



IOTAFLOW
SYSTEMS PVT LTD

Electromagnetic Flow Meter

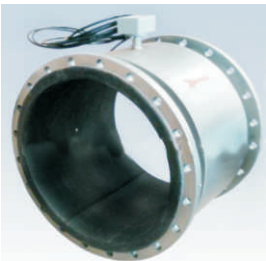
INTRODUCTION

Overview

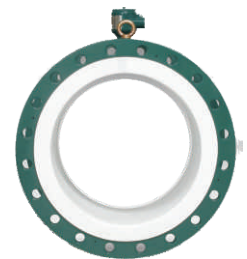
The Smart Electromagnetic Flowmeter Is Of Perfect Performance And Reliability. Based On the Successfully Proven Smart Flow Technology of Iota Flow instruments, the flowmeter is widely used in industries of petroleum, chemical engineering, iron and steel, food electric power, paper making, water treatment, petro chemistry & medicine etc.

Features :

Remote type
electromagnetic meter



Measurement is independent of fluid density, humidity, temperature, pressure and conductivity. There are no obstacle elements in the conduit, No pressure drop, the requirement of straight pipe is low. The sensor with advanced processing technology is of nice resistance to negative pressure. The liquid crystal display in the converter of smart series Magnetic flow meter makes it easy to read in the sun or in the dark room. In bad environment parameters can be set up through the infrared ray touch knobs without opening the cover of the converter. The converter has alarm output function of self-diagnosis, empty load test high and low limit of the flow, two-stage flow value, etc. not only apply in generally process test but also in the test of the mineral serosity, paper pulp as well as pastry liquid. High pressure type electromagnetic flow sensor adopting PFA lining technology which is resistant to high pressure and negative pressure is specially applicable in industries of oil, chemistry, etc. These flowmeters are calibrated as per ISO 4185/8316.



Integral Type
Electromagnetic meter

Smart Electromagnetic Flow meter Converter

Remote Converter

FEATURES AND APPLICATIONS

Smart signal converter which display all in English adopts embedded 16-bit micro controller. Full processing digitally, the converter has the function of bi-directional way measurement forward & reverses accumulated and difference and values. It can be used to measure the volume flow of conductive liquid such as a water, sewage, acid, alkali and salt as well as mixture of liquid and solid.

PERFORMANCE SPECIFICATIONS

Main power: AC 100V, 110V, 115/120V \pm 10% AC200V, 220V, 220/240V \pm 10% DC24V \pm 10% frequency: 50Hz or 60Hz power consumption: <13W

Display and push-buttons: the three-line LCD display with back lighting can display the percentage of the flow, the instantaneous flow and the total flow.

Air thermometer: it is used for accumulative counting of the total forward flow and total reverse flow.

INPUT SIGNAL

Flow signal: from the voltage signal of the direct relation to the flow from the detector.

Contact input (optional): solid-state contact or no-voltage contact.

OUTPUT SIGNAL

- I. Analog output: 4.20 mA DC (digital output is selectable) Without SFC communication: 0.8 mA, 22.4 mA (-20%..+115%) load resistance: 0.600 with SFC communication: 3.2 mA, 22.4mA (-5%..+115%) External power source for SFC communication: DC16-45V (optional) load resistance (U) = (External power source for communication .8.5V)/0.025
- II. Digital output: DE (analog output is selectable)
- III. Contact output (optional) open collector, contact capacity 30V DC max, 200mA max (selectable)
 - a. Alarm output: output alarm under the following conditions: self-diagnostic result, empty detection and high/low meter limit alarm.
 - b. Range switch output: the status of low range. Large small in dual range. Normal or reverse.
 - c. Counter preset status output (for pulse output model): activates when the counter reaches the preset values.
 - d. Self-check result output: activate only when a self-diagnostic abnormality occurs.
 - e. Empty load detection output: activates only when an empty status occurs.
 - f. High/low limited alarm output: activates when the first high/low limit alarm (H/L) occurs and the second the high/low limit (HH/LL) occurs.
- IV. Pulse output (optional): open collector, pulse frequency 2000 Hz max, pulse width from 0.3 to 999.9ms random setting or fixed at 50% of the duty.
- V. Communication: Hart or FF fieldbus (optional)
 - Accuracy: \pm 0.5% of the value displayed, \pm 0.3% or \pm 0.2% are optional
 - Damping time: adjustable between 0.5 and 199.9 seconds.
 - Low flow cut-off: adjustable between 0 and 10% of the preset range. Below selected value, output is driven to the zero flow rate signal level.
 - Ex-proof Mark: FM/SCA ex-proof certificate for class I/II/III, area II, group (A, B, C, D, F, G) or no-hazard areas.
 - Protection Class: IP67 (dustproof and submerging for short time)
 - Lighting Protection: 12KV, 1000A, equipped with the lightning arrester in the power source and external input and output terminals.
 - Electrical Connection: G1/2 internal threads watertight gland.
 - Power Failure: An EEPROM retains data record of totalized value when pulse output is used (retention period approximately 10 years).
 - Weight: 3.7 kg



Smart Electromagnetic Flow Sensor (Flange Type)

PERFORMANCE SPECIFICATIONS

- Size: DN10..DN3000mm
- Nominal Pressure: 0.6~4.0MPa
- Accuracy: \pm 0.5% of the value displayed, \pm 0.3% or \pm 0.2% are optional
- Liner Material: Teflon, PFA, F46, Neoprene, Polyurethane.
- Electrode Type: General type, Scraper type and Replaceable type.
- Electrode Material: SS316, Hastelloy B, Hastelloy C, Titanium, Tantalum, Platinum-iridium, stainless steel covered with tungsten.
- Medium Temperature Integral type: -10°C..+80°C
- Remote Type: Neoprene & Polyurethane Liner --- 10°C..+80°C, PTFE, PFA, F46 Liner ---- 10°C..+160°C
- Ambient Temperature: -25°C..+60°C
- Ambient Humidity: 5..100% RH (relative humidity)
- Medium Electrical conductivity: \geq 5.0 s/cm
- Measuring Range: 1500:1, flow rate \leq 15m/s
- Structure Type: Integral type, remote type, submersible type, ex proof type.
- Protection Class: IP65, IP68 (optional), IP65 Dustproof and Watertight: IP68 Dustproof and submersible for long (only for remote type)
- Ex-proof Mark: ExmdIIBT4



Smart Electromagnetic Flow Sensor (Clamped Type)

PERFORMANCE SPECIFICATIONS

- Size: DN10.DN 200mm
- Nominal Pressure: 10~40Bar
- Accuracy: $\pm 0.5\%$ of the value display, $\pm 0.3\%$ or ± 0.2 are optional
- Medium Temperature:
- Integral type: $- 10^{\circ}\text{C}\sim+80^{\circ}\text{C}$
- Remote type: $- 10^{\circ}\text{C}\sim+ 160^{\circ}\text{C}$
- Ambient Temperature:- $25^{\circ}\text{C}\sim+ 60^{\circ}\text{C}$
- Medium Electrical conductivity: $\geq 5.0 \text{ s/cm}$
- Liner Material: PFA, F46
- Electrode Material: S316, Hastelloy B, Hastelloy C, Titanium, Tantalum, Platinum-iridium
- Electrode Type: Electrode can be teardown.
- Structure Type: Integral type, Remote type.
- Protection Class: IP65, IP68 (optional).

Integral type
electromagnetic
flow meter



Smart Electromagnetic Flow Sensor (Insertion Type)

OVERVIEW

Being based on faraday's law to electromagnetic induction. Smart insertion electromagnetic flow meter is of high intellect and reliability with advanced international techniques. It has been widely used in the area of big-size flow meter with its high performance-price ratio.

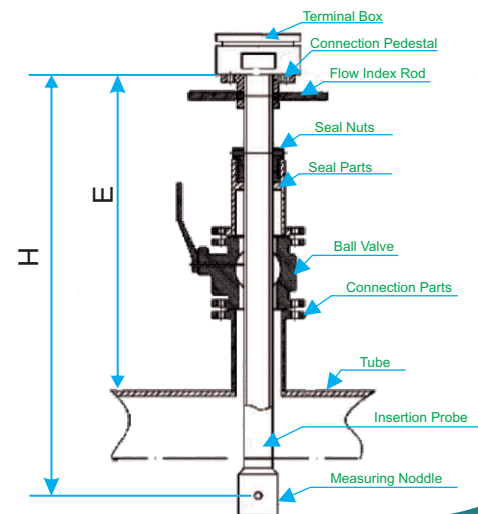
FEATURES AND APPLICATIONS

- Measurement is independent of fluid density, viscosity, humidity, temperature, pressure and conductivity.
- There is no obstacle part in the measuring tube, no pressure damage the tube.
- The high reliable out-insertion installing mode with which the sensor can be installed without removing the measuring pipe makes the flow meter particularly applicable in fields where the water can't be cut off for long. In addition, it can be equipped on the old pipe locale hatching.
- With simple structure the flow meter is of high reliability without lining in the measuring pipe.
- The wide range of the nominal bore is suitable for all the pipe size between DN300 and Dn3000
- The integral ground electrode guarantees the grounding well
- The sensor with advanced processing technology and liquid airproof is of long natural life and of nice resistance to shanking leakage. It guarantees the instrument good precision and stability.



PERFORMANCE SPECIFICATIONS

- Size: DN300~DN3000mm
- Nominal pressure: 16 Bar
- Measuring probe material: carbon steel, SS304 stainless steel
- Electrode Material: SS316, Hastelloy B, Hastelloy C
- Accuracy: flow rate= $0.5\text{m/s} \pm 0.5$ Flow rate of full range $> 1\text{m/s}$, $\pm 1.0\%$
- Medium Temperature: PVC, ABS-- $+ 60$ polypropylene-- $+80^{\circ}\text{C}$
- Ambient Temperature: $25^{\circ}\text{C}\sim+60^{\circ}\text{C}$
- Relativity Humidity: $5\%\sim95\%$
- Atmosphere Pressure: $86\sim106\text{KPa}$.
- Length of straight pipe: upstream 10D: downstream 5D
- Protection Class: IP65, IP68 (optional)
- Connection Mode: Flange type
- Ex-proof mark ExmdIIbt4



Sensor
structure

	Magnetic Flowmeter-	XXX	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Size	MM 4 mm	4																
	MM 8 mm	8																
	MM 10 Mm	10																
	MM 15 Mm	15																
	MM 20 Mm	20																
	MM 25 Mm	25																
	MM 32 Mm	32																
	MM 40 Mm	40																
	MM 50 Mm	50																
	MM 65 Mm	65																
	MM 80 Mm	80																
	MM 100 Mm	100																
	MM 125 Mm	125																
	MM 150 Mm	150																
	MM 200 Mm	200																
	MM 250 Mm	250																
	MM 300 Mm	300																
	MM 350 Mm	350																
	MM 400 Mm	400																
	MM 450 Mm	450																
	MM 500 Mm	500																
	MM 600 Mm	600																
	MM 700 Mm	700																
MM 800 Mm	800																	
MM 900 Mm	900																	
MM 1000 Mm	1000																	
MM 1100 Mm	1100																	
MM 1200 Mm	1200																	
MM 1400 Mm	1400																	
MM 1500 Mm	1500																	
MM 1600 Mm	1600																	
MM 1800 Mm	1800																	
MM 2000 Mm	2000																	
Mounting	MM Insertion	2																
	MM Inline	1																
Flow Tube Material	FMT SS304	S																
	FMT SS316	F																
Liner Material	FML F46	H																
	FML Hard Rubber	R																
	FML PTFE	T																
	FML PFA	F																
	FML Polyurathene	P																
Electrode Material	MME SS316	S																
	MME Hastalloy B	B																
	MME Hastalloy C	H																
	MME Titanium	N																
	MME SS Covered With	K																
	MME Tantalum	T																
Flow Sensor Protect	MMT IP68	IP68																
	MMT IP65	IP65																
Structure	MM Integral	1																
	MM Remote	2																
	MM Integral + Remot	3																
Process Connection & Element Housing	MMP Wafer End	W																
	MMP CS Flange	M																
	MMP SS 304 Flange	F																
	MMP SS 316 Flange	G																
	MMP SMS Union	S																
MMP TC End(SS 316)	T																	
MM Pressure Rating	MM 10 Bar	A																
	MM 16 Bar	B																
	MM 25 Bar	C																
	MM 40 Bar	P																
	MM 60 Bar	M																
	MM 100 Bar	H																
	MM 320 Bar	N																
MM 400 Bar	W																	
Flange Class	MM # 150	1																
	MM # 600	4																
	MM # 300	7																
	MM Wafer	5																
	MM PN 10/16	2																
	MM PN 40	3																
	MM Tril-clover End	6																
	MM ANSI 1500	9																
MM ANSI 2500	8																	
Display Enclosure	MMD Skip	O																
	MM IP 65	B																
	MM IP67	C																
	MM Ex-Proof	E																
Output	MMO Skip	O																
	MM Flow Volume 4-20	C																
	MM Flow Volume HART	D																
Power Supply	MMP Skip	O																
	MM 24 VDC	2																
	MM Battery	B																
	MM 220 VAC 50 Hz	1																
Signal Cable	MM Skip	N																
	MM Signal Cable	S																
Matching Flange	MMF Skip	O																
	MMF Mating Flanges	P																
Data Logger	MML Skip	O																
	MM Data Logger	P																

Line Size (mm)	Flow Range(m ³ /h) at 0.3 ~ 10 m/s
10	0.06 ~ 2.00
15	0.20 ~ 6.40
20	0.34 ~ 11.3
25	0.53 ~ 17.7
40	1.40 ~ 45.2
50	2.00 ~ 70.7
65	3.58 ~ 119
80	5.43 ~ 181
100	8.48 ~ 282
150	19.08 ~ 636
200	33.9 ~ 1131
250	53.0 ~ 1767
300	76.3 ~ 2544
350	103.9 ~ 3463
400	135.7 ~ 4524
450	171.7 ~ 5726
500	212.0 ~ 7069
600	305 ~ 10179
700	415 ~ 13854
800	542 ~ 18095
900	687 ~ 22902
1000	848 ~ 28274

Table 1. main performances of the liner materials:

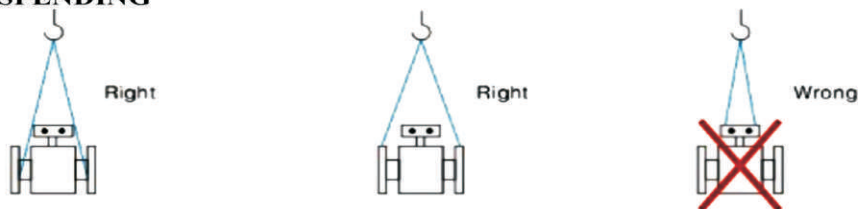
Liner Material	Main Performances	Applications
PTFE	1. The most steady material in plastics which is resistant to boiling hydrochloric acid, vitriol and aqua fortis as well as strong alkali and organic impregnants. 2. Not be perfect in abrasion resistance.	Strong corrosive mediums such as strong acid and alkali
PFA	Having the same abrasion resistance with PTFE. Having strong ability of load pressure resistance.	Applicable in state of load pressure.
F46	1. Having the same abrasion resistance with PTFE. 2. Resistant for low abrasion. 3. Having strong resistance to load pressure.	1. The same as PTFE. 2. Applicable in mediums of low abrasion.
Neoprene	1. Be of good elasticity, refractivity and abrasion resistance. 2. Be resistant to low acid, alkali and salt but not for oxidation mediums.	Water, sewage and slurry. mineral serosity of low abrasion.
Polyurethane	1. Be of good abrasion resistibility (equal to 10 times of caoutchouc). 2. Not be perfect in acid/alkali resistance. 3. Can't be used for water mixed with organic impregnants.	Applicable in mineral serosity. slurry and coal slurry of high abrasion.

Table 2. Main performances of the electrode materials:

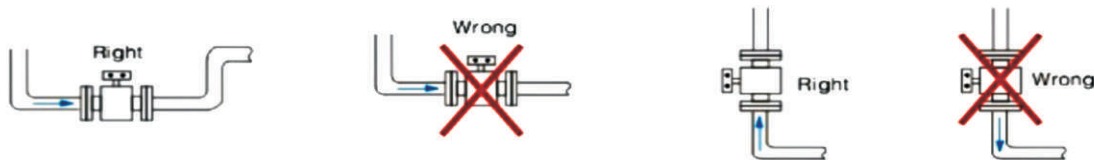
Electrode Materials	Applications
0Cr18Ni12Mo2Ti	Applicable in water, sewage and corrosive mediums. Widely used in industries of petrol, chemistry, carbamide, etc.
Stainless steel covered with tungsten	Applicable in mediums of no corrosive and low abrasion.
Hastelloy B (HB)	Having strong resistance to hydrochloric acid of any consistence which is below boiling point. Also resistable able against vitriol, phosphate, hydrofluoracid, organic acid etc. which are oxidable acid, alkali and non-oxidable salt.
Hastelloy C (HC)	BE resistant to oxidable acid such as nitric acid, mixed acid as well as oxidable salt such as Fe ⁺⁺⁺ , Cu ⁺⁺ and seawater.
Titanium (Ti)	Applicable in seawater, chloride, hypochlorite salt, oxidable acid, organic acid, alkali, etc.
Tantalum (Ta)	Having strong resistance to corrosive mediums that is similar with glass. Almost applicable in all chemical mediums except for hydrofluoric acid, oleum and alkali.
Platinum-iridium	Almost be applicable in all chemical mediums except for aqua fortis, ammonium salt.

Installation Diagram

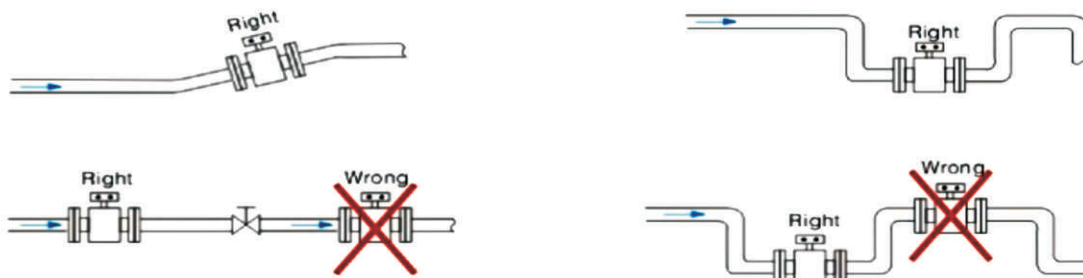
RIGHT SUSPENDING



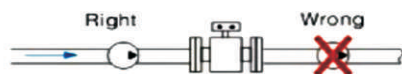
PIPE MUST BE FULL OF MEDIUM



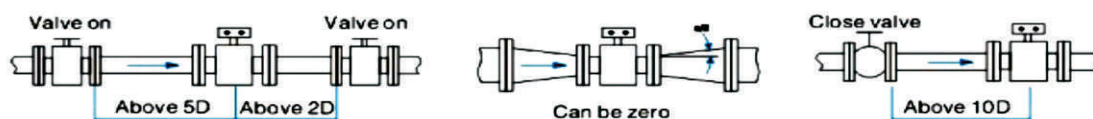
AVOID AIR BLADDER



CAN'T BE INSTALLED AT THE PUMP SIDE



STRAIGHT PIPE REQUIREMENT



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