy, stable and reliable during long-term operation • Mating clamp temperature sensor that can measure the temperature of the outside of tube to achieve heat measure

Sensor options

Flow sensor	Picture	Model	Measuring range	Temperature
Clamp on		TS-2 (small)	DN25-100	-30 ~ 90°C
		TM-1 (medium)	DN50-700	
		TL-1 (large)	DN300-6000	
High temp. Clamp on		TS-2-HT (small)	DN25-100	-30 ~ 160°C
		TM-1-HT (medium)	DN50-700	
		TL-1-HT (large)	DN300-6000	
Insertion		TC-1 (standard)	DN50-6000	-30 ~ 160°C
		TC-2 (extended)		
Inline		TP-1 (parallel)	DN80-6000	-30 ~ 160°C
		Standard	DN15-1000	

Product Description

Liquid flows through the turbine housing causing an internal rotor to spin. As the rotor spins, an electrical signal is generated in the pickup coil. This signal is converted into engineering units (liters, cubic meters, gallons etc.) on the local display where is applicable Optional accessory modules can be used to export the signal to other equipment.

Upon receipt, examine your meter for visible damage. The turbine is a precision measuring instrument and should be handled carefully.

Remove the protective plugs and caps for a thorough inspection. If any items are damaged or missing, contact.

Make sure the turbine flow model meets your specific needs. For your future reference, it might be useful to record this information on nameplate in the manual in case it becomes unreadable on the turbine. Refer to the nameplate for your customized products specification.

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Warning

For your safety, review the major warnings and cautions below before operating your equipment.

1. Use only fluids that are compatible with the housing material and wetted components of your turbine.
2. When measuring flammable liquids, observe precautions against fire or explosion.
3. When handling hazardous liquids, always follow the liquid manufacturer's safety precautions.
4. When working in hazardous environments, always exercise appropriate safety precautions.
5. During turbine removal, liquid may spill. Follow the liquid manufacturer's safety precautions for clean up of minor spills.
6. Do not blow compressed air through the turbine.
7. Handle the rotor carefully. Even small scratches or nicks can affect accuracy.
8. When tightening the turbine, use a wrench only on the wrench flats.
9. For best results, calibrate the meter at least 1 time per year.

Technical Data

Measuring system	Application Range	Liquid: water; diesel; etc
		(1) Without Impurity
		(2) Low viscosity
Measured Value	Primary Measured Value	Flow Rate
	Secondary Measured Value	Volume flow

Design

Modular Construction	The measurement system consists of a flow	
	sensor and a signal converter. It is available as	
	compact and as separate version.	
Compact Version Converter	N Type: Pulse output without local display	
	A Type: 4-20mA Output without local display, No Output	
	C Type: Local Display: 24V DC Power: 4-20mA Output;	
	Optional Function:	(1) Backup Power Supply: Lithium Battery
		(2) Modbus RS485
		(3) Pulse Output
Connection	Thread: DN4-DN50	
	Flange: DN15-DN200 (DIN, ANSI, JIS)	
	Wafer: DN15-DN100	
Measure Ment Ratio	Standard-10:1: Optional: 20:1	

Measuring accuracy

Reference Conditions	Flow conditions similar to EN 29104
	Medium: Water
	Electrical conductivity: 300 µS/cm
	Temperature: +10...+30°C/+50...+86° F
	Inlet section: 10 DN
	Operating pressure: 1 bar/14.5 psi
Flow Meter Accuracy	Standard: 0.5% of rate
	Optional: 0.2% of rate

Operating Conditions

Process temperature	T1 Level: -20...+80°C
	T2 Level: -20...+120°C
	T3 Level: -20...+150°C
Ambient temperature (all versions)	Standard (with aluminum converter housing):
	-20...+55°C
Storage temperature	-20...+70°C
EN 1092-1	DN100...DN200: PN 16
	DN15...DN80: PN 25
	Other pressures on request
ASME B16.5	1/2"...8: 150 Lb RF
	Other pressures on request
JIS	1/2...8: 10K
	Other pressures on request

Installation Conditions

Installation	Take care that flow sensor is always fully filled
	For detailed information see chapter "Cautions for Installation"
Flow direction	Forward
	Arrow on flow sensor indicates flow direction
Inlet run	≥10 DN
Outletrun	>5 DN

Materials

Sensor housing	SS304		
	Other materials on request		
Flanges	SS202/SS304		
	Other materials on request		
Rotor	Standard: 2Cr13	EN 10088-3	1.4021 X20Cr13
		AISI	420
		BS	420S37
		JIS	SUS410J1
	Optional: CD4MCu	DN15-DN80	
	Bearings and Shaft	Tungsten Carbide	
	Converter Housing	Standard: polyurethane coated die-cast aluminum	

Process Connections

Flange	EN 1092-1	DN15. 200 in PN6..40
	ASME	1/2"...8 in 150 lb RF
	JIS	1/2"...8' in 10...20K
	Design of gasket surface	RF
Thread	DN4 DN50 in PN63	

Technical Data

Nominal Diameter		Standard Flow Range	Extended Flow Range
(mm)	(in.)	(m^3/h)	(m^3/h)
4	0.15	0.04 to 0.25	0.04 to 0.4
6	0.25	0.1 to 0.6	0.06 to 0.6
10	0.4	0.2 to 1.2	0.15 to 1.5
15	0.5	0.6 to 6	0.4 to 8
20	0.75	0.8 to 8	0.45 to 9
25	1	1 to 10	0.5 to 10
32	1.25	1.5 to 15	0.8 to 15
40	1.5	2 to 20	1 to 30
50	2	4 to 40	2 to 40
65	2.5	7 to 70	4 to 70
80	3	10 to 100	5 to 100
100	4	20 to 200	10 to 200
125	5	25 to 250	13 to 250
150	6	30 to 300	15 to 300
200	8	80 to 800	40 to 800

Fange mounting

Threaded installation

Clamp installation

Pulse output

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EM-FLOW ENVIRONMENTAL TECHNOLOGY CO., LTD.
Add: 29/F, No.68, Section 5, Zhongxiao East Road, Taipei City, Taiwan+886 961
Tel: +886 961-612-974
E-mail: sales@emfow.tw

www.emflow.tw