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# Electromagnetic Flow Meter



# FLOW MEASUREMENT FIELD

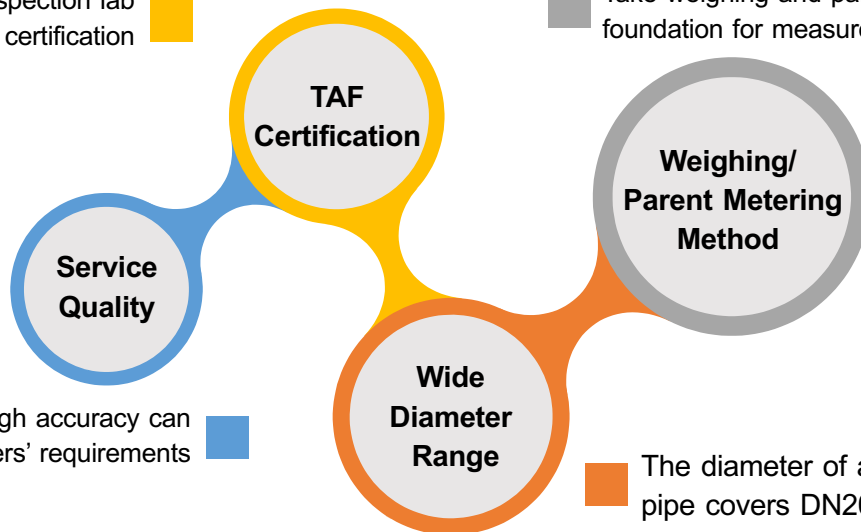
FineTek is the only inspection institution that owns a Class 2 flow test laboratory in Taiwan. With the most professional R&D and Design Team, it can design and develop high-accuracy electromagnetic flow meters. Moreover, it conducts calibration in Class 1 Flow Laboratory of the National Measurement Laboratory (ITRI Measurement Center), so as to guarantee the flow accuracy on the measurement field.

FineTek's flow laboratory has received certification from the Taiwan Accreditation Foundation and conforms to the regulations of international organizations such as ILAC and APALC. It has the complete ability of uncertainty testing and rating for flow test.



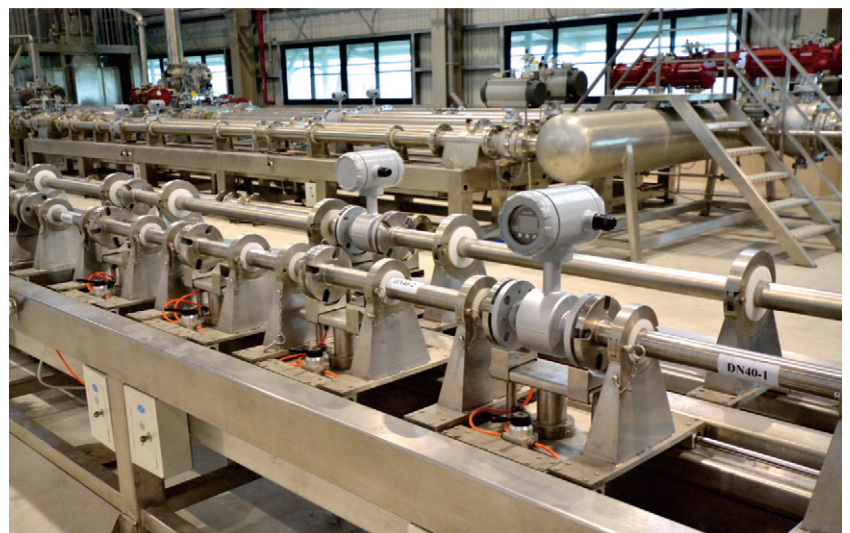
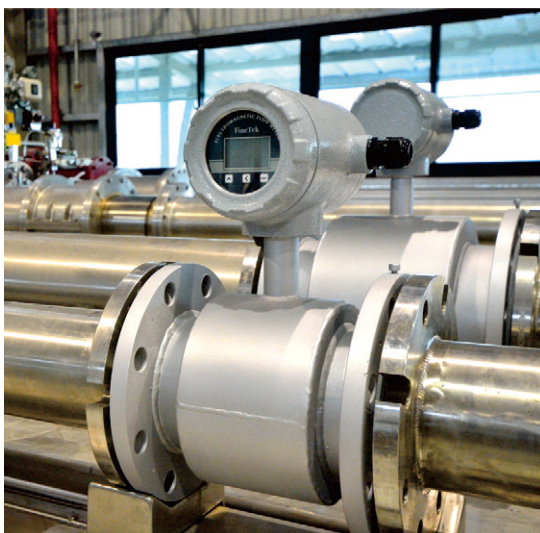
Flow inspection lab with TAF certification ■

Take weighing and parent metering as the foundation for measurement calibration ■



High quality and high accuracy can meet the customers' requirements ■

The diameter of applicable pipe covers DN20~ DN300 ■



# FLOW MEASUREMENT FIELD



PUMP equipment  
(The maximum horsepower is 110KW per unit)



Weighing equipment



Control room & Graphical HMI



Piping system I  
(Max capacity for four meters calibration simultaneously in above system.)



Piping system II  
(Maximum diameter is 300mm)

1. 測試項目 (Testing Item): 流量試驗  
2. 測試日期 (Testing Date): 2016/05/11  
3. 測試地點 (Testing Place): 廣東省  
4. 測試結果 (Result):  
環境溫度 (Environment): 25.0°C  
相對濕度 (Relative Humidity): 65%

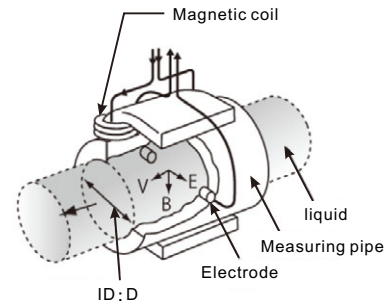
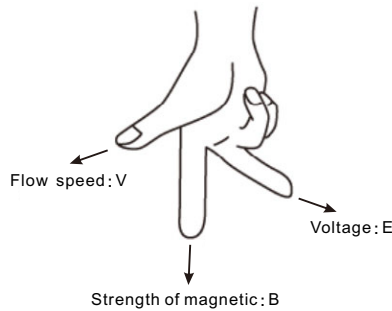
GE-16041175

電子秤編號	測試 速率 (m <sup>3</sup> /h)	流速 (m/s)	管徑 (mm)	應用介質	電子秤量測值		流計分析	
					示值	誤差	相對誤差	滿足 標準
3000 kg (8219902027)	254.47	0.98	300	水	254.47	0.02%	0.01%	2.08
3000 kg (8519902027)	127.24	0.50	300	水	127.24	0.01%	0.01%	2.08
3000 kg (8519902027)	76.34	0.31	300	水	76.34	0.01%	0.01%	2.08

The exclusive report  
(Each flow meter has its own calibration report)

# ELECTROMAGNETIC FLOW METER

EPD electromagnetic flow meter is a high-accuracy flow meter manufactured based on the latest international technology. It is widely applied in papermaking, chemical industry, metallurgical industry, drainage, waste water treatment, liquid high-pressure metering, medical care, food, and environmental protection industries. It is used to measure the non-magnetic liquid and plasma in the enclosed pipe.



## WORKING PRINCIPLE

The working principle of the electromagnetic flow meter is based on the Faraday law of electromagnetic induction. When the conducting liquid flows in the orthogonal direction of the magnetic line direction, it will cut the magnetic lines and generate induced voltage, which shows linear relationship with the flowing speed. Thus, the fluidic volume flow can be calculated.

EPD electromagnetic flow meter is mainly composed of the sensor and transmitter. The measuring tube of the sensor is equipped with the excitation coils upward and downward. The transmitter supplies the excitation current, which generates the magnetic field which goes through the measuring tube once it is powered on. A pair of induction electrodes installed on the inner side of the measuring tube comes in contact with the liquid to guide the induced voltage to the sensor.

## APPLICATIONS

- Waste water treatment
- Tapped water purification
- Sewerage
- Sea water desalination module
- Dyeing machines
- Solar energy and PCB wet processing
- Food manufacturing
- Pharmaceutical machines

## FEATURES

### Low impact on environmental matter

- The measurement results are not affected by the change in liquid density, viscosity, temperature, pressure and conductivity.
- It can be widely applied in the conducting liquids that may contain fiber, solid granules and suspended matters.
- Enclosure protection rating: IP67/NEMA 4X

### Wide measurement range & high efficiency

- The wide measurement turndown ratio can be reach 1:100, which can be set randomly and achieve high accuracy for small flow measurement.
- Highly-integrated backlit display of two rows, dual isolation, parameter setting, menu-type operation, memory function, reliable programming, password lock and access, small signal elimination, non-linear correction and two-way measurement.
- Various outputs: Current output 4~20mA, frequency output 2~8KHz and RS485 communication.

### Multiple self-diagnosis function

- Power-saving and low fault rate: The measuring tube is without baffle and movable parts, so it won't cause pressure loss and jam.
- Smart self-detection and self-diagnosis function, as well as various alarms

### The low installation cost

- It is easy-to-install with low requirements for the straight tube section (Front 5D and rear 2D)
- 2-wire analog output

# SPECIFICATION

Item	EPD30 Standard type	EPD34 Remote type
Display	LCM 128*64 pixel backlit type	
Buttons	Tri-button operation	
Communication interface	RS-485 (Modbus) (Optional support for ZigBee Pro wireless transmission)	
Accuracy	±0.5% of reading@1m/s(0.2% optional)	
Medium temperature	-20 ~ 120 °C	
Ambient temperature	-40 ~ 70 °C <sup>1</sup>	
Fluidic conductivity	> 5 uS/cm	
Measuring scope	0.1m/s ~ 10m/s	
Current output accuracy	0.1% of Pulse Output Accuracy Temperature coefficient (100ppm/°C)	
Operating pressure	10Kg/cm <sup>2</sup>	
Current output mode	Proactive	
Analog output	4 ~ 20mA	
Maximum load of current output	< 700Ω	
Alarming current	3.6mA or 22 mA	
Frequency output scope	2 ~ 8 Hz	
Pulse width	Automatic (pulse width 50%)	
Pulse mode	NPN transistor output 32vdc/200mA	
Time constant	0.1~20 s	0~100 s
Control output (DO)	NPN transistor output 32vdc/200mA ;2-CH	
Control input (DI)	Dry contact ON< 200Ω ; 1,000Ω< OFF ; 1-CH	
Baud rate	1200 ~ 38400 bps	1200 ~ 57600 bps
Protection rating	IP67 / NEMA 4X	IP68 <sup>2</sup> (Transducer) IP67/ NEMA 4X (Transmitter)
Enclosure material	Aluminum alloy	
Input power	AC 100~240V or DC 24V	
Power consumption	< 10W	
Wire inlet specification	M20 x 1.5*2 Female	
Excitation mode	Pulse DC	
Vibration regulation	IEC 60068-2-3	
EMC regulation	IEC/EN 61326-1 Class A table2	

<sup>1</sup> It can't display when LCM is lower than -20°C.

<sup>2</sup> Continuous immersion in 6 meters of water for up to 48 hours.

# MATERIAL SELECTION

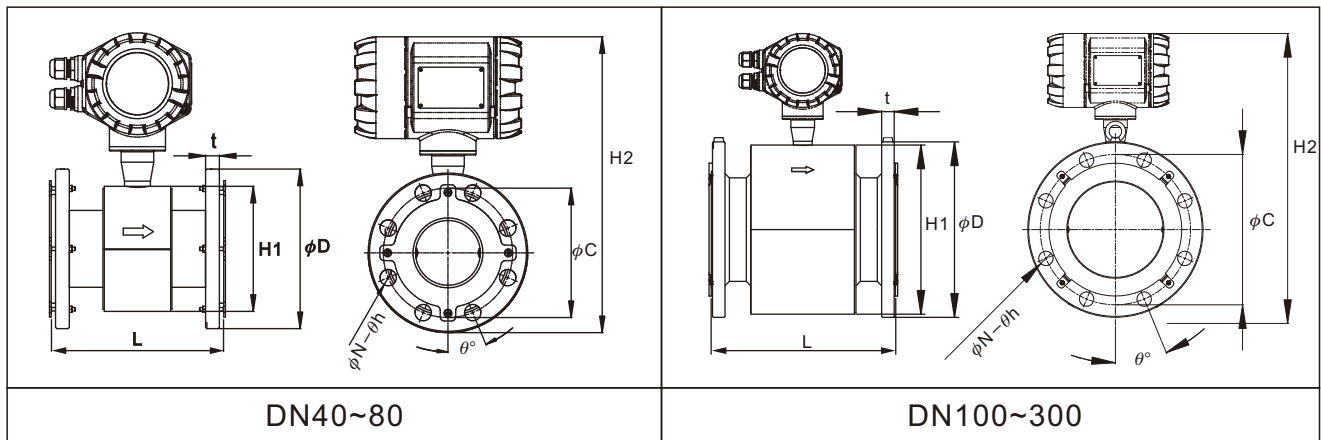
## ※Electrode material

Electrode material	Anti-corrosion property
Stainless steel (316L)	It is applied in water, sewage and organic and non-organic corrosive medium.
Hastelloy alloy	It is resistant to the corrosion of the medium mixture of oxidizing acid such as Nitric acid, mixed acid or Sulfuric acid. Moreover, it is resistant to the corrosion of the oxidizing salt such as $Fe^{2+}$ 、 $Cu^{2+}$ or other substances containing oxidants such as the salt solution of hypochlorous acid above the ambient temperature and sea water.
Titanium	It is resistant to the corrosion of sea water, various oxides, salt solution of hypochlorous acid, oxidating acid (including fuming Nitric acid) and organic acid and alkane. It is not resistant to the corrosion of pure reducing acid (such as Sulfuric acid and Hydrochloric acid). However, the anti-corrosion property will be greatly degraded if the acid contains some oxidants.
Tantalum	It has excellent corrosion resistance. Its characteristic is similar to glass. In addition to hydrofluoric acid , nitric acid , alkali, it could resist almost all chemical medium (including boiling hydrochloric acid, nitric acid and sulfuric acid below 175°C). It could not resist corrosion in alkali.

## ※Lining material

Lining material	Main properties	Application scope
PTFE	<ol style="list-style-type: none"> <li>1. Stable chemical properties, resistant to various acid, alkane, and salt solutions and various organic solvents. It is not tolerant to the corrosion of <math>ClF_3</math>, high-temperature <math>OF_3</math> and high-speed liquid oxygen and ozone.</li> <li>2. The anti-abrasion property is average.</li> </ol>	<ol style="list-style-type: none"> <li>1. -20~120°C</li> <li>2. Strong corrosive medium such as concentrated acid and alkane.</li> </ol>
NBR	<ol style="list-style-type: none"> <li>1. Excellent flexibility, highly tearing force capability, good wear resistance</li> <li>2. It is resistant to low concentrations of acid, alkali, salt solution; It is not tolerant the corrosion of oxidizing mediums.</li> </ol>	<ol style="list-style-type: none"> <li>1. &lt; 80°C</li> <li>2. Neutral-strong wearing mineral pulp, coal slurry and mud slurry</li> </ol>
Neoprene	<ol style="list-style-type: none"> <li>1. Neutral wearing capability</li> <li>2. It is resistant to low concentrations of acid, alkali, acid corrosion.</li> </ol>	<ol style="list-style-type: none"> <li>1. &lt; 80°C</li> <li>2. Water, Industrial water , Seawater</li> </ol>

# APPEARANCE AND DIMENSION AND FLANGE CONNECTION DIMENSION STANDARD TYPE

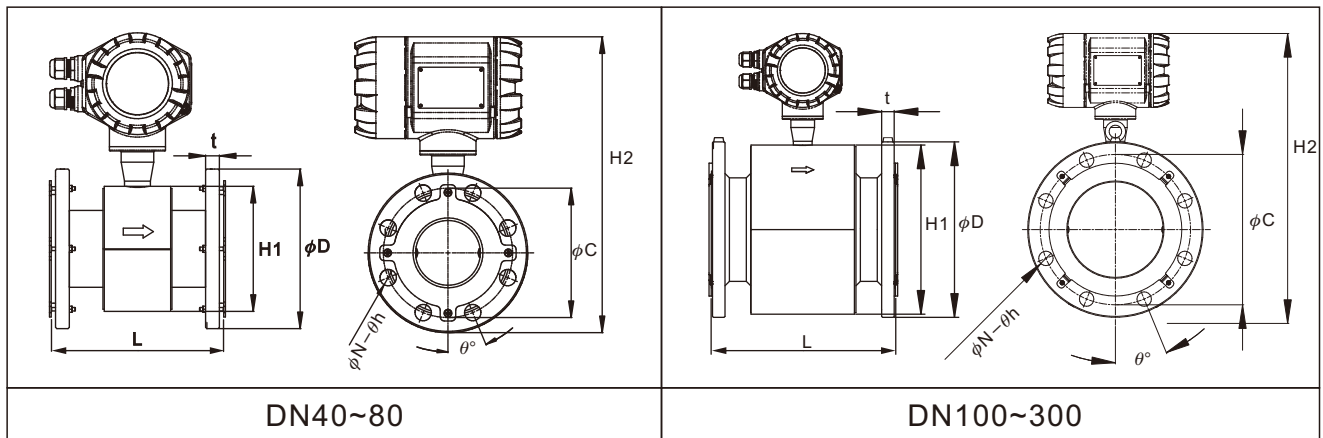


Connection specification		JIS 10K									
Nominal diameter(mm)		40	50	65	80	100	125	150	200	250	300
Lining material		PTFE									
Length	L	200	200	200	200	250	250	300	350	400	500
External diameter	$\phi D$	140	155	175	185	210	250	280	330	400	445
PCD	$\phi C$	105	120	140	150	175	210	240	290	355	400
Flange thickness	t	14	14	16	16	16	20	22	22	24	24
Inclined angle of screw hole	$\theta^\circ$	45	45	45	22.5	22.5	22.5	22.5	15	15	11.25
Diameter of screw hole	$\theta h$	19	19	19	19	19	19	23	23	25	25
Quantity of screw holes	N	4	4	4	8	8	8	8	12	12	16
Height of sensor casing	H1	125	125	145	145	195	195	270	305	365	406
Total height	H2	315	322	342	347	384.5	404.5	467	506	572	616
Weight (kg)		6.8	7.68	8.98	9.87	12.9	17.5	23.51	33.23	54.03	69.55

Connection specification		JIS 20K									
Nominal diameter(mm)		40	50	65	80	100	125	150	200	250	300
Lining material		PTFE									
Length	L	200	200	200	200	250	250	300	350	400	500
External diameter	$\phi D$	140	155	175	200	225	270	305	350	430	480
PCD	$\phi C$	105	120	140	160	185	225	260	305	380	430
Flange thickness	t	18	18	20	22	24	26	28	30	34	36
Inclined angle of screw hole	$\theta^\circ$	45	22.5	22.5	22.5	22.5	22.5	15	15	15	11.25
Diameter of screw hole	$\theta h$	19	19	23	23	23	25	25	25	27	27
Quantity of screw holes	N	4	8	8	8	8	8	12	12	12	16
Height of sensor casing	H1	125	125	145	145	195	195	270	305	365	406
Total height	H2	314.5	322	342	354.5	392	414.5	478	514	585	632
Weight (kg)		7.08	7.72	8.98	12.25	16.42	23.56	31.03	43.37	74.23	94.15

Notice: The thickness of lining protection ring (grounding) for DN40 to DN80 is 2 mm; The total length of EPD Electromagnetic Flow Meter is L+ 4 mm. The thickness of lining protection ring (grounding) for DN100 to DN300 is 0.5 mm; The total length of EPD Electromagnetic Flow Meter is L+1 mm.  
Size tolerance: Total length is  $\pm 3$ mm; Total height is  $\pm 5$ mm.

# APPEARANCE AND DIMENSION AND FLANGE CONNECTION DIMENSION STANDARD TYPE



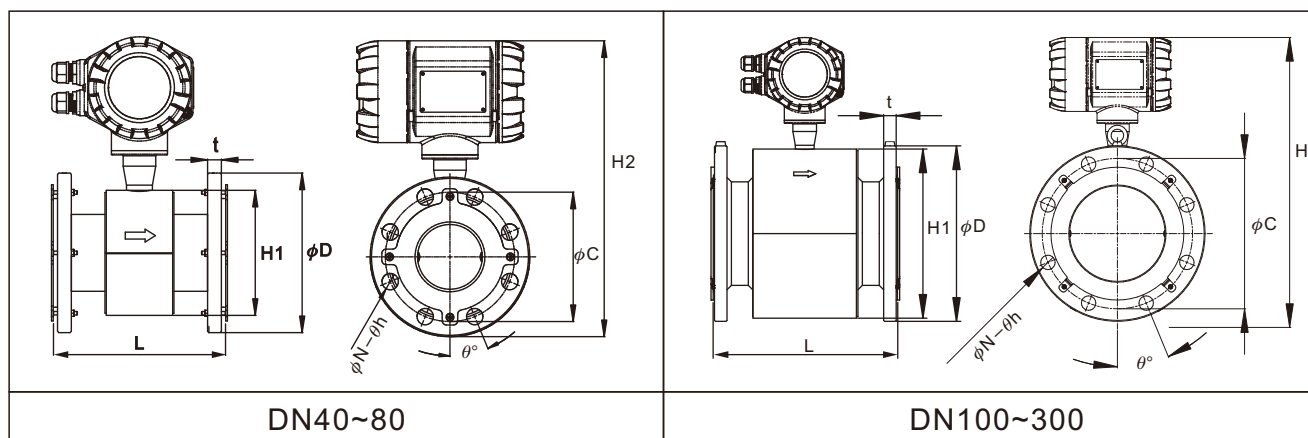
Connection specification		JIS 7.5K							
Nominal diameter(mm)		50	80(75)	100	125	150	200	250	300
Lining material		PTFE							
Length	L	200	200	250	250	300	350	400	500
External diameter	$\phi D$	155	211	238	263	290	342	410	464
PCD	$\phi C$	120	168	185	225	247	299	360	414
Flange thickness	t	18	21	24	26	23	24	26	28
Inclined angle of screw hole	$\theta^\circ$	45	45	45	30	30	22.5	22.5	18
Diameter of screw hole	$\theta h$	19	19	19	19	19	19	23	23
Quantity of screw holes	N	4	4	4	6	6	8	8	10
Height of sensor casing	H1	125	145	195	195	270	305	365	406
Total height	H2	322	360	399	411	472	511	577	625
Weight (kg)									

Notice: The thickness of lining protection ring (grounding) for DN40 to DN80 is 2 mm; The total length of EPD Electromagnetic Flow Meter is L+ 4 mm. The thickness of lining protection ring (grounding) for DN100 to DN300 is 0.5 mm; The total length of EPD Electromagnetic Flow Meter is L+1 mm.

Size tolerance: Total length is  $\pm 3$ mm; Total height is  $\pm 5$ mm.



# APPEARANCE AND DIMENSION AND FLANGE CONNECTION DIMENSION STANDARD TYPE

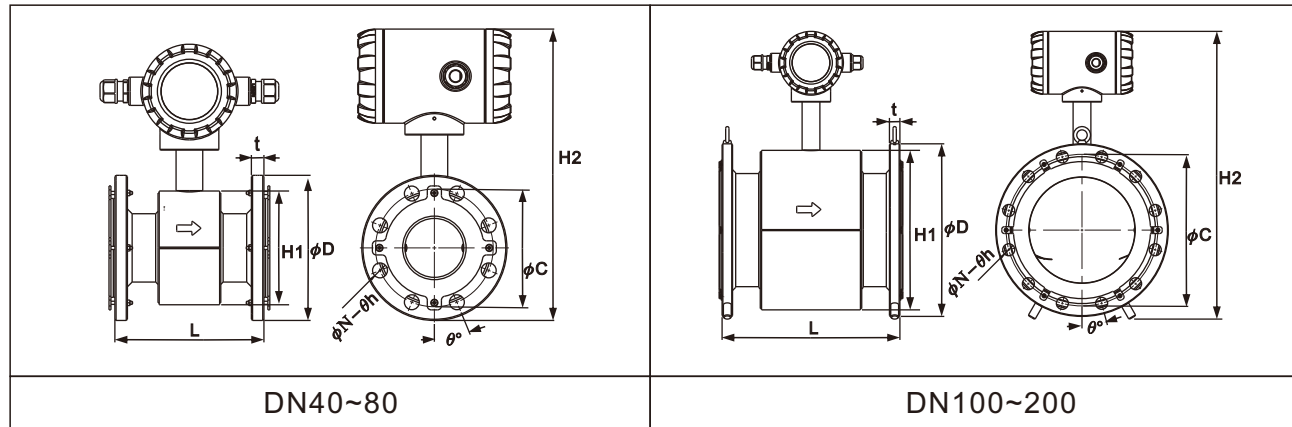


Connection specification		ANSI 150Lbs									
Nominal diameter(mm)		40	50	65	80	100	125	150	200	250	300
Lining material		PTFE									
Length	L	200	200	200	200	250	250	300	350	400	500
External diameter	$\phi D$	127	152	178	190	229	254	279.4	342.9	406.4	482.6
PCD	$\phi C$	98.4	120.6	139.7	152.4	190.5	215.9	241.3	298.4	361.9	431.8
Flange thickness	t	15.9	17.4	20.6	22.2	22.2	22.2	23.8	27	28.6	30.2
Inclined angle of screw hole	$\theta^\circ$	45	45	45	45	22.5	22.5	22.5	22.5	15	15
Diameter of screw hole	$\theta h$	15.9	19	19	19	19	22.2	22.2	22.2	25.4	25.4
Quantity of screw holes	N	4	4	4	4	8	8	8	8	12	12
Height of sensor casing	H1	125	125	145	145	195	195	265	305	365	406
Total height	H2	308	321	344	350	394	407	464	511	575	633
Weight (kg)		6.48	8.32	10.78	12.25	17.82	20.96	27.03	44.17	67.23	99.55

Connection specification		ANSI 300Lbs									
Nominal diameter(mm)		40	50	65	80	100	125	150	200	250	300
Lining material		PTFE									
Length	L	200	200	200	200	250	250	300	350	400	500
External diameter	$\phi D$	156	165	190	210	254	279	317.5	381	444.5	520.7
PCD	$\phi C$	114.3	127	149.2	168.3	200	235	269.9	330.2	387.35	450.9
Flange thickness	t	19	20.6	23.8	27	30.2	33.3	34.9	39.7	46	49.2
Inclined angle of screw hole	$\theta^\circ$	45	22.5	22.5	22.5	22.5	22.5	15	15	11.3	11.3
Diameter of screw hole	$\theta h$	22.2	19	22.2	22.2	22.2	22.2	22.2	25.4	28.6	31.8
Quantity of screw holes	N	4	8	8	8	8	8	12	12	16	16
Height of sensor casing	H1	125	125	145	145	195	195	265	305	365	406
Total height	H2	323	327	350	360	407	419	481	528	592	650
Weight (kg)		9.08	10.32	12.78	16.45	26.62	32.96	43.83	69.17	100.43	146.6

Notice: The thickness of lining protection ring (grounding) for DN40 to DN80 is 2 mm; The total length of EPD Electromagnetic Flow Meter is L+ 4 mm. The thickness of lining protection ring (grounding) for DN100 to DN300 is 0.5 mm; The total length of EPD Electromagnetic Flow Meter is L+1 mm.  
 Size tolerance: Total length is  $\pm 3\text{mm}$ ;  
 Total height is  $\pm 5\text{mm}$ .

# APPEARANCE AND DIMENSION AND FLANGE CONNECTION DIMENSION STANDARD TYPE

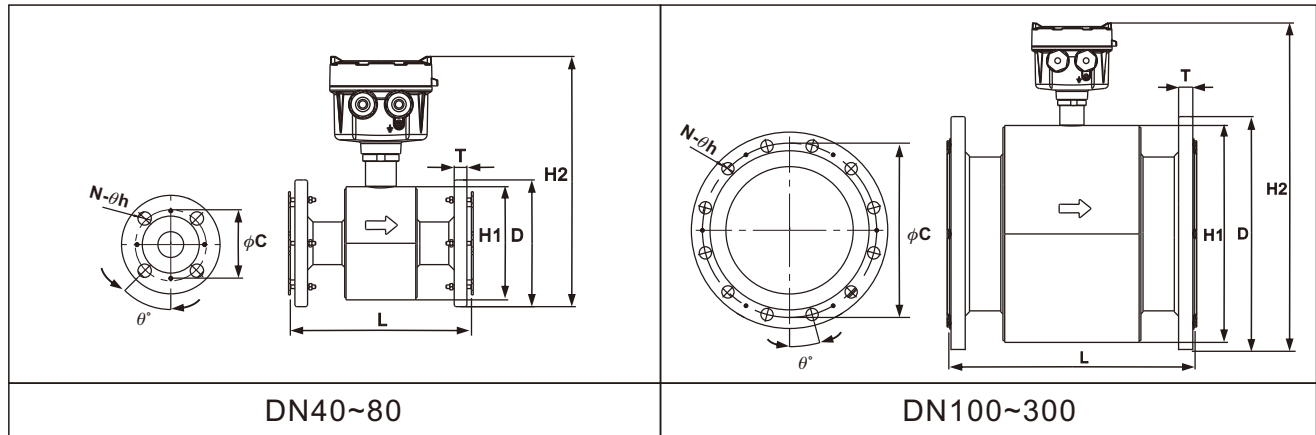


Connection specification	DIN PN40				DIN PN16						
Nominal diameter(mm)	40	50	65	80	65	80	100	125	150	200	
Lining material											
Length	L	200	200	200	200	200	200	250	250	300	350
External diameter	$\phi D$	150	165	185	200	185	200	220	250	285	340
PCD	$\phi C$	110	125	145	160	145	160	180	210	240	295
Flange thickness	t	18	20	22	24	18	20	20	22	22	24
Inclined angle of screw hole	$\theta^\circ$	45	45	22.5	22.5	45	22.5	22.5	22.5	22.5	15
Diameter of screw hole	$\theta h$	18	18	18	18	18	18	18	18	22	22
Quantity of screw holes	N	4	4	8	8	4	8	8	8	8	12
Height of sensor casing	H1	125	125	145	145	145	145	195	195	265	305
Total height	H2	320	327	347	355	347	355	390	405	470	510
Weight (kg)		7.08	7.72	8.98	12.25	8.58	11.65	15.62	20.96	28.23	39.97

Connection specification	DIN PN10			
Nominal diameter(mm)	200	250	300	
Lining material	PTFE			
Length	L	350	400	500
External diameter	$\phi D$	340	395	445
PCD	$\phi C$	295	350	400
Flange thickness	t	24	26	26
Inclined angle of screw hole	$\theta^\circ$	22.5	15	15
Diameter of screw hole	$\theta h$	22	22	22
Quantity of screw holes	N	8	12	12
Height of sensor casing	H1	305	365	406
Total height	H2	510	568	637
Weight (kg)		33.23	54.03	69.55

Notice: The thickness of lining protection ring (grounding) for DN40 to DN80 is 2 mm; The total length of EPD Electromagnetic Flow Meter is L+ 4 mm. The thickness of lining protection ring (grounding) for DN100 to DN300 is 0.5 mm; The total length of EPD Electromagnetic Flow Meter is L+1 mm.  
Size tolerance: Total length is  $\pm 3$ mm; Total height is  $\pm 5$ mm.

# APPEARANCE AND DIMENSION AND FLANGE CONNECTION DIMENSION REMOTE TYPE



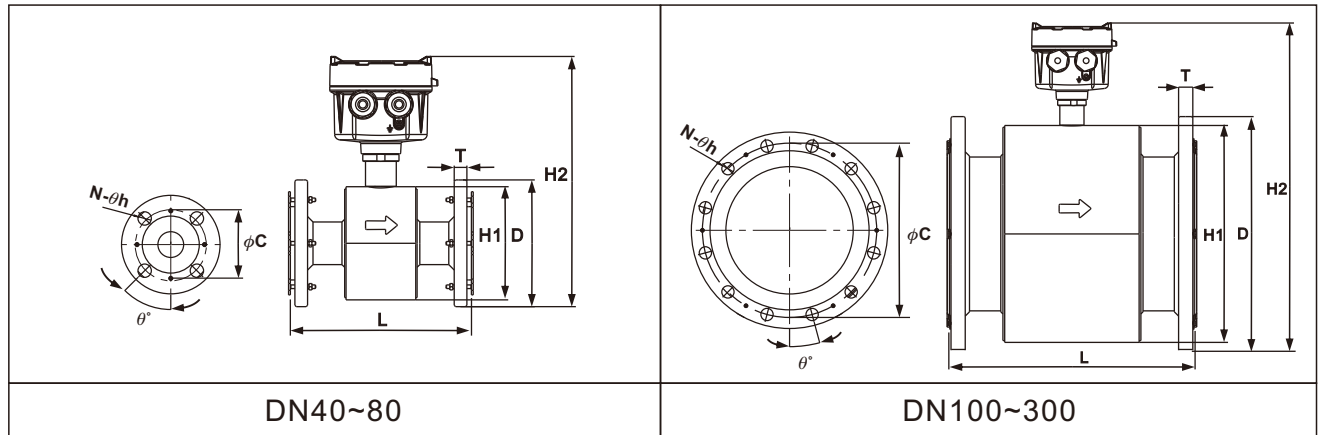
Connection specification		JIS 10K									
Nominal diameter(mm)		40	50	65	80	100	125	150	200	250	300
Lining material		PTFE									
Length	L	200	200	200	200	250	250	300	350	400	500
External diameter	$\phi D$	140	155	175	185	210	250	280	330	400	445
PCD	$\phi C$	105	120	140	150	175	210	240	290	355	400
Flange thickness	t	14	14	16	16	16	20	22	22	24	24
Inclined angle of screw hole	$\theta^\circ$	45	45	45	22.5	22.5	22.5	22.5	15	15	11.25
Diameter of screw hole	$\theta h$	19	19	19	19	19	19	23	23	25	25
Quantity of screw holes	N	4	4	4	8	8	8	8	12	12	16
Height of sensor casing	H1	125	125	145	145	195	195	270	305	365	406
Total height*1	H2	276.4	283.9	303.9	308.9	346.4	366.4	429	468	534	578
Weight (kg)*2	-	5.25	6.13	7.43	8.32	11.35	15.95	21.96	31.68	52.48	68.00

Connection specification		JIS 20K									
Nominal diameter(mm)		40	50	65	80	100	125	150	200	250	300
Lining material		PTFE									
Length	L	200	200	200	200	250	250	300	350	400	500
External diameter	$\phi D$	140	155	175	200	225	270	305	350	430	480
PCD	$\phi C$	105	120	140	160	185	225	260	305	380	430
Flange thickness	t	18	18	20	22	24	26	28	30	34	36
Inclined angle of screw hole	$\theta^\circ$	45	22.5	22.5	22.5	22.5	22.5	15	15	15	11.25
Diameter of screw hole	$\theta h$	19	19	23	23	23	25	25	25	27	27
Quantity of screw holes	N	4	8	8	8	8	8	12	12	12	16
Height of sensor casing	H1	125	125	145	145	195	195	270	305	365	406
Total height*1	H2	276.4	283.9	303.9	316.4	353.9	376.4	440	476	547	594
Weight (kg)*2	-	5.53	6.17	7.43	10.7	14.87	22.01	29.48	41.82	72.68	92.60

\*1: The thickness of lining protection ring (grounding) for DN40 to DN80 is 2 mm; The total length of EPD Electromagnetic Flow Meter is L+ 4 mm. The thickness of lining protection ring (grounding) for DN100 to DN300 is 0.5 mm; The total length of EPD Electromagnetic Flow Meter is L+1 mm.  
Size tolerance: Total length is  $\pm 3\text{mm}$ ; Total height is  $\pm 5\text{mm}$ .

\*2: To shows the weight of sensor only. Not include the weight of transmitter 2.06kg

# APPEARANCE AND DIMENSION AND FLANGE CONNECTION DIMENSION REMOTE TYPE



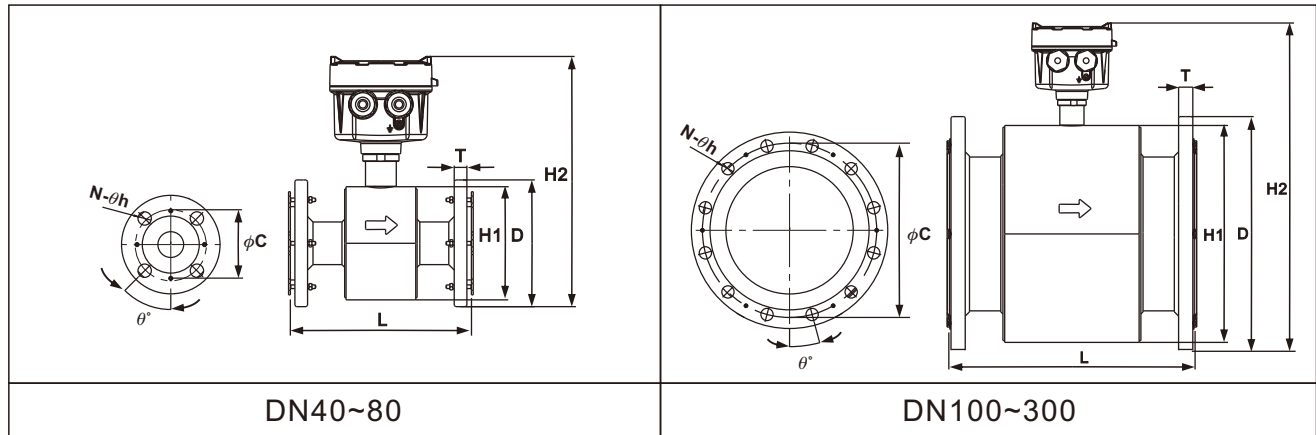
Connection specification		ANSI 150 Lbs									
Nominal diameter(mm)		40	50	65	80	100	125	150	200	250	300
Lining material		PTFE									
Length	L	200	200	200	200	250	250	300	350	400	500
External diameter	$\phi D$	127	152	178	190	229	254	279.4	342.9	406.4	482.6
PCD	$\phi C$	98.4	120.6	139.7	152.4	190.5	215.9	241.3	298.4	361.9	431.8
Flange thickness	t	15.9	17.4	20.6	22.2	22.2	22.2	23.8	27	28.6	30.2
Inclined angle of screw hole	$\theta^\circ$	45	45	45	45	22.5	22.5	22.5	22.5	15	15
Diameter of screw hole	$\theta h$	15.9	19	19	19	19	22.2	22.2	22.2	25.4	25.4
Quantity of screw holes	N	4	4	4	4	8	8	8	8	12	12
Height of sensor casing	H1	125	125	145	145	195	195	265	305	365	406
Total height*1	H2	322	335	358	364	408	421	478	525	589	647
Weight (kg)*2	-	4.93	6.77	9.23	10.7	16.27	19.41	25.48	42.62	65.68	98

Connection specification		ANSI 300 Lbs									
Nominal diameter(mm)		40	50	65	80	100	125	150	200	250	300
Lining material		PTFE									
Length	L	200	200	200	200	250	250	300	350	400	500
External diameter	$\phi D$	156	165	190	210	254	279	317.5	381	444.5	520.7
PCD	$\phi C$	114.3	127	149.2	168.3	200	235	269.9	330.2	387.35	450.85
Flange thickness	t	19	20.6	23.8	27	30.2	33.3	34.9	39.7	46	49.2
Inclined angle of screw hole	$\theta^\circ$	45	22.5	22.5	22.5	22.5	22.5	15	15	11.3	11.3
Diameter of screw hole	$\theta h$	22.2	19	22.2	22.2	22.2	22.2	22.2	25.4	28.6	31.8
Quantity of screw holes	N	4	8	8	8	8	8	12	12	16	16
Height of sensor casing	H1	125	125	145	145	195	195	265	305	365	406
Total height*1	H2	337	341	364	374	421	433	495	542	606	664
Weight (kg)*2	-	9.08	10.32	12.78	16.45	26.62	32.96	42.28	67.62	98.88	145

\*1: The thickness of lining protection ring (grounding) for DN40 to DN80 is 2 mm; The total length of EPD Electromagnetic Flow Meter is L+ 4 mm. The thickness of lining protection ring (grounding) for DN100 to DN300 is 0.5 mm; The total length of EPD Electromagnetic Flow Meter is L+1 mm.  
Size tolerance: Total length is  $\pm 3$ mm; Total height is  $\pm 5$ mm.

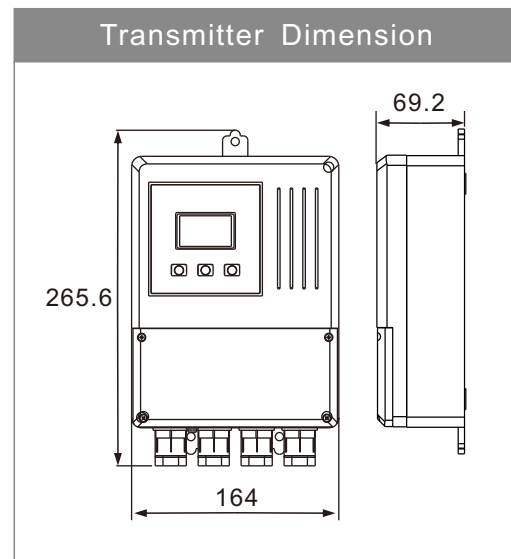
\*2: To shows the weight of sensor only. Not include the weight of transmitter 2.06kg

# APPEARANCE AND DIMENSION AND FLANGE CONNECTION DIMENSION REMOTE TYPE



Connection specification		DIN PN40				DIN PN16					
Nominal diameter(mm)		40	50	65	80	65	80	100	125	150	200
Lining material		PTFE									
Length	L	200	200	200	200	200	200	250	250	300	350
External diameter	$\phi D$	150	165	185	200	185	200	220	250	285	340
PCD	$\phi C$	110	125	145	160	145	160	180	210	240	295
Flange thickness	t	18	20	22	24	18	20	20	22	22	24
Inclined angle of screw hole	$\theta^\circ$	45	45	22.5	22.5	45	22.5	22.5	22.5	22.5	15
Diameter of screw hole	$\theta h$	18	18	18	18	18	18	18	18	22	22
Quantity of screw holes	N	4	4	8	8	4	8	8	8	8	12
Height of sensor casing	H1	125	125	145	145	145	145	195	195	265	305
Total height*1	H2	334	341	361	369	361	369	404	419	484	524
Weight (kg)*2		5.53	6.17	7.43	10.70	7.03	10.70	14.07	19.41	26.68	38.42

Connection specification		DIN PN10		
Nominal diameter(mm)		200	250	300
Lining material		PTFE		
Length	L	350	400	500
External diameter	$\phi D$	340	395	445
PCD	$\phi C$	295	350	400
Flange thickness	t	24	26	26
Inclined angle of screw hole	$\theta^\circ$	22.5	15	15
Diameter of screw hole	$\theta h$	22	22	22
Quantity of screw holes	N	8	12	12
Height of sensor casing	H1	305	365	406
Total height*1	H2	524	582	651
Weight (kg)*2		31.68	52.48	68



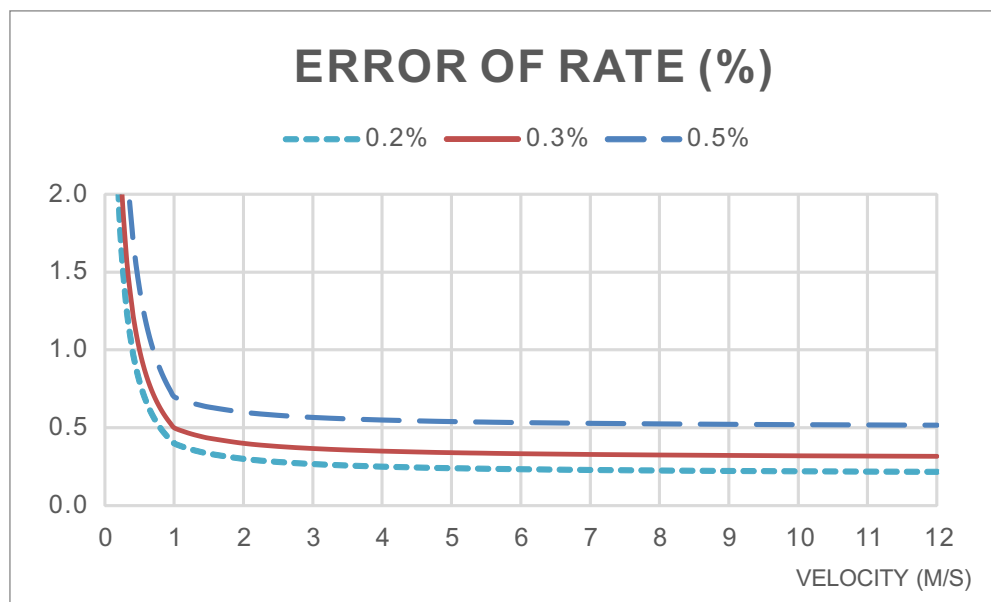
\*1: The thickness of lining protection ring (grounding) for DN40 to DN80 is 2 mm; The total length of EPD Electromagnetic Flow Meter is L+ 4 mm. The thickness of lining protection ring (grounding) for DN100 to DN300 is 0.5 mm; The total length of EPD Electromagnetic Flow Meter is L+1 mm.  
Size tolerance: Total length is  $\pm 3\text{mm}$ ; Total height is  $\pm 5\text{mm}$ .

\*2: To shows the weight of sensor only. Not include the weight of transmitter 2.06kg

# PIPE DIAMETER, FLOW RANGE AND ACCURACY SELECTION

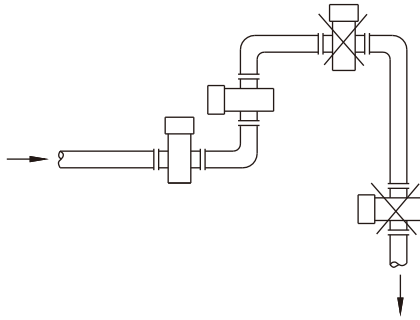
Pipe diameter (mm)	Flow range (m <sup>3</sup> /h)	
	Flowing speed 0.1~1.0m/s	Flowing speed 1.0~10m/s
40	0.45~4.5	4.5~45.2
50	0.71~7.1	7.1~71
65	1.19~11.9	11.9~119
80	1.81~18.1	18.1~181
100	2.83~28.3	28.3~283
125	4.42~44.2	44.2~442
150	6.36~63.6	63.6~636
200	11.3~113	113~1130
250	17.7~177	177~1770
300	25.4~254	254~2540

## Accuracy class & tolerance



# INSTALLATION INSTRUCTIONS

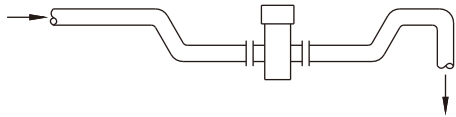
1. The flow meter must be free from strong electromagnetic field. The magnetic intensity of the flow meter installation site must be smaller than 400A/m (It should not be installed near large motors or transformers).
2. It should be installed at the lower point and the vertically upward point of the horizontal pipe. Don't install it at the highest point and the vertically downward point of the pipe.



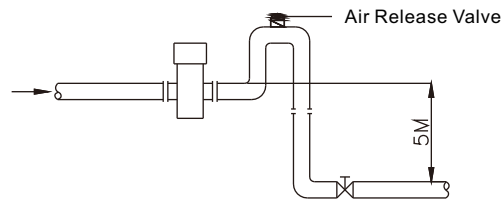
3. It should be installed at the rising point of the pipe.



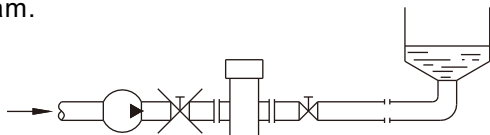
4. It should be installed at the lower point of the pipe when it is installed on the pipe with opening for drainage.



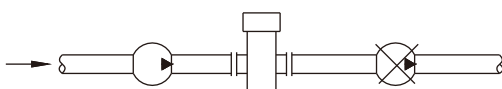
5. If the pipe gap exceeds 5m, the air release valve should be installed at the downstream of the sensor. The downstream of the sensor should have some back pressure.



6. The control valve and cut valve should be installed at the downstream of the sensor rather than the upstream.



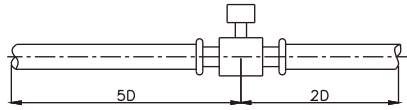
7. The sensor should be installed at the pump outlet rather than the inlet.



8. The fluidic must flow towards the arrow direction of the flow meter.
9. The axial line of the measuring electrode must be approximate to the horizontal direction (The angle of from the horizontal direction).
10. The measuring pipe must be completely filled with liquid.

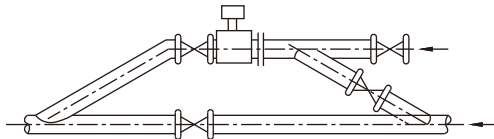
# INSTALLATION INSTRUCTIONS

11. The straight tube section is required to be at least 5D (internal diameter of the flow meter) on the front side, and at least 2D on the rear side.



12. When measuring the mixture of different media, the distance between the mixing point and the flow meter must be 30D at least.

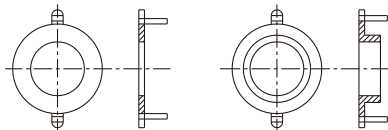
13. For convenient cleaning and maintenance of the flow meter, a bypass pipe must be installed.



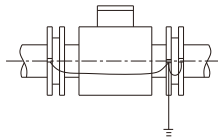
14. When installing the sensor, it should ensure that the measuring pipe and the process pipe must be on the same axial line. For the flow meter with the pipe meter of 50mm or below, the axial line deviation should not exceed 2mm. For those of DN65~DN150, the axial line deviation should not exceed 3mm. For those of  $\geq$ DN200, the axial line deviation should not exceed 4mm.

15. The shim installed between the flanges should have excellent anti-corrosion property. The shim should not intrude in the pipe, which will affect the fluidic in the pipe.

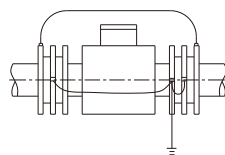
16. The sensor and transmitter should be equipped with high-quality independent grounding wire (The section area of the copper core is 1.6mm<sup>2</sup>). The grounding resistance should be  $<10\Omega$ . If the grounding is poor, it won't work normally. The grounding ring is needed if the pipe connecting with the sensor is insulating, and the material of the grounding ring should be the same as that of the electrode. If the test medium is abrasive, the neck grounding ring should be selected.



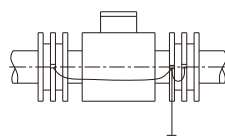
- 16.1 It is for installing the flow meter on the metal pipe not coated with insulating layer internally.



- 16.2 When installing the flow meter on the protective pipe of the cathode, the pipe with the protection of electrolytic corrosion generally has insulating walls and protruding sides. Thus, during installation, the grounding ring and the flanges on the pipe should be insulating.



- 16.3 When installing the flow meter on the plastic pipe or the pipe with insulating coating material, paints or lining, grounding rings on both ends of the sensor should be installed.





# ORDERING INFORMATION

EPD       5   N J 2  0

## Model

- 30: Standard type
- 34: Remote type<sup>1</sup>

## Pipe Diameter

- 040: 40mm      125: 125mm
- 050: 50mm      150: 150mm
- 065: 65mm      200: 200mm
- 080: 80mm      250: 250mm
- 100: 100mm     300: 300mm

## Connection Specification

- V: 7.5Kg/cm<sup>2</sup>    O: 150Lbs      X: PN16
- N: 10Kg/cm<sup>2</sup>    P: 300Lbs      Y: PN25
- G: 20Kg/cm<sup>2</sup>    W: PN10        Z: PN40

## Casing and Flange Material

- 5: Carbon Steel

## Lining Material

- H:NBR      R:Neoprene      E: PTFE

## Electrode Material

- L: SUS316L
- H: Hastelloy alloy C276
- T: Titanium
- A: Tantalum

## Electrode Type

- N: Normal Type

## Power Supply and Signal Transmission

- J2: Integrated Flow Meter, 100~240 Vac 50/60Hz, 4-20mA,pulse output, RS-485
- S2: 24Vdc, 4-20mA, pulse output, RS-485

## Accuracy

- F: 0.5%
- C: 0.3%
- A: 0.2%

## Grounding Ring

- : None
- 0: SUS 304
- L: SUS316L
- H: Hastelloy alloy C276
- T: Titanium

<sup>1</sup> Standard cable length for EPD34 remote type is 10M; 100M is Max.

<sup>2</sup> The accuracy is 0.5% with NBR lining material

# SETTING VALUES

Main Menu	Sub Menu	Unit	Default	Setting Range
Fast Set(0)	Device Tag Num (1.1)			
	Zero Adj. (2.1)			
	Flow Span (1.5)			
	Flow Unit (1.4)			
	Low cutoff (2.4)			
	Damping Time (3.1)			
	Pulse Out Unit (3.3)			
	Total Reset (1.9)			

The parameter is linking from standard menu

Main Menu	Sub Menu	Unit	Default	Setting Range
Basic Set(1)	Device Tag Num (1.1)	none	00001	00001~65535
	Measure Type (1.2)	-	Water	Water
	Tube Size (1.3)	mm	actual	10,15,25,32,40,50,65,80,100 125,150,200,250,300,350,400,450,500
	Flow Unit (1.4)	-	m <sup>3</sup> /h	L/(min,h),m <sup>3</sup> /(min,h),gal/(min,h), kg/(min,h),Ton(min,h) (Flow rate* Liquid density = weight) "L/m","L/h","m <sup>3</sup> /m","m <sup>3</sup> /h","gal/m","gal/h" ,"kg/m","kg/h","Ton/m","Ton/h","m <sup>3</sup> /d"
	Flow Span (1.5)	=Flow Rate Unit	(5m/s)* (Diameter/2) <sup>2</sup> *pi* Unit of Flow Forward	(0.1 ~ 10.0m/s) * (Diameter mm/2) <sup>2</sup> * pi *Unit of Flow Forward
	Direction (1.6)	dir	Forward	Forward,Reverse
	Total Unit (1.7)	-	m <sup>3</sup>	Liter,gal,m <sup>3</sup> ,kg,Ton
	Total Mode (1.8)	none	Forward	Forward,Reverse, Bi-direction
	Total Reset (1.9)	none	Cancel	Cancel,Accept

Main Menu	Sub Menu	Unit	Default	Setting Range
Advanced Set(2)	Zero Adj. (2.1)	m/s	actual	-0.5000~+0.5000
	K-Factor (2.2)	none	1.000	0.000~3.000
	Density (2.3)	g/cm <sup>3</sup>	1.0000	0.0001~9.9999
	Low cutoff (2.4)	%	0.5	0.00~100.00
	Fwd. Init. (2.5)	=Total Unit	0	0~99999
	Rev. Init.(2.6)	=Total Unit	0	0~99999

# SETTING VALUES

Main Menu	Sub Menu	Unit	Default	Setting Range
I/O Signal Set(3)	Damping Time (3.1)	second (s)	3	0~100
	Pulse Out Mode (3.2)	none	Pulse NO	Pulse NO, Pulse NC, Frequency
	Pulse Out Unit (3.3)	Unit/pulse	0.1 L	0.001~100(L,gal,m <sup>3</sup> ,g,kg,Ton) m <sup>3</sup> /pulse,gal/pulse,m <sup>3</sup> /pulse g/pulse,kg/pulse,Ton/pulse
	Max. Freq. (3.4)	Hz,kHz	2K	1~8K (00.000)
	Curr. Mode (3.5)	none	4-20	4-20,0-20
	4mA Fine-Tune (3.6)	count	0	-5000~5000
	20mA Fine-Tune (3.7)	count	0	-5000~5000
	Input1 Func. (3.8)	N/A	None	None, Total Reset
	Input1 Type (3.9)	N/A	NO	NO,NC

Main Menu	Sub Menu	Unit	Default	Setting Range
Alarm Set (4)	Max. Flow (4.1)	Flow Rate Unit	Max.	Max. Flow Rate
	Min. Flow (4.2)	Flow Rate Unit	Min.	Min. Flow Rate
	Empty Tube Set (4.3)	N/A	Disable	Enable, Disable
	Output 1 Func. (4.4)	N/A	Max. Flow Rate	Max. Flow Rate, Min. Flow Rate, Empty Tube, System Alarm
	Output 1 Type (4.5)	N/A	No	NO,NC
	Output 2 Func. (4.6)	N/A	Min. Flow Rate	Max. Flow Rate, Min. Flow Rate, Empty Tube, System Alarm
	Output 2 Type (4.7)	N/A	No	NO,NC
	Curr. Func. (4.8)	N/A	None	Empty Tube, System Alarm
	Alarm Curr. (4.9)	N/A	3.6	3.6,3.8,20.5,22

# SETTING VALUES

Main Menu	Sub Menu	Unit	Default	Setting Range
System Set (5)	Language (5.1)	N/A	English	English, 繁中, 簡中
	System Info.(5.2)	N/A	Actual	(Normal, Empty
		m/s	Actual	N/A
		kΩ	Actual	N/A
		N/A	Actual	0000 0000 ~ FFFF FFFF
	Self-Test (5.3)	N/A	Cancel	Normal, Circuit Fail ,Excitation Fail, Amb. Temp, Electrode Coating
	Analogy Input (5.4)	N/A	0000	0~9999
		N/A	1000	0~9999
		N/A	Kpa	None, Kpa, Mpa, Psi, Bar, °C, °F,
		N/A	1	0~3
ModBus Comm. (5.5)	N/A	1	1~255	
	N/A	BPS	9600	1200,2400,4800,9600,19200 38400,57600
	N/A	8	8,9	
	N/A	none	none,odd,even	
Recovery Default (5.6)	N/A	1	1,2	
Recovery Default (5.6)	N/A	Cancel	Cancel, Accept	

Main Menu	Sub Menu	Unit	Default	Setting Range
Simulation (6)	Flow Speed (6.1)	m/s	0	-10 ~ 10
	Flow Rate (6.2)	Flow Rate Unit	0	0~max.
	Output Curr. (6.3)	mA	4mA	3.6~22
	Output Freq. (6.4)	Hz(pulse/sec)	2	8000
	Output1 Status (6.5)	N/A	OFF	ON/OFF
	Output2 Status (6.6)	N/A	OFF	ON/OFF
	Input1 Status (6.7)	N/A	Actual	ON/OFF
	Input Curr. (6.8)	N/A	Actual	0~24mA

Main Menu	Sub Menu	Unit	Default	Setting Range
System Log(7)	Date Set (7.1)	actual		year : 17~99, month : 01~12, day : 01~31
	Time Set (7.2)	actual		hour : 00~23, minute : 00~59, sec : 00~59
	System Log Info (7.3)	actual		N/A

Main Menu	Sub Menu	Unit	Default	Setting Range
Infomation (8)	F.W. Version(8.1)		actual	

# APPLICATION DEMO



Pharmaceutical



Pharmacy



Beverage



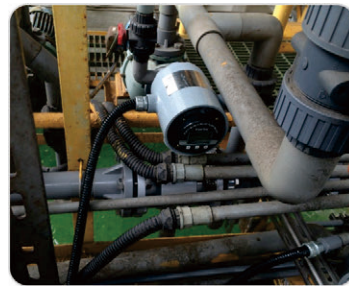
Electronics



Food & Beverage



Incinerator



Mining



Plastic

# TUCHENG PLANT/YILAN PLANT



# EPD APPLICATION / ORDER FORM

## Company Profile

Company Name: \_\_\_\_\_ Contact Person: \_\_\_\_\_

E-mail: \_\_\_\_\_ Phone: \_\_\_\_\_ Tax: \_\_\_\_\_

## Application

Medium: \_\_\_\_\_ Temperature: \_\_\_\_\_ Sanitary Degree Request: Yes  NO

Conductivity: \_\_\_\_\_ Viscosity: \_\_\_\_\_

Diameter of Tube (DN) : \_\_\_\_\_ Accuracy Request(%): \_\_\_\_\_ Ambient Temp.: \_\_\_\_\_

Normal Flow Rate(m<sup>3</sup>/h): \_\_\_\_\_ Max. Flow Rate(m<sup>3</sup>/h): \_\_\_\_\_ Min. Flow Rate(m<sup>3</sup>/h): \_\_\_\_\_

Connection Spec: \_\_\_\_\_ Connection Material\*\*: \_\_\_\_\_

Pressure(Kg/m<sup>3</sup>): \_\_\_\_\_ Max. Static Pressure(Kg/m<sup>3</sup>): \_\_\_\_\_ \*\*SUS304, SUS316, SUS316L

Lining Material\*: \_\_\_\_\_ Electrode Material\*\*\*: \_\_\_\_\_

\* PTFE · NBR · Neoprene

\*\*\*SUS316 · Hastelloy Alloy · Titanium · Tantalum

Power:  110Vac  220Vac  24Vdc

Output:  4-20mA/Pulse(freq)  RS-485/Modbus

Grounding:  NO  YES

Installation Direction:  Horizontal  Vertical

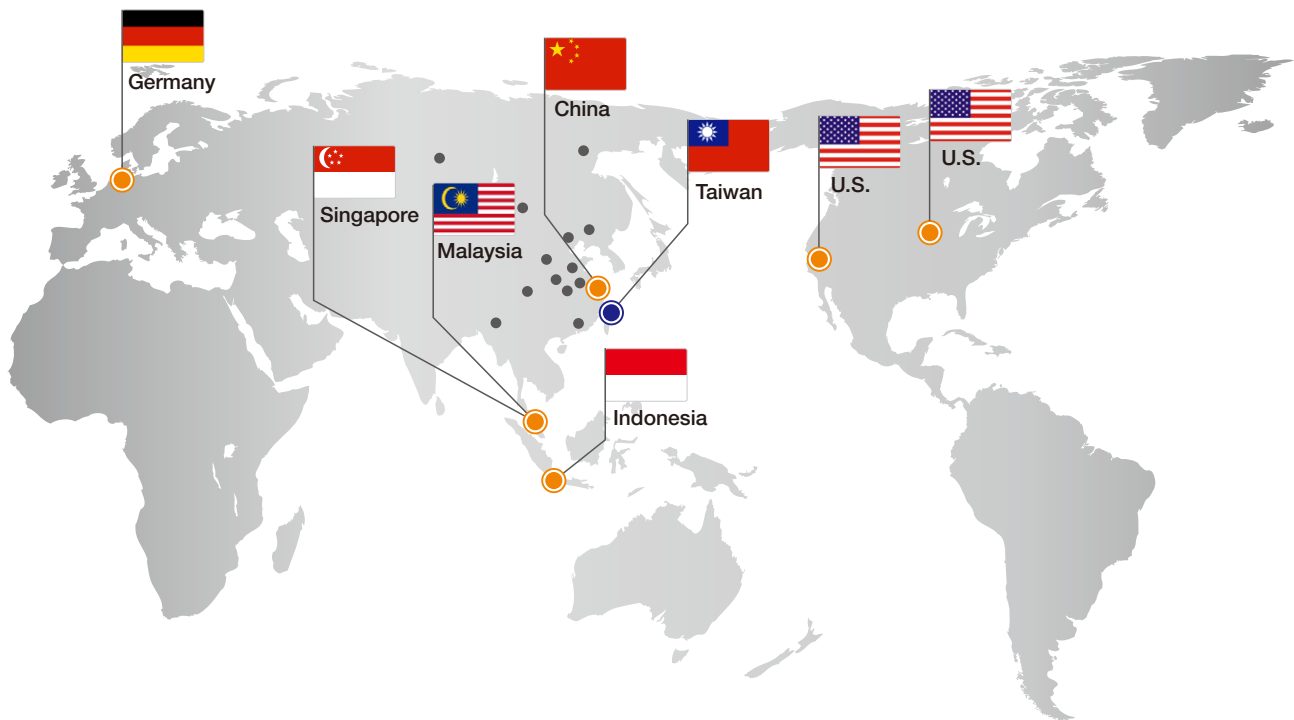
Vibration Inside Tube:  NO  YES

Strong Magnetic Nearby:  NO  YES

Explosion Proof:  NO  YES

Explosion Proof Code: \_\_\_\_\_

# Global Network



## ■ Asia

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