BCST

Professional Manufacturer of Electromagnetic Flowmeter

Features

- Simple structures, firm, no movable parts and long operation life.(Guarantee in 1 year)
- No intercepting fluid parts, no pressure loss and fluid clogging.
- No mechanical inertia, quick response and good stability, application in automatic examination, adjustment & controlling.
- Measuring accuracy not influenced by physical parameters such as style, temperature, viscosity, density and pressure.
- Employ Teflon or rubber liner and different combination of electrode material such as Hastelloy C, Hastelloy B, 316L, and Titanium and adapt the need of different mediums.
- Supply many styles of flow meters such as inline type and insertion type, etc.
- Adopt EEPROM memory to measure operation data, safe and reliable protection of memory.

- Integral type flow meters and remote type flow meters.
- LCD back light display with high clearness
  (Option: LED back light display)
- Bi-direction measurement (Option)
- Approved from CE, EMC,ISO.
- Programming language: English .

★ LED display(Option)
★ Data Logging ability
★ Range-ability(turn down): 20:1
★ Reputability: Below 0.25%

Description of products

Electromagnetic flow meter is a kind of induction instrument designed by Faraday's law of electromagnetic induction to measure flow of conductive media in the tube. It adopts the technology of insertion of single chip to realize digital excitation and employs CAN local fieldbus.

Electromagnetic flow meter can realize local indication and output electrical current signal of 4-20mA which can be used to record, adjust and control. Electromagnetic flow meters are widely used in industrial sectors such as chemical industry, environmental protection, metallurgy, pharmaceutical, paper making, water supply and removal etc.
Besides measuring flow of general conductive liquid electromagnetic flow meter can measure flow of liquid-solid mixed fluid, high-viscosity fluid and salt, strong acid and strong alkali.

New generation of electromagnetic flowmeter

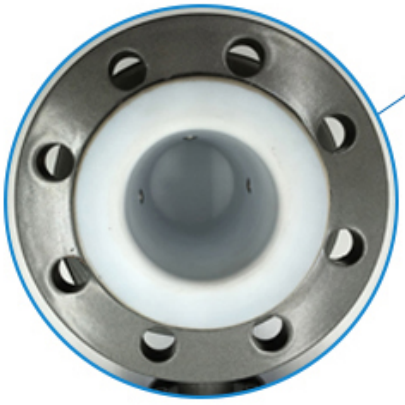
product details

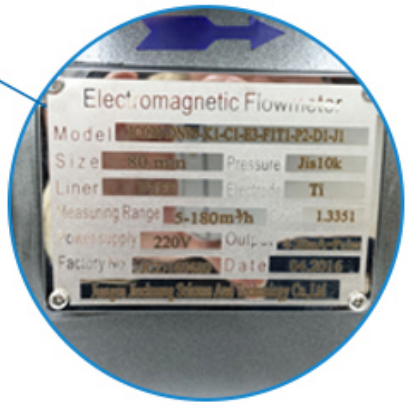
4-20ma,1-2000HZ frequency output RS485, Modbus, Hart 220VAC, 24VDC power supply protection for over flow&lighting,anti-interference

Baking paint,more durable

316LSS,HC,Ta,Ti,PT for electrode

LCD display with backlit ,English language, Dispaly for instant & total flow rate, and alarms .





PTFE(Teflon),F46,Rubber,Ebonite for liner

Stainless steel English nameplate

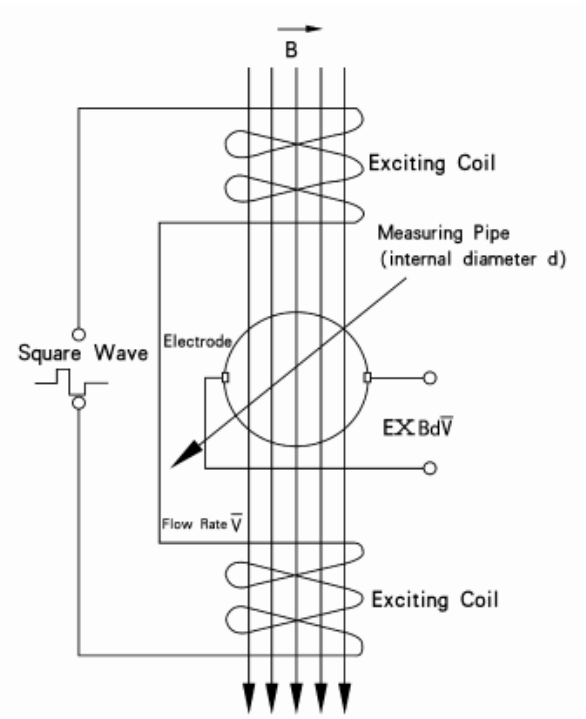
Working principle

Electromagnetic flow meter is based on Faraday's law of electro-magnetic induction. The measuring tube is a non-magnetic-conductive alloy short pipe with a inside-liner of insulated materials.

Along the pipeline the two electrodes perforate the pipe and are fixed on the measuring pipe.

The head of the electrodes is basically paralleled with inner surface of the liner. When excitation coils excited by bidirectional square-wave pulse, a working magnetic field with magnetic flux density B will generate in the direction vertical with the measuring pipeline.

At this time if the flux with specific electro-conductivity flows through the measuring pipe, the line of magnetic force will induct electromotive force E. Electromotive force E is in positive proportion to magnetic flux B, product of inside diameter d and average flow velocity v, electromotive force E (flow signal) is examined by electrodes and sent through cable to transducer. After the transducer magnifies flow signal, the flow rate of flux will be displayed, and capable of outputting pulse and analog current, used to control and adjust flow.



Working Principle

In the formula, d is a constant. Because the excitation current is constant B is also a constant.

We can know from E = KBdV that volume flow Q is in positive proportion to signal voltage E, that is, signal voltage E inducted by flow velocity is in linear relation to volume flow Q.

So if only E is measured ten flow rate Q can be defined.

This is the basic working principle of electromagnetic flow meter.

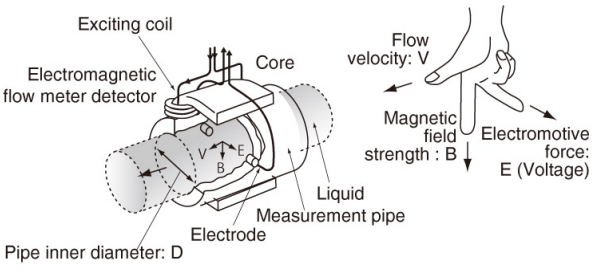
From **E=KBdV** we can know that the temperature of measured flux, density, pressure, electro-conductivity and the liquid-solid proportion of the liquid-solid mixed flux will not affect measurement result.

To moving condition if only it accords with the flow of axial symmetry (such as laminar flow) it will not affect the result of measurement.

Therefore, we say that electromagnetic flow meter is a genuine volume flow meter.

For manufacturer and users, if only practically calibrated with average water can volume flow of any other conductive flux be measured, without any amendment.

This is a prominent merit of electromagnetic flow meter while any other flow meter doesn't possess. In the measuring pipe there's no moving and choking parts, therefore there's nearly no pressure loss, and the reliability is very high.



E = K B d V

E --- Internal electrode signal voltage (v)

B---- Density of magnetic flux (T)

d---- Internal diameter of measuring pipe (m)

V --- Average flow velocity (m/s)

Confirmation of measuring range

Generally for electromagnetic flow meter used in industry the flow velocity of measured medium should be 2~ 4m/s. Under special conditions the minimum flow rate should be not less than 0.3m/s, and the maximum should be not more than 8m/s. If the medium includes solid granules, the usual flow rate should be less than 3m/s to prevent the liner and electrodes from excessively rubbing. To those viscous liquid, the flow rate should be more than 2m/s. The bigger flow rate is conducive to automatically eliminating the role of viscid substances apposed on the electrodes and advancing the accuracy. Under the condition that the span Q is defined, diameter D of flow meter can be decided according to the above flow velocity V, and the value is counted according to the following formula:

$$Q = \frac{\Pi D^2}{4} V$$

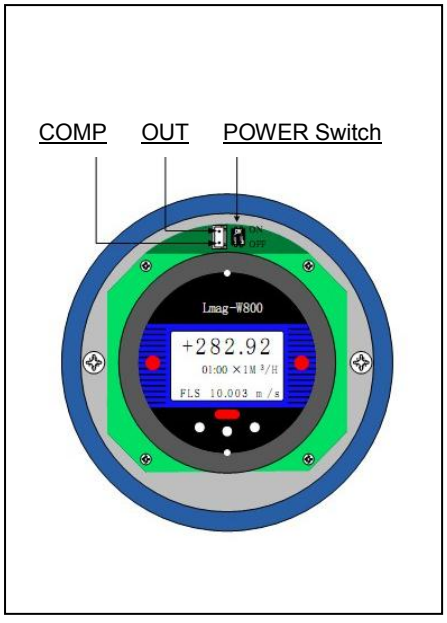
Q : flow rate(m3/h)
D : Internal Diameter (m)
V : flow velocity(m/h)

Span Q of electromagnetic flow meter should be more than anticipated max value of flow rate. While the normal value of flow rate should be slightly more than 50% of full scale of the span of flow meters.

Classification of Products

Series smart electromagnetic flow meters consist of sensor and smart signal transducer.
And it can be classified into two structures- integral type and remote type according to the set-up form of the sensor and transducer. In terms of integral type electromagnetic flow meters, transducer and sensor directly assembles as a whole and cannot be dissociated.
It is usually used at the scene where the environmental situation is good.
To remote type electromagnetic flow meters transducer composes a product through a special electric cable and sensor.
The sensor is installed at the scene and the transducer is installed in the place where the conditions are good. It is usually used at the scene where the environmental situation is poor, such as underground wells, high temperature and the place where people cannot reach.

Battery type



Remote type

Pictures of Transducers

Technical data

Items		Description
Suitable Diameter		DN10~DN2600 (below DN15 non-standard)
Electrode no.		2~3pcs
Min conductivity		More than 5 microsimens.
Suitable Fluid		Liquid with conductive ratio more than 5 μs/cm
Measuring Range		0.5~10m/s (extendable to 15m/s)
Upper Limit of Span		0.5~10m/s. 1~5m/s recommended
Accuracy		0.3% (Option), 0.5%, 1.0% of F.S..
Repeatability		Below 0.25%
Display of Converter		Display : Flow rate (4-digits), Totalizer (9-digits), Velocity, Alarm status by LCD (LED-option)
		Scale unit: selectable of L/h, L/m, L/s, m^3/h, m^3/m, m^3/s
		Flow direction : selectable by program
		3 Digits display below of decimal points.
		K-factor: 5 digits.
		Data logger for 2-3years.
		Programming language: English, Korean(on request)
		Mounting: Integral type; Remote Type
Power		AC: 220V, 50-60Hz; DC: +24V(Option)
Output Signals		4~20m ADC, load ≤ 750ohm, 0~3kHz, 5V with source and changeable width. High terminal and effective frequency output Voltage output:0-5 V DC
Conduit connection		M20 * 1.5 Thread ,1/2"NPT
Communication Interface		RS-232; RS-485; HART
Operation Pressure		1.0MPa, 1.6MPa, 4.0MPa, 6.3 MPa,, special need confirm us
Fluid Temperature		-20°C~80°C, 80°C ~130°C, 130°C ~180°C Depending on Lining Material
Ambient Temperature		Sensor -40°C ~80°C. transducer -15°C ~50°C
Ambient Humidity		≤ 85%RH (at 20C)
Cable Outlet Size		M20×1.5 , 1/2"NPT
Power Supply		220VAC±10%, 50-60Hz±1Hz, 24VDC±10%, Battery power (3-5years)
Power Consumption		≤ 8W
Protection Ratings		Integral type: IP65. Remote type: sensor IP68, transducer IP65.
Materials	Electrode	316L (stainless steel), Hastelloy C, Hastelloy B, Titanium, Tantalum, etc.
	Liner	PTFE, Soft rubber, Hard rubber, F46, FS, PUR.
	Measuring tube	SUS 304
	Flange	Carbone Steal ,304SS ,316SS
	Ground ring	316L (stainless steel), HC, Ti, Ta, Cu.
Connection of Flange		National Standard GB9119-88 (DIN2051, BS4504), JIS, ANSI. Screw.
		Tri-clamp for sanitary application
		Insertion type.
EX-proof protection		Exde ib ii BT2
Quality control		ISO9001-2008, CE

Product Selection

1. Model Selection

Sheet 2

Code	Nominal Diameter (mm)	Flow Range (m^3/h)	Code	Nominal Diameter (mm)	Flow Range (m^3/h)
JC090-10	DN10	0.04-2.8			
JC090 -15	DN15	0.19-6.36	JC090- 450	DN-450	171.00-5722.65
JC090 -20	DN20	0.34-11.3	JC090- 500	DN-500	211.95-7065.00
JC090 -25	DN25	0.53-17.66	JC090- 600	DN-600	305.21-10173.00
JC090 -32	DN32	0.87-28.94	JC090- 700	DN-700	415.42-13847.40
JC090 -40	DN40	1.36-45.22	JC090-800	DN-800	542.59-18086.40
JC090 -50	DN50	2.12-70.65	JC090- 900	DN-900	686.72-22890.60
JC090 -65	DN65	3.58-119.40	JC090-1000	DN-1000	847.80-28260.00
JC090 -80	DN80	5.43-180.86	JC090-1200	DN-1200	1220.83-40694.40
JC090 -100	DN100	8.48-282.6	JC090-1400	DN-1400	1661.69-55389.60
JC090- 125	DN125	13.25-441.56	JC090-1600	DN-1600	2170.37-72345.6
JC090 -150	DN150	19.08-635.85	JC090-1800	DN-1800	2746.87-91562.40
JC090 -200	DN200	33.91-1130.4	JC090-2000	DN-2000	3391.20-113040.00
JC090 -250	DN250	52.99-1766.25	JC090-2200	DN-2200	4103.35-136778.40
JC090 -300	DN300	76.30-2543.40	JC090-2400	DN-2400	4883.33-162777.60
JC090 -350	DN350	103.86-3461.85	JC090-2600	DN-2600	5731.13-191037.6
JC090 -400	DN400	135.65-4521.60			

Code	Electrode Material
K1	SS 316L
K2	Hastelloy B
K3	Hastelloy C
K4	Titanium
K5	Tantalum
K6	Pt/Iridium Alloy
K7	Stainless Steel Painting Tungsten Carbide

Code	Material of liner
C1	PTFE (F4 or Teflon)
C2	Fluorinated Ethylene Propylene (FEP)
C3	FS
C4	Neoprene (Soft Rubber)
C5	Polyurethane Rubber (PUR)
C6	Hard Rubber
C7	PFA

Code	Function
E1	Class 0.3%
E2	Class 0.5%
E3	Class 1.0%
X4	Class 0.2%
F1	4~20mA DC, load ≤750Ω
F2	0~3kHz, 5V active, changeable pulse, high-terminal and effective frequency output
F3	RS 485 interface (Modbus)
F4	HART
T1	Normal Temperature
T2	High Temperature
T3	Ultra Temperature
P1	1.0MPa
P2	1.6MPa
P3	4.0MPa
P4	16MPa
P0	Special Pressure
D1	220VAC+10%; 50Hz+ 1Hz
D2	24VDC+10%
D3	Battery Operated
J1	Integral Type
J2	Remote Type
J3	Explosion-proof, Integral

W1 Flange connection	Standard:ANSI,JIS,DIN,GB
W2 Thread connection	NPT,BSP,G1",2"...
W3 Sanitary connection	Tri-clamp

2. Selection of Liner

Sheet 3

Material of Liner	Main Functions	Max Fluid Temp.		Application
		Integral	Remote	
Teflon (PTFE)	1. Most steady plastic of chemical living energy; resist boiling hydrochloric acid, sulfuric acid, nitric acid, nitro-hydrochloric acid, thick alkali and all kinds of organic solvent; not resist chlorine trifluoride, chlorine trifluoride of high temperature, liquid fluorine of high rate, liquid fluorine, corrosion of ozone. 2. Performance of resisting abrasion not as good as polyurethane rubber. 3. Capability of resisting sub atmospheric pressure not as good as polychlorobutadiene rubber.	100°C	120°C ~150°C (require special order)	1. Thick acid, alkali, etc. with strong corrosion 2. Sanitary mediums 3. Industrial Waste water
Fluorinated Ethylene Propylene (FEP)			Same above	
Fs	Upper limit of suitable temperature lower than teflon, as well as cost		80°C	
Polychlorobutadiene rubber	1. Excellent elasticity, high strength of pulling apart, good performance of resisting abrasion 2. Resist corrosion of generally low-density acid, alkali and salt; not resist corrosion of oxidized matters	70°C	80°C 120°C (require special order)	Water, sewage, Mud and pulp with Weak abrasion.
Polyurethane rubber	1. Strong performance of resisting abrasion 2. Poor performance of resisting corrosion		80°C	Neutral pulp, coal And mud with Strong Abrasion.

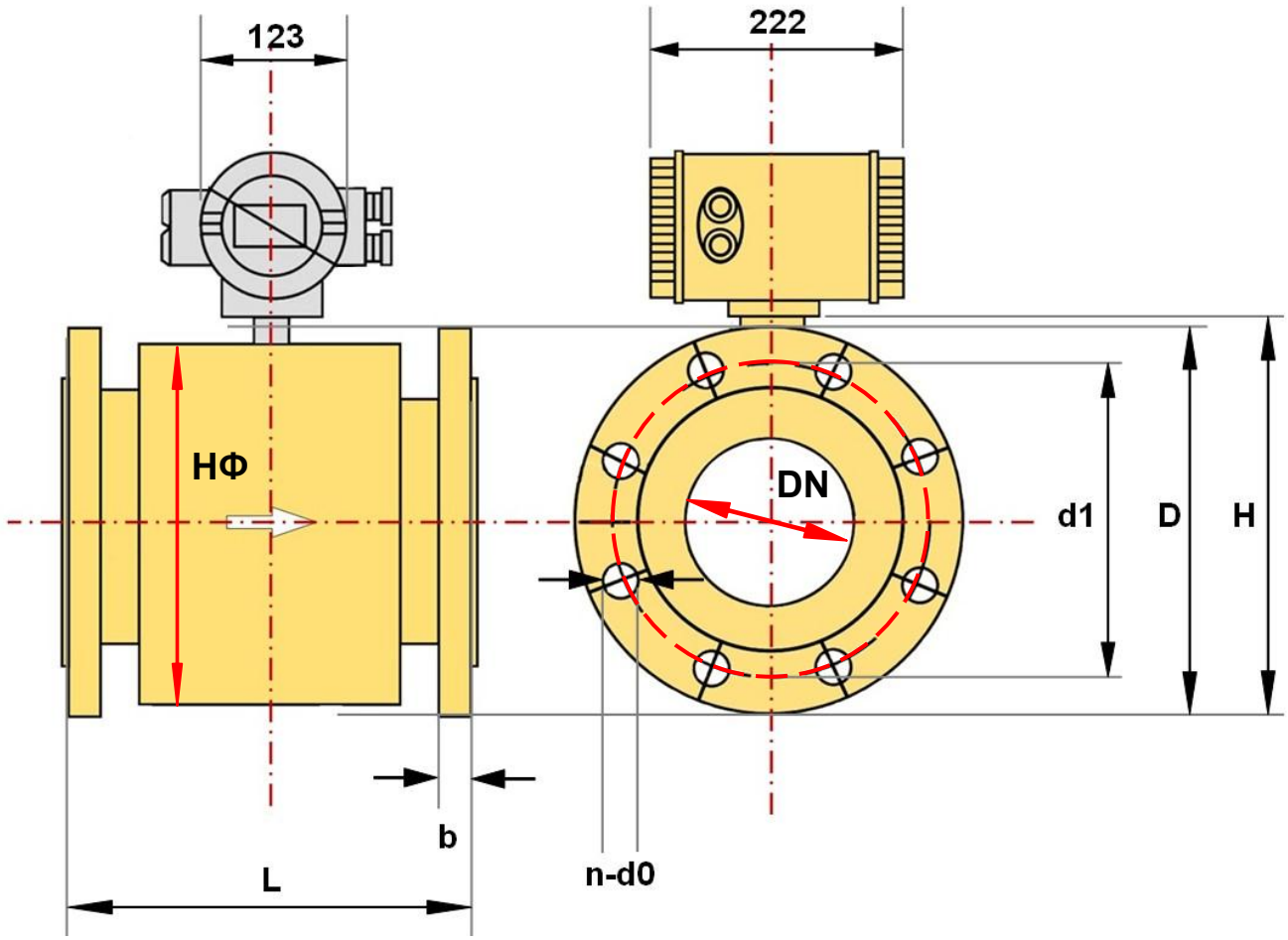
3. Selection of Materials of Electrodes

Sheet 4

Materials of electrodes	Performance of resisting erosion and abrasion
Stainless steel 0Cr18Ni12Mo2Ti	Apply to industrial water, domestic water, polluted water, etc. with weak erosion, applied in petroleum chemical industry, steel and iron, etc. and fields in government and environmental protection.
Hastelloy B	Good performance of resisting erosion to hydrochloric acid of all degrees of density below the boiling point; resisting sulfuric acid, phosphoric acid, hydrofluoric acid, organic acid, etc. non- chlorine acid, alkali, erosion of non-oxidized salty fluid.
Hastelloy C	Resisting non-oxidized acid, such as nitric acid, nitration mixture, or the erosion of the mixture of chromic acid and sulfuric acid; resisting oxidized salt such as Fe +++, Cu++ or the erosion of other oxidizers, such as the erosion of higher than normal temperature hypochlorite liquor and the sea water.
Titanium	Resisting erosion of sea water, all kinds of chloride and hypochlorite, oxidized acids (including Fuming sulfuric acid), organic acid, alkali; not resisting the erosion of purer reducing acids(such as sulfuric acid, hydrochloric acid); if oxidizer exists in acids (such as nitric acid, Fe+++. Cu++) the erosion will reduce greatly.
Tantalum	Good performance of resisting erosion, similar to glass; Besides hydrofluoric acid, fuming nitric acid, alkali, nearly can resist erosion of all chemical mediums (including boiling hydrochloric acid, nitric acid and below 150°C sulfuric acid). Not resisting erosion in alkali.
Pt/ Iridium Alloy	Can nearly resist all chemical matters, not fit for aqua and ammonium salt
Stainless Steel Painting Tungsten Carbide	Fit for mediums without erosion and strong attrition

Remarks:
Due to multiple types the erosion is subject to complex factors such as temperature, density, flow rate etc.,
This sheet is for reference only. Users should make decision according to practical conditions, if necessary make experiment of resisting erosion of to-be-chosen materials, such as the experiment of hanging pieces.

Figure and Mounting Size



- Figure of DN15~DN150 Integral Type and Sensor

Figure Size & Weight (mm) *sheet 1*

DN	L (mm)	H (mm)	Reference weight (kg)	
			Integral type	Sensor
10	200	220	10	7
15	200	220	10	7
20	200	220	12	9
25	200	230	14	11
32	200	235	15	12
40	200	245	16	13
50	200	250	17	14
65	200	270	25	22
80	200	285	29	26
100	250	300	31	28
125	250	330	35	32
150	300	360	41	38

Figure Size (Standard; GB/T 9119) *sheet 2*

DN	Pressure 1.6 MPa				Pressure 4.0 MPa			
	D (mm)	d1 (mm)	n - d0 (mm)	b (mm)	D (mm)	d1 (mm)	n - d0 (mm)	b (mm)
15	Φ 95	Φ 65	4 - Φ 14	16	Φ 95	Φ 65	4 - Φ 14	16
20	Φ 105	Φ 75	4 - Φ 14	18	Φ 105	Φ 75	4 - Φ 14	18
25	Φ 110	Φ 85	4 - Φ 14	18	Φ 110	Φ 85	4 - Φ 14	18
40	Φ 150	Φ 110	4 - Φ 18	20	Φ 150	Φ 110	4 - Φ 18	20
50	Φ 165	Φ 125	4 - Φ 18	20	Φ 165	Φ 125	4 - Φ 18	20
65	Φ 185	Φ 145	4 - Φ 18	20	Φ 185	Φ 145	8 - Φ 18	22
80	Φ 200	Φ 160	8 - Φ 18	22	Φ 200	Φ 160	8 - Φ 18	22
100	Φ 220	Φ 180	8 - Φ 18	22	Φ 235	Φ 190	8 - Φ 22	26
150	Φ 285	Φ 240	8 - Φ 22	24	Φ 300	Φ 250	8 - Φ 26	28

- Figure of DN200~DN600 Integral Type and Sensor

Figure Size & Weight (mm) *sheet 3*

DN	L (mm)	H Φ (mm)	Reference weight (kg)
200	350	Φ 310	42
250	450	Φ 358	50
300	500	Φ 410	60
350	550	Φ 465	145
400	600	Φ 515	180
450	600	Φ 564	215
500	600	Φ 614	245
600	600	Φ 722	335

Figure Size (Standard; GB/T 9119) *sheet 4*

DN	Pressure 1.6 MPa				Pressure 4.0 MPa			
	D (mm)	d1 (mm)	n - d0 (mm)	b (mm)	D (mm)	d1 (mm)	n - d0 (mm)	b (mm)
200	Φ 340	Φ 295	12 - Φ 24	26	Φ 340	Φ 295	8 - Φ 22	34
250	Φ 405	Φ 355	12 - Φ 26	28	Φ 395	Φ 350	12 - Φ 22	38
300	Φ 460	Φ 410	12 - Φ 28	32	Φ 445	Φ 400	12 - Φ 22	42
350	Φ 520	Φ 470	16 - Φ 30	35	Φ 505	Φ 460	16 - Φ 22	46
400	Φ 580	Φ 525	16 - Φ 32	38	Φ 565	Φ 515	16 - Φ 26	50
450	Φ 640	Φ 585	20 - Φ 40	42	Φ 615	Φ 565	20 - Φ 26	57
500	Φ 715	Φ 650	20 - Φ 44	46	Φ 670	Φ 620	20 - Φ 26	57
600	Φ 840	Φ 770	20 - Φ 54	52	Φ 780	Φ 725	20 - Φ 30	72

- Figure of DN700~DN2600 Sensor

Remarks:
1. DN700~DN2600have no integral type;
2. Figure of DN2700~DN1600 Explosion-separation type sensor is the same as normal instrument

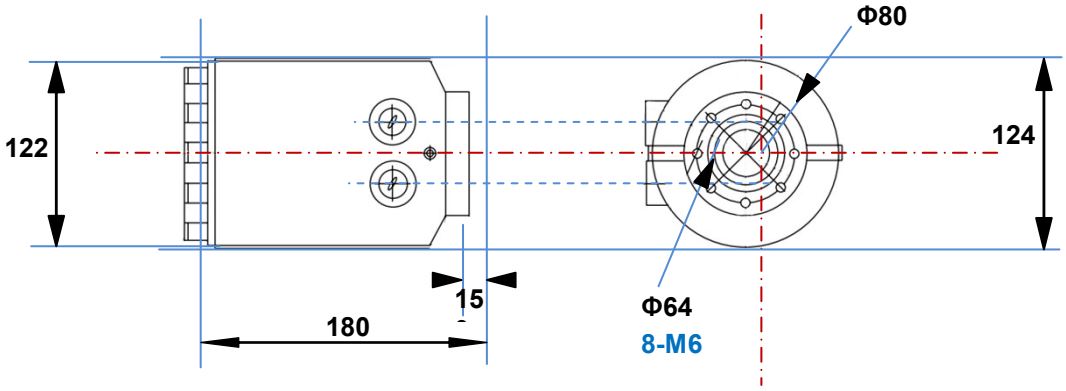
Figure Size & Weight (mm) *sheet 5*

DN	L (mm)	H (mm)	Reference weight (kg)
700	700	Φ 836	435
800	800	Φ 936	545
900	900	Φ 1036	655
1000	1000	Φ 1136	810
1200	1200	Φ 1336	875
1400	1400	Φ 1536	1235
1600	1600	Φ 1736	1555
1800	1800	Φ 1960	2085
2000	2000	Φ 2160	2610
2200	2200	Φ 2364	3210
2400	2400	Φ 2564	3910
2600	2600	Φ 2764	4510

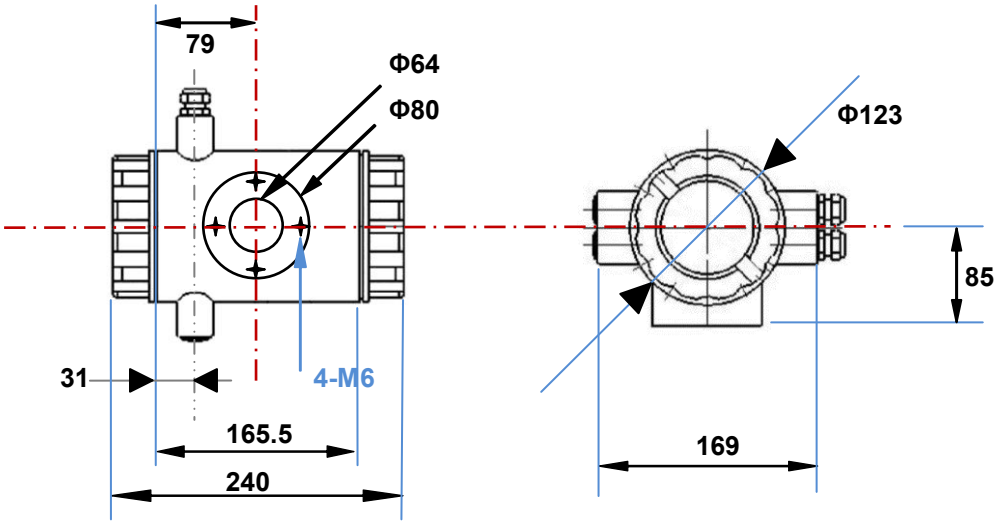
Figure Size (Standard: GB/T9119) *sheet 6*

DN	Pressure 1.0 MPa				Pressure 0.6 MPa			
	D (mm)	d1 (mm)	n - d0 (mm)	b (mm)	D (mm)	d1 (mm)	n - d0 (mm)	b (mm)
700	Φ 895	Φ 840	24 - Φ 30	34	Φ 860	Φ 810	24 - Φ 14	26
800	Φ 1015	Φ 950	24 - Φ 33	36	Φ 975	Φ 920	24 - Φ 14	26
900	Φ 1115	Φ 1050	28 - Φ 33	38	Φ 1075	Φ 1020	24 - Φ 14	26
1000	Φ 1230	Φ 1160	28 - Φ 36	38	Φ 1175	Φ 1120	28 - Φ 18	26
1200					Φ 1405	Φ 1340	32 - Φ 18	28
1400					Φ 1630	Φ 1560	36 - Φ 18	32
1600					Φ 1830	Φ 1760	40 - Φ 18	34
1800					Φ 2045	Φ 1970	44 - Φ 22	36
2000					Φ 2265	Φ 2180	48 - Φ 26	38
2200					Φ 2475	Φ 2390	52 – Φ 42	42
2400					Φ 2685	Φ 2600	56 – Φ 42	44
2600					Φ 2905	Φ 2810	60 - Φ 48	46

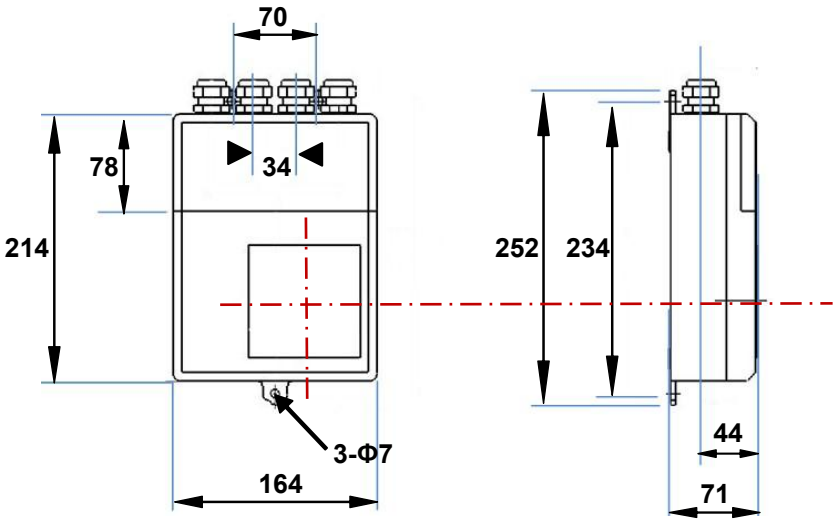
Round, integral & vertical



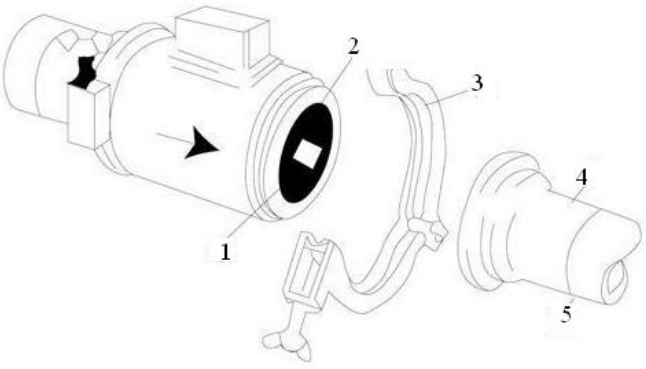
Round, integral & horizontal



Square & separate



Sanitary Connection



Parts:

1. Liner
2. Gasket
3. Hoop
4. Sleeve
5. Welding seam

Thread Connection

Range	DN15 to DN 80
Liner	PTFE or F46
Rated pressure	1.6Mpa , Special custom-made
Body Material	Stainless Steel (304SS)

CERTIFICATE OF CONFORMITY

TEST REPORT NO: JC-16001232-1, JC-16001232-2

CERTIFICATE NO: UST-CE-5043

NAME OF THE MANUFACTURER:

JIANGSU JIECHUANG SCIENCE AND TECHNOLOGY CO., LTD

ADDRESS:

JIECHUANG SCIENCE AND TECHNOLOGY PARK,TONGTAI AVENUE NO.288,JIANGSU JINHU COUNTY INDUSTRIAL PARK

PRODUCT NAME:

SMART ELECTROMAGNETIC FLOWMETER

PRODUCT MODEL:

BCST-JC090,BCST-JC091, BCST-JC092

APPLICABLE EC DIRECTIVES:

LOW VOLTAGE DIRECTIVE (2014/35/EU)

ELECTROMAGNETIC COMPATIBILITY DIRECTIVE (2014/30/EU)

EN 61010-1:2010,EN 61326-1:2013

BASED ON OUR REVIEW WE CAN CONFIRM THAT THE TECHNICAL FILE FOR THE ABOVE MENTIONED PRODUCT MEETS THE REQUIREMENTS OF THE RELEVANT EC DIRECTIVES.
THE MANUFACTURER IS RESPONSIBLE FOR CERTIFYING THE PRODUCT AND ENSURING THAT ALL MANUFACTURED PRODUCTS ARE IN COMPLIANCE WITH THE SPECIFICATIONS DETAILED IN THE TECHNICAL FILE THIS CERTIFICATE IS VALID UNTIL 12/19/2021

Certificate Issued:

Place: BEIJING CHINA

Signature: 2016 / 12 / 19

www.certchina.org China Tel: 400-888-2692
UNITED-STANDARD TESTING & CERTIFICATION CENTRE UST

Explosion-proof Certificate

PCEC

防 爆 合 格 证

CONFORMITY CERTIFICATE OF EXPLOSION-PROOF

证 号 Certificate No. CE14.2232

产品名称 Name of Product	电磁流量计 Electromagnetic Flow Meter
型号及规格 Type of Product	JC-090 JC-091
防爆标志 Marking	Ex d ia [ia Ga] q II C T6 Gb
技术文件 Technical Documents	Q/JC 001-2014
图号 Drawing No.	DCLLJ-00
备注 Note (s)	1. 额定电压：DC24V。 Power supply:DC24 V 2. 输出信号：4～20mA。 Signal output: 4 to 20Ma

经对上述产品图样及技术文件的审查和样品的检验，其符合以下标准：

By verifying the drawings and technical documents and checking samples, the product complies with the following standards:

GB 3836.1-2010 GB 3836.2-2010 GB 3836.4-2010 GB 3836.7-2004

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中心印章 Center seal

中心主任 Director

石油和化学工业电气产品防爆质量监督检验中心

Supervision & Test Center of Ex- products of China Petroleum & Chemical Industry

注：本证仅对与送检样品一致的产品有效

Note: This certificate is only valid for the products that are in accord with sample(s) tested and verified

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