

Selection of Samples

■ Precise Manufacturing Accurate Measurement



Electromagnetic Flowmeter SE11/12/13/14



SINIER

Features

- No movable, choking parts in the pipe, nearly no extra pressure loss during measurement.
- Measuring results have nothing with velocity distribution, fluid pressure, temperature, density, viscosity, and other physical parameters.
- Available to modify measuring range according to user's actual needs on the scene.
- Suitable to measure all kinds of conducting fluid, such as tap water, sewage, mud, all beverage, chemical materials, sticky fluid and suspension.
- Adopting SMD device and SMT technology, high circuit reliability, low consumption.
- Adopting 16 Bit embedded microprocessor, fast operating rate, high accuracy, programmable low frequency rectangular wave excitation, to increase stability of measurement.
- Digital value processing, strong anti-jamming ability, reliable measurement, high accuracy, range ability can reach 30:1.
- Low consumption EMI switching power, suitable for large range of supply voltage change, good EMC performance.
- Including three integrators, which can achieve forward total, reserve total and D-value total; including non-power-failure clock, which can record 16 times power failure.
- Easy to operate, only need to connect to power, no any other operations, it can output standard signal, suitable for non-professional users.
- Available to RS485, RS232, Hart, Modbus, and Profibus communication signal.
- Providing modification function of five nonlinearity of sensor.
- Providing automatic operation of average flow, easy for calibration.
- Damping: range 1-50s
- Power off protection, operation result of flowmeter and set parameter won't disappear after power off, EEPROM can protect set parameter and total value.
- Small signal resection function. Users can set lower limit of voltage and flow by display panel, to remove interference of small flow.
- Password latch function. After power on, if need to set parameter, five bit password should be input to do parameter setting, and prevent irrelevant persons changing parameter.
- Having various kinds of protection grade and installation methods of converters and sensors, and submersible installation IP68 is available.
- Insertion electromagnetic flowmeter is suitable to measure in large diameter, easy installation, without cutoff, tapping with pipe pressure, having absolute advantage in installation and price.
- Measurement of insertion electromagnetic flowmeter only has matter with insertion depth, so it has good generality and compatibility. Only one mode can satisfy all specifications of pipe.

Working principle

Faraday's law of induction (when conductor passes magnetic field, it will produce EMF in conductor), is basic principle of measurement of electromagnetic flowmeter. This principle can apply for conductive fluid, this fluid flows into magnetic field, which is perpendicular to direction of flow, and electric potential produced in fluid can be measured by two symmetrical electrodes. Signal voltage U_E is proportional to magnetic induction B , electrode space D , and average velocity V . Because B and D is constant, U_E is proportional to V . Equation used for calculating volume velocity shows U_E has a linear relation with volume flow.

Inductive signal voltage is transformed into indexing, analog and digital output signal in converter.

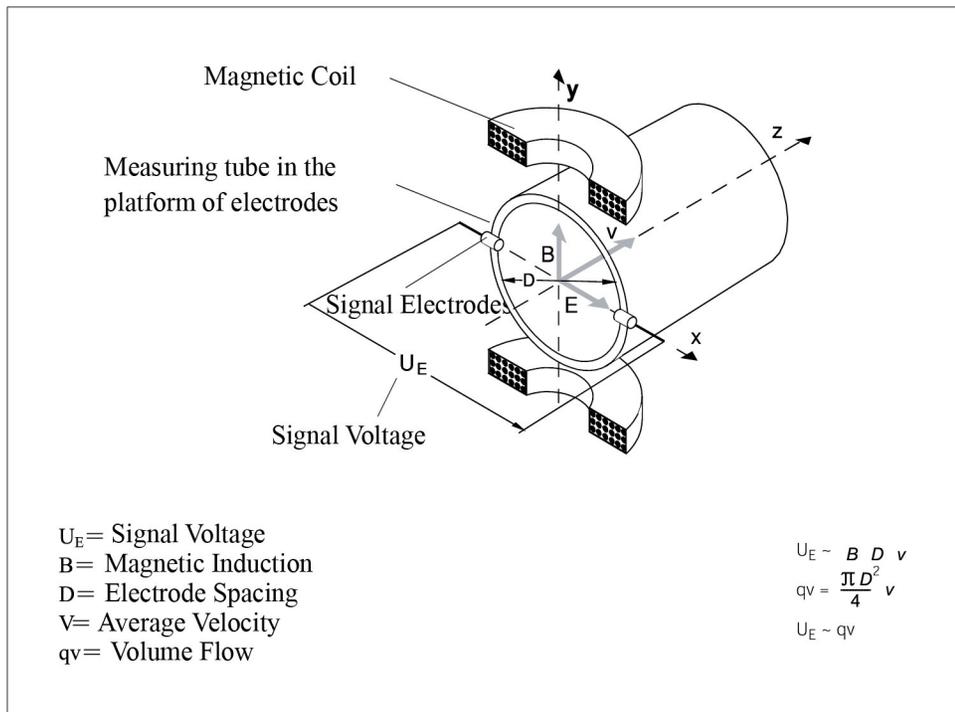


Diagram of Electromagnetic Flowmeter

Standard Technical Specification

1. Normal Working Condition

Ambient Temperature: -25~+60 °C

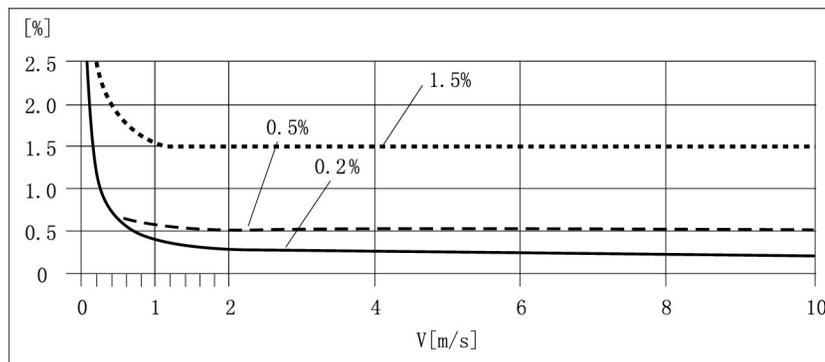
Relative Humidity: 5%~90%

Power Supply: 85~250V AC, 45~63Hz; 16~36V DC

Wasted Power: less than 20W

2. Accuracy

Standard SE11/Hygiene SE13: $\pm 0.5\%$ High Accuracy SE12: $\pm 0.2\%$ Insertion SE14: $\pm 1.5\%$



Measurement Error

3. Output Variable

3.1 Analog Current Output

Load Resistant: when 0~10mA, 0~1.5k Ω ;
When 4~20mA, 0~750 Ω .

Basic Error: 0.1% $\pm 10\mu A$.

3.2 Digital Frequency Output

Frequency Output Range: 1~5000Hz;
Output Electric Isolation: photoelectric isolation, isolation voltage: >1000VDC;
Frequency Output Driver: field-effect tube output, max voltage is 36VDC, max load current is 250mA.

3.3 Digital Pulse Output

Output Pulse Range: 0~100pulse/s (if higher than upper limit, pulse will be lost);
Output Pulse Equivalent: (0.001~1.000)m3/cp;
(0.001~1.000)LTR/cp;
(0.001~1.000)USG/cp;
(0.001~1.000)UKG/cp;

Output Pulse width: set by software of users
Output Electric Isolation: photoelectric isolation, isolation voltage: >1000VDC;
Pulse Output Driver: field-effect tube output, max voltage is 36VDC, max load current is 250mA.

3.4 Alarm Output

Alarm output interface: ALMH---- higher limit alarm; ALML--- lower limit alarm;
Output Electric Isolation: photoelectric isolation, isolation voltage: >1000VDC;
Alarm Output Driver: Darlington tube output, max voltage is 36VDC, max load current is 250mA.

3.5 Digital Communication Interface and Communication Protocol

MODBUS Interface: RTU format, physical interface: RS485, electric isolation: 1000V
HART Interface: supporting standard HART protocol, having HART communicator, showing measuring values online, and modifying parameter;

Main Technical Parameter

	SE11	SE12	SE13	SE14
Measuring fluid	Conductive fluid			
Accuracy	±0.5%	±0.25%	±0.5%	±1.5%
Repeatability	±0.25%	±0.125%	±0.25%	±0.75%
Fluid temperature	-25℃~200℃	-25℃~200℃	-25℃~200℃	-25℃~130℃
Conductivity	≥5μs/cm(if softened water≥20μs/cm)			
Diameter range	(10~2000)mm	(10~2000)mm	(10~125)mm	(200~3000)mm
Working pressure	0.6Mpa/1.0Mpa/1.6Mpa/2.5Mpa/4.0Mpa/Others			
Velocity range	(0.5~10)m/s			
Direction of flow	Forward /Backward			
Electrode material	316L/Hastelloy B , C/ Ta/Ti/Pt/Tungsten Carbide/Others			
Lining material	Rubber/PTFE/F46/PFA		PFA	PTFE
Electrode form	Standard			
Quantity of electrodes	Two pairs (measuring, ground))			One pair (measuring)
Measuring tube material	304SS			/
Port material	Carbon steel/SS		SS	SS
Installation form	Wafer/flange		Hoop/thread	Flange/hotplug online
Protection grade	IP65/IP67/IP68 (Divided type)			
Power supply	220VAC±20% 50HZ/24VDC			
Signal output	(4-20)mA Active			
Communication	HART Communication/Modbus Protocol/Profibus Protocol			
Electric connection	2-M20×1.5			
Anti-explosion form	Non-anti-explosion/explosion suppression			
Structure form	Integrated type/divided type			
Working condition	Ambient temperature(-25~60)℃ Humidity5%~90%			

Diameter, Nominal Pressure and Flow Range

Instantaneous volume flow is function of velocity and diameter of sensor. Instantaneous velocity chart shows flow range of every diameter which can measure, and several suitable specifications of given flow.

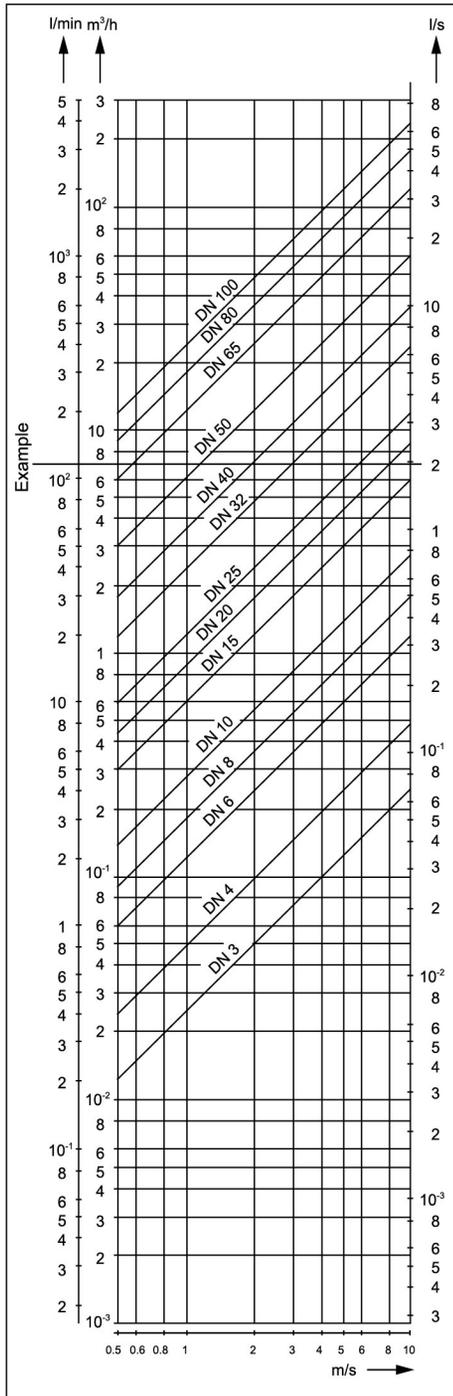
Diameter DN	Pressure MPa	Min flow range Velocity(0~0.5)m/s	Max flow range Velocity(0~10)m/s
10	4.0	(0~2.25) L/min	(0~45) L/min
15	4.0	(0~5) L/min	(0~100) L/min
20	4.0	(0~7.5) L/min	(0~150) L/min
25	4.0	(0~10)L/min	(0~200) L/min
32	4.0	(0~20)L/min	(0~400) L/min
40	4.0	(0~30)L/min	(0~600) L/min
50	4.0	(0~3)m ³ /h	(0~60) m ³ /h
65	4.0	(0~6)m ³ /h	(0~120) m ³ /h
80	4.0	(0~9)m ³ /h	(0~180) m ³ /h
100	1.6	(0~12)m ³ /h	(0~240) m ³ /h
125	1.6	(0~21)m ³ /h	(0~420) m ³ /h
150	1.6	(0~30)m ³ /h	(0~600) m ³ /h
200	1.6	(0~54)m ³ /h	(0~1080) m ³ /h
250	1.6	(0~90)m ³ /h	(0~1800) m ³ /h
300	1.0	(0~120) m ³ /h	(0~2400) m ³ /h
350	1.0	(0~165) m ³ /h	(0~3300) m ³ /h
400	1.0	(0~225) m ³ /h	(0~4500) m ³ /h
500	1.0	(0~330) m ³ /h	(0~6600) m ³ /h
600	1.0	(0~480) m ³ /h	(0~9600) m ³ /h
700	1.0	(0~660) m ³ /h	(0~13200) m ³ /h
800	1.0	(0~900) m ³ /h	(0~18000) m ³ /h
900	1.0	(0~1200) m ³ /h	(0~24000) m ³ /h
1000	1.0	(0~1350) m ³ /h	(0~27000) m ³ /h
1200	0.6	(0~2100) m ³ /h	(0~42000) m ³ /h
1400	0.6	(0~2700) m ³ /h	(0~54000) m ³ /h
1600	0.6	(0~3600) m ³ /h	(0~72000) m ³ /h
1800	0.6	(0~4500) m ³ /h	(0~90000) m ³ /h
2000	0.6	(0~5700) m ³ /h	(0~114000) m ³ /h

Instantaneous Flow Chart

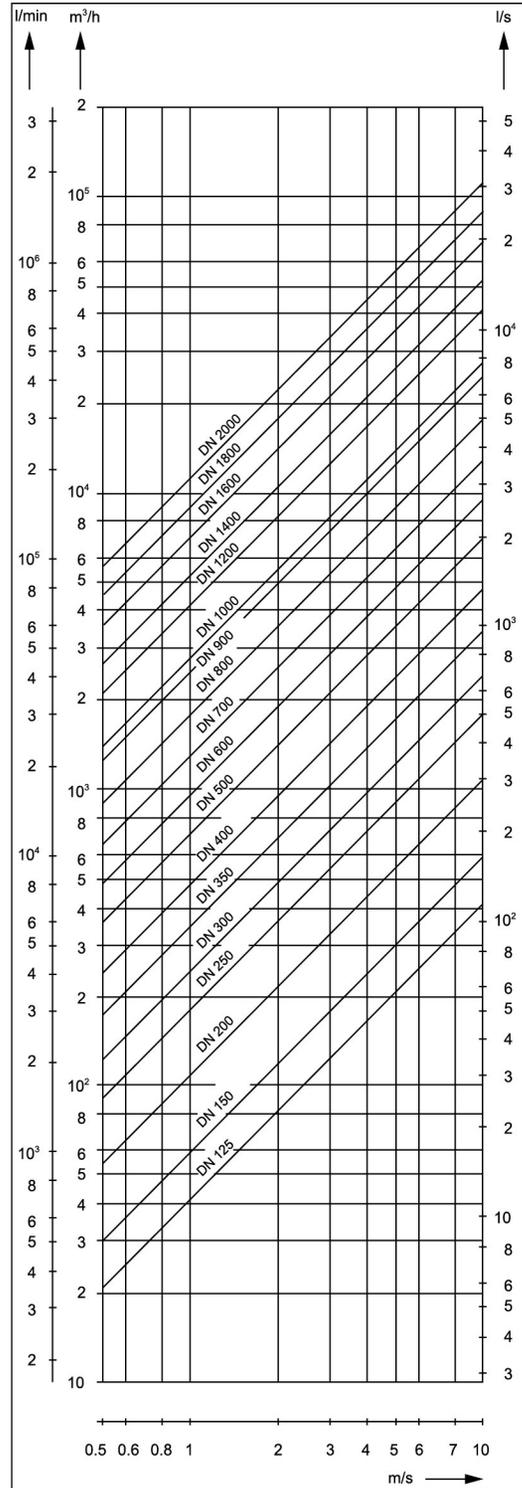
Example:

Instantaneous flow=7m³/h (max value is higher limit of range).

Velocity is between 0.5~10m/s, suitable diameter is DN20~DN65.



DN3-DN100



DN125-DN2000

Choice of Electrode Material

Material of electrodes should be chosen according to corrosion of measured fluid.

Material	Corrosion resistance
316L	Applicable:1.Domestic water, industrial water, raw well water, municipal water
	2.Dilute acid, dilute alkali, and other weak corrosion, alkali and salt solution
Hastelloy B	Applicable:1.Hydrochloric acid (concentration less than 10%) non-oxidizing acid
	2.Sodium hydroxide (concentration less than 50%) all ammonium hydroxide aqueous alkali
	3.Phosphoric acid, organic acid
	Non-applicable:Nitric acid
Hastelloy C	Applicable:1.Mixed acid, like mixed solution of chromic acid and vitriolic
	2.Oxidizing salt, like Fe ⁺⁺⁺ 、Cu ⁺⁺⁺ , sea water
	Non-applicable: Hydrochloric acid
Ti	Applicable:1.Salt. Like (1) Chloride (chloride/Mg/Al/Ca/Ammonium/Fe, etc)
	(2)Sodium salt, ammonium salt, pyochloride, sea water
	2.Concentration less than 50%, potassium hydroxide, ammonium hydroxide, barium hydroxide alkalis
	Non-applicable: Hydrochloric acid, sulfuric acid, phosphoric acid, hydrofluoric acid, and other reducibility acid
Ta	Applicable:1.Hydrochloric acid (concentration less than 40%), dilute sulfuric acid, concentrated sulfuric acid, not including fuming sulfuric acid
	2.Chlorine dioxide, ferric chloride, hypochlorous acid, sodium cyanide, aluminium acetate
	3.Hydrogen nitrate, including fuming nitric acid, and other oxidizing acid, aqua regia whose temperature is less than 80 C
	Non-applicable: Alkali, hydrofluoric acid
Pt	Applicable: Nearly all acid, alkali, salt solution, including fuming sulfuric acid, fuming nitric acid, etc
	Non-applicable: Aqua regia, ammonium salt
Tungsten Carbide	Applicable: Pulp, sewage, anti-interference of solid particle
	Non-applicable: Inorganic acid, organic acid, chloride

Choice of Lining Material

Lining material should be chosen according to corrosion, abrasiveness, and temperature of measured medium. Soft or hard rubber can resist common corrosion of weak acid and alkali, max temperature is 65 °C. soft rubber has abrasive resistance, PTFE can nearly resist corrosion of strong acid and alkali, except for hot phosphoric acid, medium temperature can reach 130 °C, but it can't resist abrasiveness. Polyurethane has good abrasiveness resistance, but it can't resist corrosion of acid and alkali, and high temperature, medium temperature should be less than 65 °C.

Lining Material	Main Function	Applicable Range
Hard rubber	<ol style="list-style-type: none"> 1. Resist hydrochloric acid, acetic acid, oxalic acid, ammonia water, phosphoric acid, and 50% sulfuric acid, sodium hydroxide, potassium hydroxide. 2. Non-resistance of strong oxidant 	<ol style="list-style-type: none"> 1. Less than 65 °C 2. Normal acid, alkali, salt solution
Soft rubber	<ol style="list-style-type: none"> 1. Good flexibility and abrasiveness resistance 2. Resist corrosion of normal low concentration acid, alkali, salt, Non-resistance of corrosion of oxidant 	<ol style="list-style-type: none"> 1. Less than 65 °C 2. Measuring normal water, sewage, mud, pulp
PTFE F46 PFA	<ol style="list-style-type: none"> 1. The most stable material in plastic, can resist boiling hydrochloric acid, sulfuric acid, nitric acid, aqua regia. It can also resist strong alkali and all organic solvent. 2. Bad abrasiveness resistance and adhesion. 	<ol style="list-style-type: none"> 1. -40 °C ~ +130 °C (PTFE) -40 °C ~ +180 °C (F46) -40 °C ~ +200 °C (PFA) 2. Strong corrosion medium, like acid and alkali 3. Hygiene medium

Choice of Protection Grade

According to GB/T4208-1993, housing protection grade can be divided into:

IP65, sprayed type, which means it is available to spray to flowmeter by faucet in all directions, pressure is 30kPa, water yield is 12.5L/min, distance is 3m.

IP67, soaked type, which means it can soak into water in short time, during experiment, the highest point should be soaked for 30 minutes in 150cm.

IP68, under type, which means it can work in long time, and the largest width should be negotiated between manufacturer and users.

The principle of choosing protection grade should be based on above requirements and actual conditions. If the flowmeter is underground, always under water, then IP68 is the best option; if on the ground, IP65 is the option.

Correct Installation of Electromagnetic Flowmeter

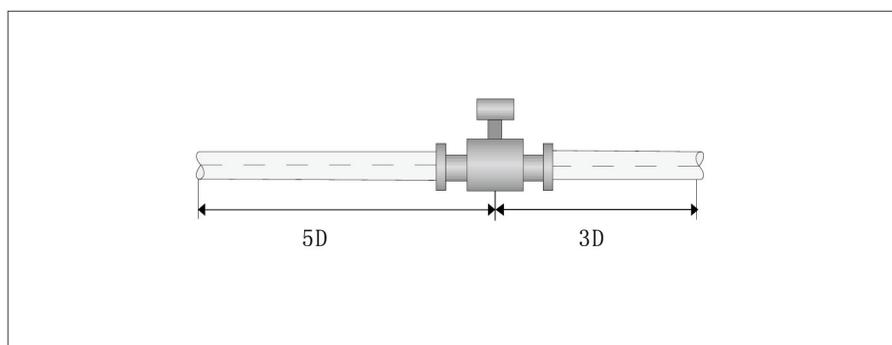
1. Choice of Installation Place

- Choosing no negative pressure in measuring tube;
- Avoiding being installed near motor, transformer, and other strong current equipment, to avoid jammer;
- Avoiding being installed near strong corrosion gas;
- Avoiding being installed in separated place, when measuring mixed fluid;
- Avoiding being under direct sunlight, ambient temperature should be $-25\sim 60^{\circ}\text{C}$;
- Choosing place without or less vibration, if too much vibration, fixed support should be installed before and behind the pipe;
- Choosing relative humidity is $5\%\sim 90\%$;
- Avoiding being installed in place which can be exposed to rain or immersed.

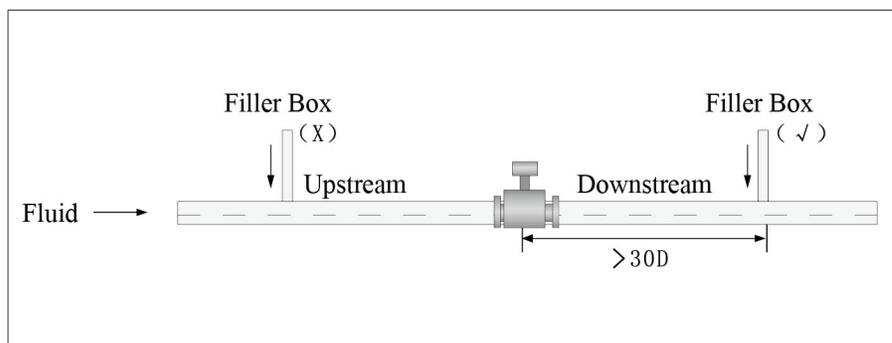
2. Demands of straight length: (D is the diameter of flowmeter)

Electromagnetic flowmeter has less demands for straight length forward and backward, usually as for 90° bend, T pattern three way, reducer, widely open valve, it must have $5D$ straight length near axis of spindle, not headface of sensor; as for different aperture valve, such as adjustable aperture valve, it must have $10D$ straight length. As for backward, it only needs $3D$ straight length.

As following picture shows:



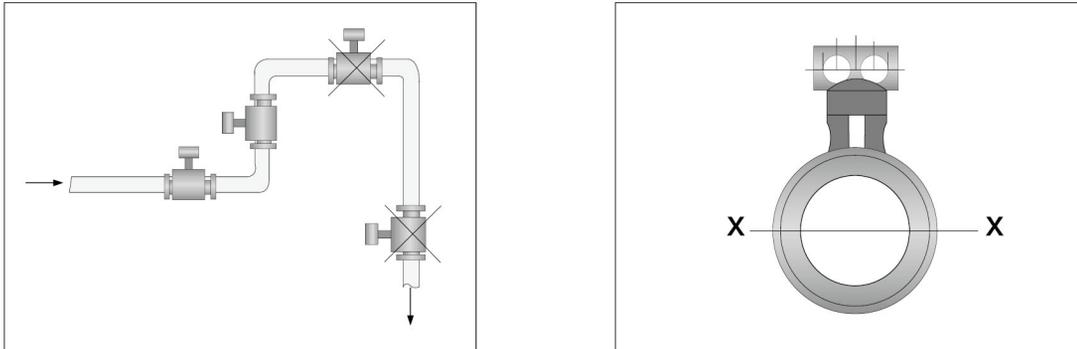
When measuring different medium of mixed fluid, distance between mixing point and flowmeter should be $>30D$, as following picture shows:



3. Installation and Direction of Flow

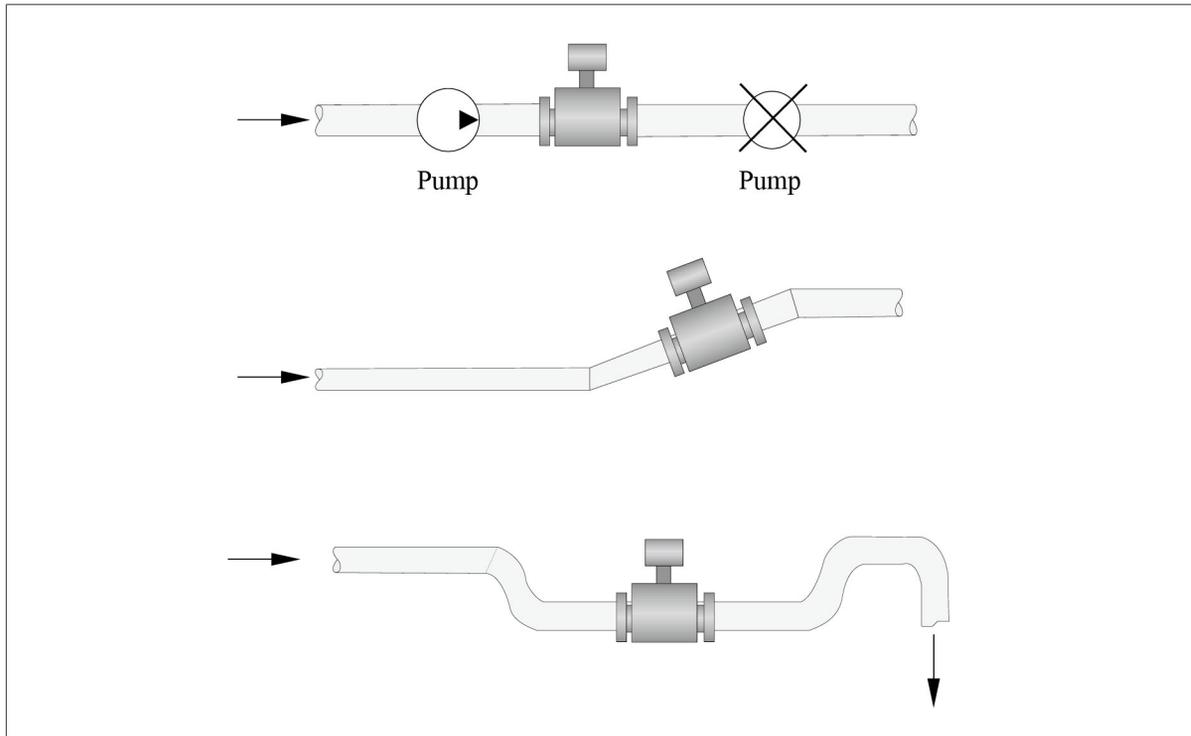
Electromagnetic flowmeter can be installed horizontal, vertical, bias to the pipe:

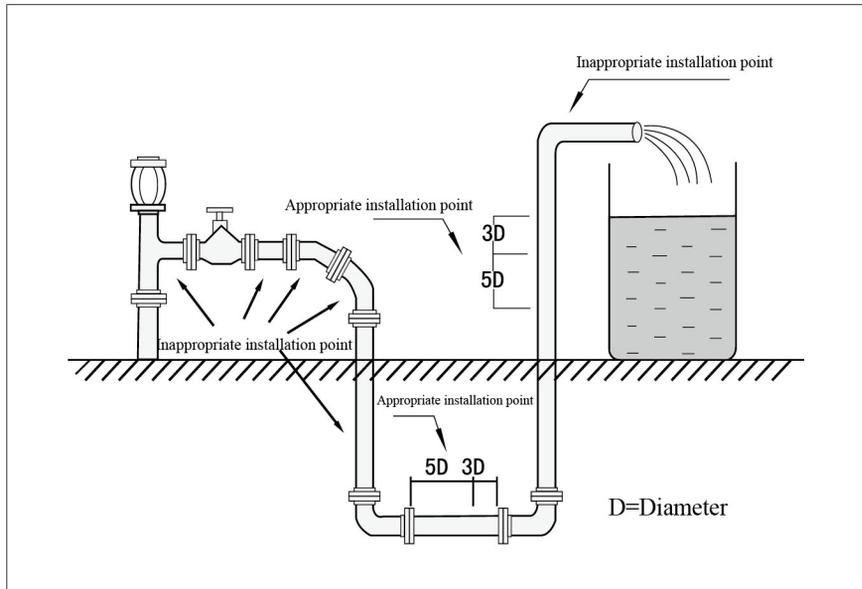
When horizontal installation, axis of electrode should be horizontal, which prevents short insulation of electrodes due to bubble within fluid, and prevents electrodes being covered by sediment in fluid. Sensor shouldn't be installed in the highest point, to avoid gas accumulation.



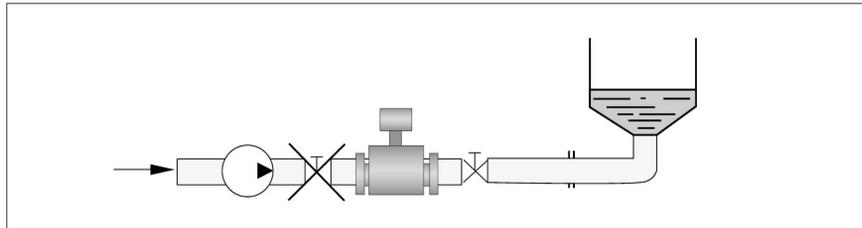
When vertical installation, direction of flow should be upward, so that when no flow or small flow, heavier solid particle in fluid will sink, and lighter material will rise to leave electrode district, when measuring solid and liquid medium, it can avoid rubbing between sediment of solid and uneven lining. As following picture shows.

Measuring pipe of sensor should be full of fluid, and have some backpressure. In order to prevent negative pressure (damaging lining), electromagnetic flowmeter can't be installed behind the pump, but before the pump; when bias installation, it must be installed in rising pipe; when installed in discharged pipe, it must be installed in lower point of pipe.

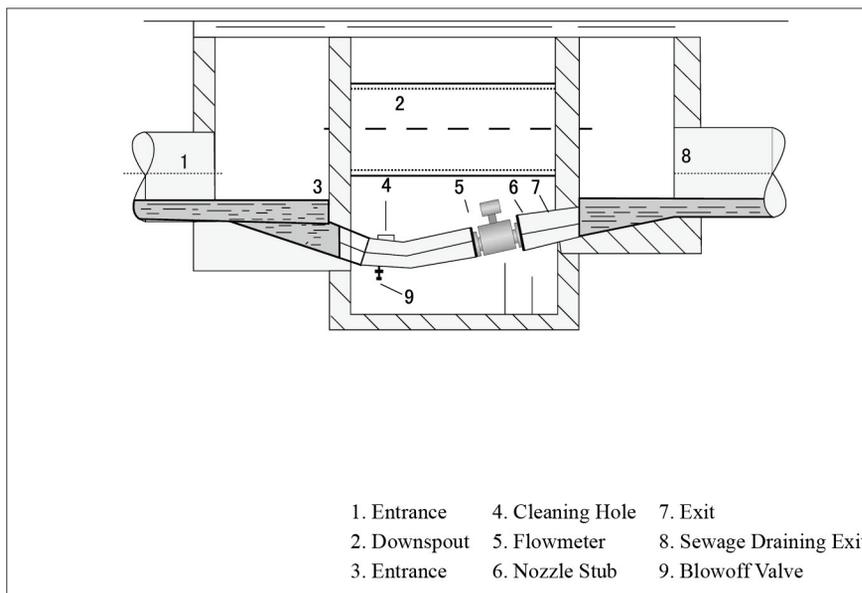




Controlling valve and stopping valve should be installed in downstream sensor, not upstream.

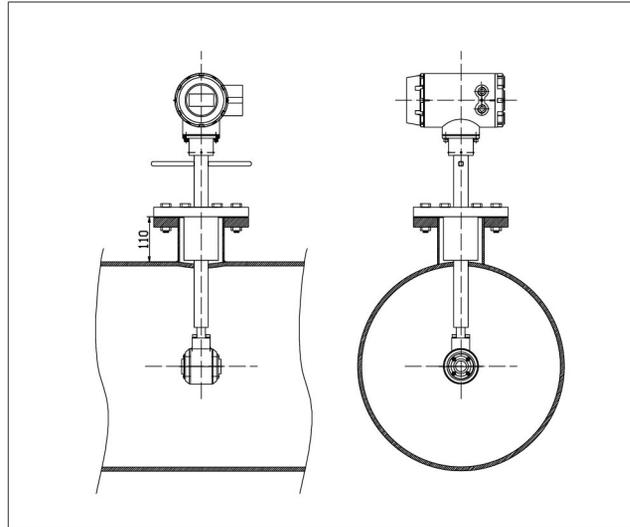


Methods of installing flowmeter in measuring well



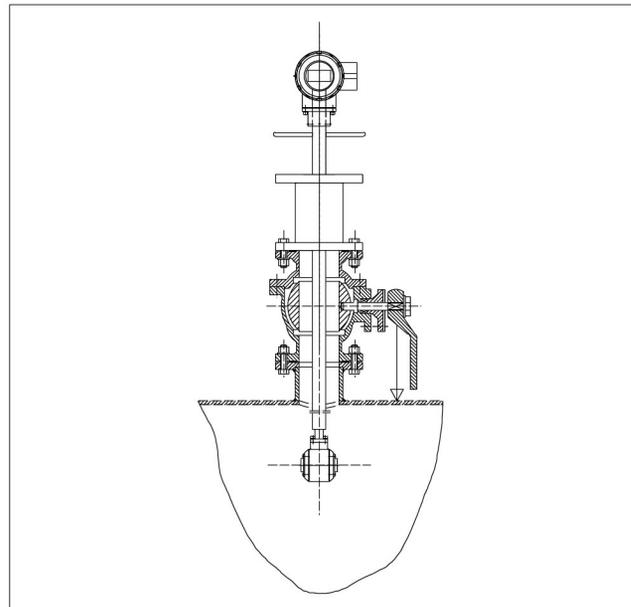
4. Installation Picture of Insertion Flowmeter

Standard Flange Insertion Electromagnetic Flowmeter



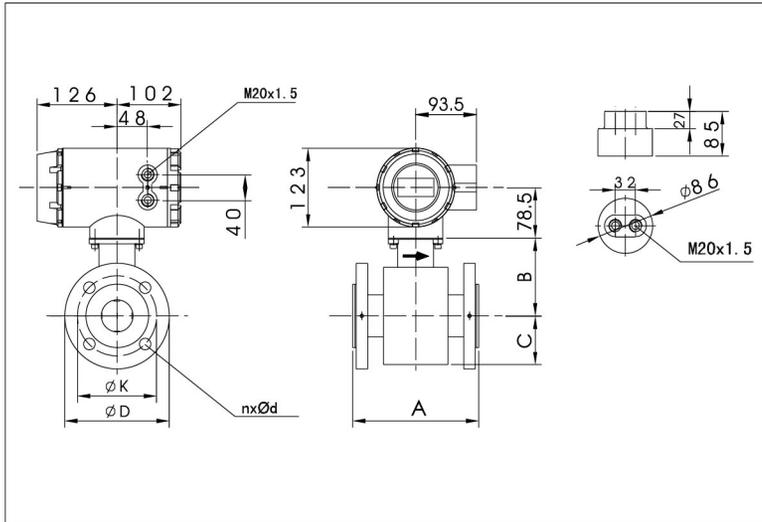
Open hole of DN100 in the pipe, then weld installing boss, which weld 100mm long, DN100 pipe and flange of DN100, PN1.6MPa. Then install standard flange insertion flowmeter on the flange.

Standard Online Plug Electromagnetic Flowmeter

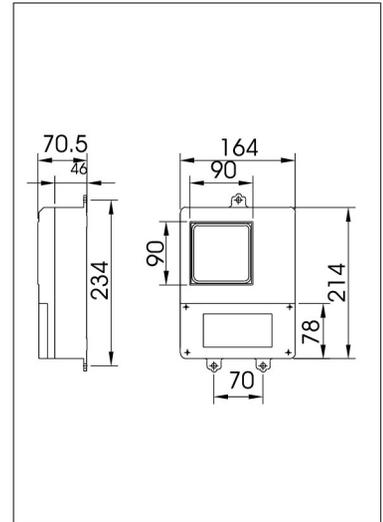


Based on the foundation of installing boss on standard flange insertion flowmeter, it will add fully-on ball valve. Users can pump the standard online plug insertion flowmeter to the highest point, cut off ball valve, take out flowmeter, under the circumstance of no cutting medium.

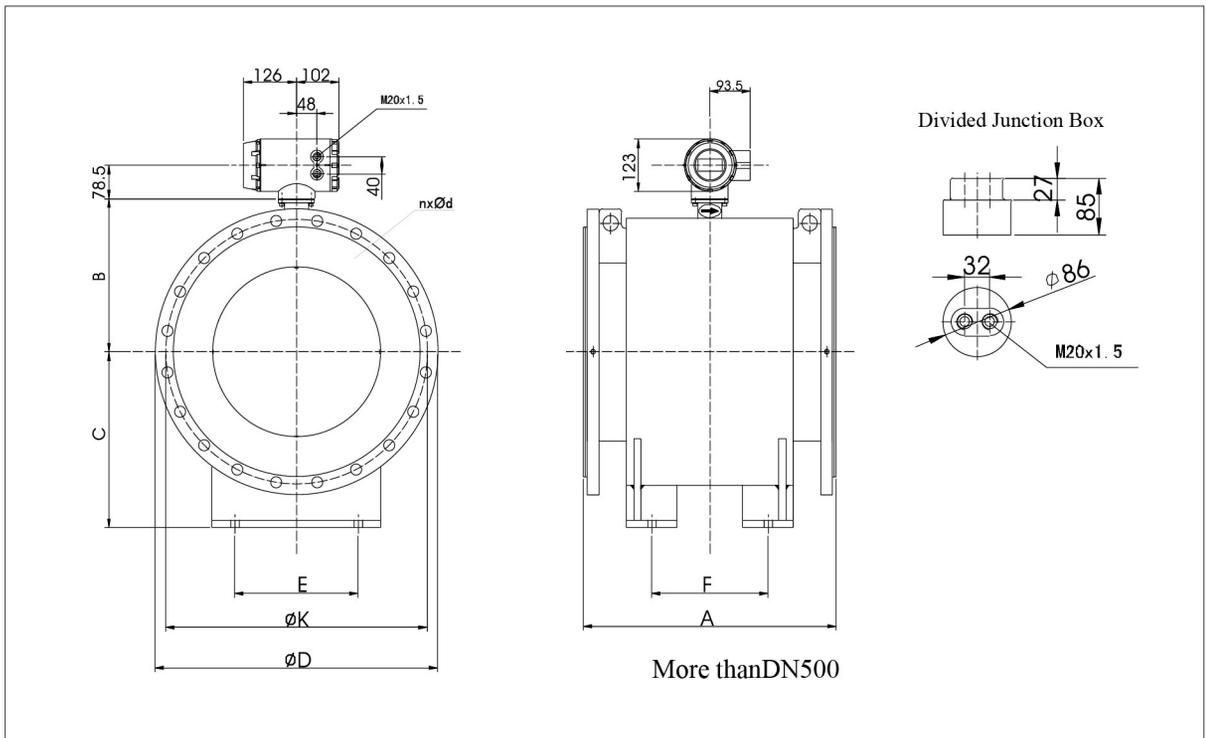
Outline Dimensional Drawing



DN15-DN450 Pipe Electromagnetic Flowmeter



Divided Type Transmitter



More than DN500

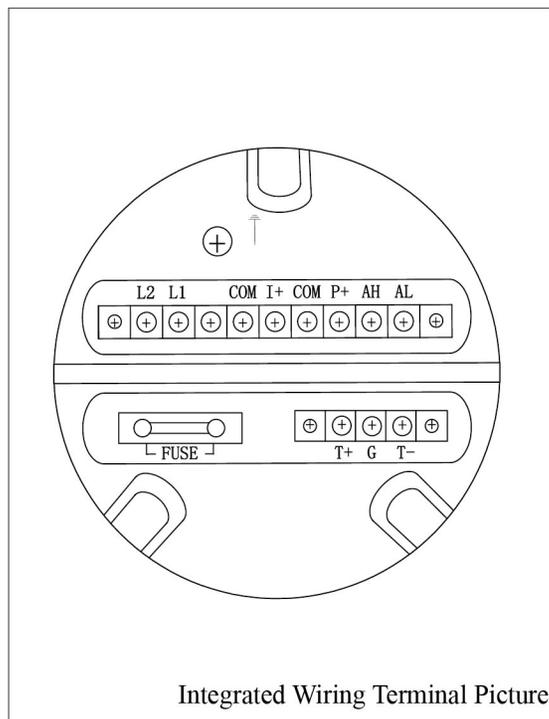
More than DN500 Pipe Electromagnetic Flowmeter

Dimension Chart of Electromagnetic Flowmeter

DN	Rated Pressure	Dimension			Unit: mm		PTFE Lining/Rubber Lining				
	MPa	A	B	C	E	F	ØD	ØK	nxØd		
10	4.0	150	95	50			90	60	4xØ14		
15							95	65	4xØ14		
20							105	75	4xØ14		
25			100	55			4xØ14				
32			105	60			4xØ18				
40			110	65			4xØ18				
50		197/202	121	76			4xØ18				
65			130	85			8xØ18				
80			135	90			8xØ18				
100	1.6	247/252	145	100			220	180	8xØ18		
125		247/252	161	116			245	210	8xØ18		
150		297/302	171	126			280	240	8xØ22		
200		348/352	199	154			335	295	12xØ22		
250		398/402	224	179			405	355	12xØ26		
300	1.0	498/502	249	204	300	240	440	400	12xØ22		
350			274	229			500	460	16xØ22		
400		598/602	305	260			565	515	16xØ26		
450			330	285			615	565	20xØ26		
500			/600	360			403	670	620	20xØ26	
600		/600	410	453			270	780	725	20xØ30	
700		/700	467	560			400	350	895	840	24xØ30
800		/800	517	610				400	1010	950	24xØ33
900		/900	567	660				470	1110	1050	28xØ33
1000	/1000	617	712	570	1225	1160		28xØ36			
1200	0.6	/1200	719	814	600	710	1400	1340	32xØ33		
1400		/1400	819	914		900	1625	1560	36xØ36		
1600		/1600	919	1036	800	1040	1825	1760	40xØ36		
1800		/1800	1021	1138		1180	2045	1970	44xØ39		
2000		/2000	1121	1238		1350	2265	2180	48xØ42		

Electrical Connection

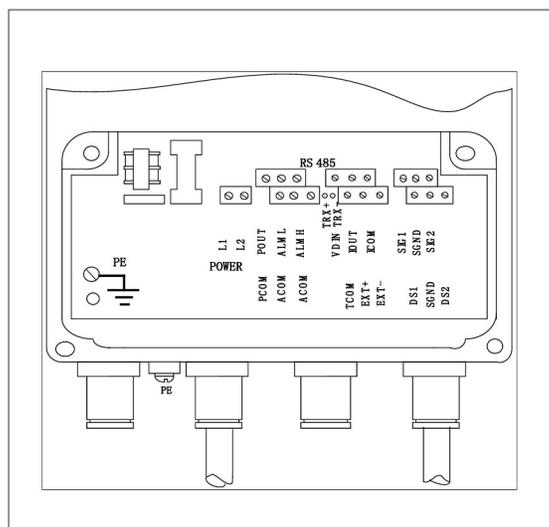
1. Integrated Type Terminal Wiring Drawing



Integrated Type Wiring Terminal Mark Definition

I+:	Current Output
COM:	Current Output Point
P+:	Bi-directional Flow Frequency (Pulse) Output
COM:	Frequency (Pulse) Output Point
AL:	Lower Limit Alarm Output
AH:	Higher Limit Alarm Output
COM:	Alarm Output Point
FUSE:	Input Power Fuse
T+:	Communication Input
T-:	Communication Input
G:	RS232 Communication Point
L ₁ :	220V (24V) Power Input
L ₂ :	220V (24V) Power Input

2. Divided Type Terminal Wiring Drawing



Divided Type Wiring Terminal Mark Definition

SIG 1	Signal 1	Connecting to Divided Type Sensor
SGND	Signal Point	
SIG 2	Signal 2	
DS 1	Drive Shield 1	
DS 2	Drive Shield 2	
EXT +	Excitation Current +	
EXT -	Excitation Current -	Analog Current Output
VDIN	Two-wire 24V Contact	
IOUT	Analog Current Output	
ICOM	Analog Current Output Point	Frequency (Pulse) Output
POUT	Flow Frequency (Pulse) Output	
PCOM	Frequency (Pulse) Output Point	Two-way Alarm Output
ALMH	Higher Limit Alarm Output	
ALML	Lower Limit Alarm Output	
ACOM	Alarm Output Point	Communication Input
TRX +	Communication Input	
TRX -	Communication Input	
TCOM	232 Communication Point	

Parameter Setting

8.1.1 Basic Parameter Setting Menu Chart

Parameter No.	Parameter Characters	Setting Method	Parameter Range
1	Pipe Diameter	Selected	3mm-3000mm
2	Flow Unit	Selected	L/h、 L/m、 L/s、 m3/h、 m3/m、 m3/s
3	Range Setting	Value	0-99999
4	Choice of Flow Direction	Selected	Forward Direction, Reverse Direction
5	Flow Totalizer Unit	Selected	0.001m3~1m3、 0.001L~1L
6	Measuring Damping Time	Selected	(1、 2、 3、 4、 6、 8、 10、 15、 30、 50) s
7	Small Signal Resection Point	Value	0%-599.99%
8	Allowance of Resection Display	Selected	Allowance/Prohibition
9	Communication Address	Value	0~9
10	Communication Speed	Selected	300~38400
11	Pulse Output Method	Selected	Frequency/Pulse
12	Pulse Unit Equivalent	Selected	0.001m3~1m、 0.001L~1L
13	Total Clear Password	Value	0~99999
14	Current Output Type	Selected	0mA~10mA/4mA~20mA
15	Frequency Output Range	Selected	1HZ~5999HZ
16	Flow Zero Correction	Value	0~±9999

8.1.2 Advanced Parameter Setting Menu Chart

Parameter No.	Parameter Characters	Setting Method	Parameter Range
1.	Flow Zero Correction	Value	0~±9999
2.	Empty Alarm Allowance	Selected	Allowance/Prohibition
3.	Empty Alarm Threshold Value	Value	599.99%
4.	Upper Limit Alarm Allowance	Selected	Allowance/Prohibition
5.	Upper Limit Alarm Value	Value	000.0%~599.99%
6.	Lower Limit Alarm Allowance	Selected	Allowance/Prohibition
7.	Lower Limit Alarm Value	Value	000.0%~599.99%
8.	Reverse Direction Output Allowance	Selected	Allowance/Prohibition
9.	Excitation Alarm Allowance	Selected	Allowance/Prohibition
10.	Sensor Code 1	Set by Users	Factory Date(0~99999)
11.	Sensor Code 2	Set by Users	Product No. (0~99999)
12.	Choice of Excitation Method	Selected	Method 1、 2、 3
13.	Sensor Coefficient Value	Value	0.0000~5.9999
14.	Current Zero Correction	Value	0.0000~1.9999
15.	Current Full Correction	Value	0.0000~3.9999
16.	Factory Calibration Coefficient	Value	0.0000~5.9999
17.	Flowmeter Code 1	Set by Manufacturer	Factory Date 0~99999
18.	Flowmeter Code 2	Set by Manufacturer	Product No. 0~99999
19.	Flow Correction Allowance	Set by Manufacturer	Allowance/Prohibition
20.	Flow Correction Point 1	Set by Manufacturer	Set by Manufacturer
21.	Flow Correction Value 1	Set by Manufacturer	Set by Manufacturer
22.	Flow Correction Point 2	Set by Manufacturer	Set by Manufacturer
23.	Flow Correction Value 2	Set by Manufacturer	Set by Manufacturer
24.	Flow Correction Point 3	Set by Manufacturer	Set by Manufacturer
25.	Flow Correction Value 3	Set by Manufacturer	Set by Manufacturer
26.	Flow Correction Point 4	Set by Manufacturer	Set by Manufacturer
27.	Flow Correction Value 4	Set by Manufacturer	Set by Manufacturer
28.	Forward Direction Total Low	Modified	00000~99999
29.	Forward Direction Total High	Modified	0000~9999
30.	Reverse Direction Total Low	Modified	00000~99999
31.	Reverse Direction Total High	Modified	0000~9999
32.	Language	Selected	Chinese/English
33.	Secret Code 1	Changed by Users	00000~99999
34.	Secret Code 2	Changed by Users	00000~99999
35.	Secret Code 3	Changed by Users	00000~99999

Standard Electromagnetic Flowmeter SE11 Order Information

SE11 Series Electromagnetic Flwometer DN10-DN2200

Accuracy≤0.5%

Model	SE11																	
Installation Method																		
Flange Type	F																	
Wafer Type	W																	
Lining																		
Hard Rubber	H																	
Soft Rubber	S																	
PTFE	T																	
P46	R																	
PFA	P																	
Others	Z																	
Diameter	Standard Rated Pressure																	
DN10	4.0MPa	10																
DN15	4.0MPa	15																
DN20	4.0MPa	20																
DN25	4.0MPa	25																
DN32	4.0MPa	32																
DN40	4.0MPa	40																
DN50	4.0MPa	50																
DN65	4.0MPa	65																
DN80	4.0MPa	80																
DN100	1.6MPa	1H																
DN125	1.6MPa	1Q																
DN150	1.6MPa	1F																
DN200	1.6MPa	2H																
DN250	1.6MPa	2F																
DN300	1.0MPa	3H																
DN350	1.0MPa	3F																
DN400	1.0MPa	4H																
DN450	1.0MPa	4F																
DN500	1.0MPa	5H																
DN600	1.0MPa	6H																
DN700	1.0MPa	7H																
DN800	1.0MPa	8H																
DN900	1.0MPa	9H																
DN1000	1.0MPa	1T																
DN1200	0.6MPa	2M																
DN1400	0.6MPa	4M																
DN1600	0.6MPa	6M																
DN1800	0.6MPa	8M																
DN2000	0.6MPa	OM																

Model	SE11																	
Electrode Material	Grounding Electrode Material																	
316L	/No		S															
Hastelloy B	/No		B															
Hastelloy C	/No		H															
Ti	/No		M															
Ta	/No		T															
Pt	/No		P															
Tungsten Carbide	/No		U															
316L	/Yes		E															
Hastelloy B	/Yes		N															
Hastelloy C	/Yes		O															
Ti	/Yes		I															
Ta	/Yes		Q															
Pt	/Yes		G															
Tungsten Carbide	/Yes		V															
Others			Z															
Rated Pressure	0.6Mpa		B															
	1.0Mpa		C															
	1.6Mpa		D															
	2.5Mpa		E															
	4.0Mpa		F															
	Others		Z															
Flange Material	/	Companion Flange																
No (Wafer Type)	/	No	0															
Carbon Steel	/	No	1															
Stainless Steel	/	No	3															
Carbon Steel	/	Yes	5															
Stainless Steel	/	Yes	7															
Grounding Ring	No		A															
	Grounding Ring		C															
Temperature Range	Standard Temperature	< 65 °C	0															
	Standard Temperature	< 130 °C	1															
	Standard Temperature	< 180 °C	2															
	Standard Temperature	< 200 °C	3															
Converter Form	Integrated		T															
	Divided		R															
Output Model	(4~20)mA+ Pulse		01															
	(4~20)mA+ HART Communication		02															
	(4~20)mA+ Modbus Protocol		03															
	(4~20)mA+ Profibus Protocol		04															
Power Supply	220VAC		G															
	24VDC		K															
Protection Level	IP65		0															
	IP67		1															
	IP68		2															
Anti-explosion Level	No		0															
	Explosion Suppression	Exdeia II CT3~T6	EX															
Cable Length	5m		R5															
	Client Specify (50m at most)		RX															

High Accuracy Electromagnetic Flowmeter SE12 Order Information

SE12 Series Electromagnetic Flowmeter DN10-DN1000

Accuracy≤0.25%

Model	SE12																			
Installation Method																				
Flange Type		F																		
Wafer Type		W																		
Lining																				
Hard Rubber		H																		
Soft Rubber		S																		
PTFE		T																		
PFA		P																		
Others		Z																		
Diameter	Standard Rated Pressure																			
DN10	4.0MPa	10																		
DN15	4.0MPa	15																		
DN20	4.0MPa	20																		
DN25	4.0MPa	25																		
DN32	4.0MPa	32																		
DN40	4.0MPa	40																		
DN50	4.0MPa	50																		
DN65	4.0MPa	65																		
DN80	4.0MPa	80																		
DN100	1.6MPa	1H																		
DN125	1.6MPa	1Q																		
DN150	1.6MPa	1F																		
DN200	1.6MPa	2H																		
DN250	1.6MPa	2F																		
DN300	1.0MPa	3H																		
DN350	1.0MPa	3F																		
DN400	1.0MPa	4H																		
DN450	1.0MPa	4F																		
DN500	1.0MPa	5H																		
DN600	1.0MPa	6H																		
DN700	1.0MPa	7H																		
DN800	1.0MPa	8H																		
DN900	1.0MPa	9H																		
DN1000	1.0MPa	1T																		

Model	SE12																	
Electrode Material	Grounding Electrode Material																	
316L	/No		S															
Hastelloy B	/No		B															
Hastelloy C	/No		H															
Ti	/No		M															
Ta	/No		T															
Pt	/No		P															
Tungsten Carbide	/No		U															
316L	/Yes		E															
Hastelloy B	/Yes		N															
Hastelloy C	/Yes		O															
Ti	/Yes		I															
Ta	/Yes		Q															
Pt	/Yes		G															
Tungsten Carbide	/Yes		V															
Others			Z															
Rated Pressure	0.6Mpa		B															
	1.0Mpa		C															
	1.6Mpa		D															
	2.5Mpa		E															
	4.0Mpa		F															
	Others		Z															
Flange Material	/	Companion Flange																
No (Wafer Type)	/	No	0															
Carbon Steel	/	No	1															
Stainless Steel	/	No	3															
Carbon Steel	/	Yes	5															
Stainless Steel	/	Yes	7															
Grounding Ring	No		A															
	Grounding Ring		C															
Temperature Range	Standard Temperature	<65℃	0															
	Standard Temperature	<130℃	1															
	Standard Temperature	<180℃	2															
	Standard Temperature	<200℃	3															
Converter Form	Integrated		T															
	Divided		R															
Output Model	(4~20)mA+ Pulse			01														
	(4~20)mA+ HART Communication			02														
	(4~20)mA+ Modbus Protocol			03														
	(4~20)mA+ Profibus Protocol			04														
Power Supply	220VAC												G					
	24VDC												K					
Protection Level	IP65																0	
	IP67																1	
	IP68																2	
Anti-explosion Level	No																	0
	Explosion Suppression	ExdeiaII CT3~T6																EX
Cable Length	5m																	R5
	Client Specify (50m at most)																	RX

Sanitary Electromagnetic Flowmeter (OMTW) SE13 Order Information

SE13 Series Electromagnetic Flowmeter DN10-DN125

Accuracy≤0.5%

Model	SE13																			
Craft Joint																				
Three-hoop (3A)		T																		
DIN 11851		R																		
Others		Z																		
Lining																				
F46		P																		
PFA		F																		
Diameter																				
DN10		10																		
DN15		15																		
DN20		20																		
DN25		25																		
DN32		32																		
DN40		40																		
DN50		50																		
DN65		65																		
DN80		80																		
DN100		1H																		
DN125		1Q																		
Electrode Material	Grounding Electrode Material																			
316L	/No						S													
Hastelloy B	/No						B													
Hastelloy C	/No						H													
Ti	/No						M													
Ta	/No						T													
Pt	/No						P													
Temperature Range	Standard Temperature <130℃ Hyperthermia <200℃							1 2												
Converter Form	Integrated Divided							T R												
Power Supply	220VAC 24VDC								G K											
Output Model	(4~20)mA+ Pulse (4~20)mA+ HART Communication (4~20)mA+ Modbus Protocol (4~20)mA+ Profibus Protocol																			01 02 03 04
Anti-explosion Level	IP65																			0
Cable Length	5m Client Specify (50m at most)																			R5 RX



Continued

Model	SE14													
Electrode Material														
316L														
Hastelloy B														
Hastelloy C														
Rated Pressure														
0.6Mpa														
1.0Mpa														
1.6Mpa														
Flange Material / Companion Flange														
SS / No														
SS / Carbon Steel														
SS / SS														
Temperature Range														
Temperature < 130 C														
Converter Form														
Integrated														
Divided														
Output Mode														
(4~20)mA+ Pulse														
(4~20)mA+ HART Communication														
(4~20)mA+ Modbus Protocol														
(4~20)mA+ Profibus Protocol														
Power Supply														
220VAC														
24VDC														
Protection Level														
IP65														
IP67														
IP68														
Anti-explosion Level														
No														
Explosion Suppression Exdeia II CT3~T6														
Cable length														
5m														
Customer specified(Up to 50 meters)														

Electrode Material Anti-corrosion Selection Reference Table

Sign Notes: A-Suitable; B-Available, but short life; N-Not-available;
X-Corrosion Resistance; Blank-No Data; Sat-Saturate.

Medium	Concentration%	Temperature C	316L	HC	Ti	Ta	Pt
Sulfuric Acid	2~5	Room Temperature	N	X	X	A	A
		Boiling Point	N	N	X	N	A
	10	Room Temperature	N	X	X	A	A
		Boiling Point	N	N	N	N	A
	25~60	Room Temperature	N	X	B	A	A
		Boiling Point	N	N	N	N	A
	70~85	Room Temperature	N	X	N	A	A
		Boiling Point	N	N	N	N	A
	90~96	Room Temperature	X	X	N	A	A
		Boiling Point	N	N	N	N	A
Hydrochloric Acid	0.5~5	Room Temperature	N	X	A	A	A
		Boiling Point	N	N	A	X	X
	10~20	Room Temperature	N	B	A	A	A
		Boiling Point	N	N	N	X	X
	37	Room Temperature	B	N	N	A	X
		Boiling Point	N	N	N	X	X
Nitric Acid	7~65	Room Temperature	X	X	X	A	A
		Boiling Point	X	N	X	A	A
	100	Room Temperature	N		X	A	A
		Boiling Point			X	A	A
Chromic Acid	10	Room Temperature	A	A	A	A	A
		Boiling Point	N	A	A	A	N
	50	Room Temperature	N	A	A	A	A
		Boiling Point	N	A	A	A	A
	100	Room Temperature	N	N		A	A
		Boiling Point	N	N		A	A
Aqua Regia	100	Room Temperature	N	N	B	A	N
		Boiling Point	N	N	N	N	A
Hydrofluoric Acid	1~50	Room Temperature	N	N	N	N	A
	98~100	Boiling Point	N	N	N	N	A
Phosphoric Acid	1~30	Room Temperature	X	X	X	A	A
	45~Sat	Room Temperature	B	X	B	A	A
	80~Sat	Boiling Point	N	N	N	A	A
Acetic Acid	5~10	Room Temperature	A	A	A	A	A
	50 over	Room Temperature	N	A	A	A	A
	Sat	Room Temperature	A	A	A	X	A
Methanol	100	Room Temperature	A	A	A	X	A
	100	Boiling Point	B	A	B	X	A
Sewage		Room Temperature	A	A	A	A	A
Sea Water		Room Temperature	B	A	A	A	A

Over next page

Continued

Medium	Concentration%	Temperature C	316L	HC	Ti	Ta	Pt
Formic Acid	10~50	Room Temperature	N	A	A	A	A
		Boiling Point	N	B	A	A	A
	50~100	Room Temperature	N	B	B	A	A
		Boiling Point	N	N	N	A	A
Oxalate Acid	5~10	Room Temperature	A	A	A	X	A
	25~50	Room Temperature		A	A	X	A
		Room Temperature		N	B	X	A
	5~Sat	Boiling Point	N	N	N	X	A
Citric Acid	5~25	Room Temperature	A	A	A	X	A
		Boiling Point	A	A	A	X	A
	50	Room Temperature	A	A	A	X	A
		Boiling Point	A	A	B	X	A
Ferric Chloride	10~Sat	Room Temperature	N	A	A	A	N
		Boiling Point	N	A	A	A	N
Sodium Chloride	100	Room Temperature	B	A	A	X	A
		Boiling Point	B	A	A	X	A
Ammonium Chloride	10~20	Room Temperature	N	B	B	A	A
		Boiling Point	N	B	B	A	A
	50~100	Room Temperature	N	B	B	X	A
		Boiling Point	N	B	B	X	A
Calcium Chloride	100	Room Temperature	N	N		A	A
		Boiling Point		X		A	A
Magnesium Chloride	10~30	Room Temperature	N	B	B	A	A
		Boiling Point	N	B		X	A
Nitrate	20~50	Room Temperature	A	A	A	X	A
		Boiling Point	A	A	A	X	A
	80~Sat	Room Temperature	A	A	A	X	A
		Boiling Point	N	A	A	X	A
Sodium Sulfate	Sat	Room Temperature	A	A	A	A	A
		Boiling Point	N	N	N	A	A
Fatty Acid	100	Room Temperature	A	A	A	X	A
	100	Boiling Point	B	A	A	X	A
Lactic Acid	1.5~10	Room Temperature	A	A	A	X	
	1.5~10	Boiling Point	N	A	A	X	
	Sat	Boiling Point	N	N	A	A	
Aluminium Nitrate	10	Room Temperature	A	X	A	A	A
	10~100	Room Temperature		X	A	X	
	57	120 C		X	A	X	
Paper Pulp		Room Temperature	B	A	A	A	A
Lime Slurry		Room Temperature	N	B	A	A	A

Common Fluid Conductivity Reference Table

Medium	Concentration%	Temperature °C	Conductivity(s/m)
Sulfuric Acid	5	18	20.85×10^{-2}
	85		98.50×10^{-3}
	99.4		85.00×10^{-4}
Hydrochloric Acid	5	15	39.48×10^{-2}
	40		51.52×10^{-2}
Nitric Acid	6.2	18	31.23×10^{-2}
	31		79.19×10^{-2}
	62		49.04×10^{-2}
Hydrofluoric Acid	0.004	18	2.50×10^{-4}
	0.121		21.00×10^{-4}
	4.80		59.3×10^{-3}
	29.80		34.11×10^{-2}
Acetic Acid	0.30	18	3.18×10^{-4}
	20		16.05×10^{-4}
	70		2.35×10^{-4}
	99.70		4.00×10^{-8}
	100 (simple)	25	1.20×10^{-8}
Phosphoric Acid	10	15	56.6×10^{-3}
	70		14.73×10^{-2}
	87		70.90×10^{-3}
Ammonia Water	0.10	15	2.51×10^{-4}
	8.03		10.38×10^{-4}
	30.50		1.93×10^{-4}
Butyric Acid	1.00	18	4.55×10^{-4}
	50.04		2.96×10^{-4}
	70.01		5.6×10^{-7}
	100		6.0×10^{-8}
Hydrobromic Acid	5	15	19.08×10^{-2}
	15		49.40×10^{-2}
	100		8.0×10^{-4}
Barium Chloride	5	18	3.89×10^{-2}
	24		15.34×10^{-2}
Potassium Sulfate	5	18	45.80×10^{-3}

Medium	Concentration%	Temperature °C	Conductivity(s/m)
Formic Acid	4.94	18	55.00×10^{-4}
	39.955		98.40×10^{-4}
	100		2.80×10^{-4}
	10 (simple)		5.60×10^{-5}
Oxalate Acid	3.5	18	5.08×10^{-2}
	5	18	67.20×10^{-3}
Sodium Chloride	10		12.11×10^{-2}
	26		21.51×10^{-2}
Calcium Chloride	5		6.43×10^{-2}
	25		17.81×10^{-2}
	35		13.66×10^{-2}
Ammonium Chloride	5	18	91.80×10^{-3}
	25		40.25×10^{-2}
Potassium Chloride	5	18	69.90×10^{-3}
	21		28.10×10^{-2}
Magnesium Chloride	5	18	68.30×10^{-3}
	30		10.61×10^{-2}
Sodium Sulfate	5	18	40.90×10^{-3}
	15		88.60×10^{-3}
Copper Sulfate	2.50	18	10.90×10^{-3}
	17.50		45.80×10^{-3}
Nitrate	5	15	45.4×10^{-3}
	22		16.25×10^{-2}
Ammonium Sulfate	5	15	55.20×10^{-3}
	31		23.21×10^{-2}
Ammonium Nitrate	5	15	55.20×10^{-3}
	50		23.21×10^{-2}
Zinc Chloride	2.5	15	27.60×10^{-3}
	30		92.60×10^{-3}
	60		36.9×10^{-3}
Sodium Carbonate	5	18	45.10×10^{-3}
	15		83.60×10^{-3}
Urea	100	145	5.0×10^{-3}

Configuration Data Table

Client Name:		Date:	
Contact Person:		Department:	
Tel:		E-mail:	
Product Model:		Item No:	
Medium:	<input type="checkbox"/> Fluid	(with or without solid particle	<input type="checkbox"/> Yes <input type="checkbox"/> No)
Conductivity:	more than	5 μ s	<input type="checkbox"/> Yes <input type="checkbox"/> No
Flow Range:	Max	Average	Min
Working Pressure:	Max	Average	Min
Temperature of Medium:	Max	Average	Min
Diameter of pipe:			
Flange Material:	<input type="checkbox"/> Carbon steel	<input type="checkbox"/> Stainless Steel	
Converter:	<input type="checkbox"/> Integrated	<input type="checkbox"/> Divided (cable length)	
Power Supply:	<input type="checkbox"/> 220V AC	<input type="checkbox"/> 24VDC	
Protection Level:	<input type="checkbox"/> IP65	<input type="checkbox"/> IP67	<input type="checkbox"/> IP68
Anti-explosion Request:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Electric Output:	<input type="checkbox"/> Pulse	<input type="checkbox"/> 4~20mA Current	
	<input type="checkbox"/> HART	<input type="checkbox"/> MODBUS	<input type="checkbox"/> PROFIBUS

SINIER

© SINIER 2013

SINIER

SINIER CO.,LTD.

Add:16-18 CIRCUS ROAD,ST.JOHN'S WOOD,LONDON NVV8 6PG
POST:NVV8 6PG

SINIER(NANJING)PROCESS CONTROL CO.,LTD

Add : NO.18, Ailing Road, Moling Industrial Zone, Jiangning Development District, Nanjing
SaCe: Room 307, Zhihuimofang, No.86, Yulan Road, Yuhuatai District, Nanjing
Post: 210012
T e l : 86-25-86969910
F a x : 86-25-86988066
W e b : www.sinier.com.cn
E-mail: sales@sinier.com.cn