



Excellent Vortex Flowmeter INSERTION Type SMART EX DELTA

GENERAL SPECIFICATION
GS.No.GBD603E-9

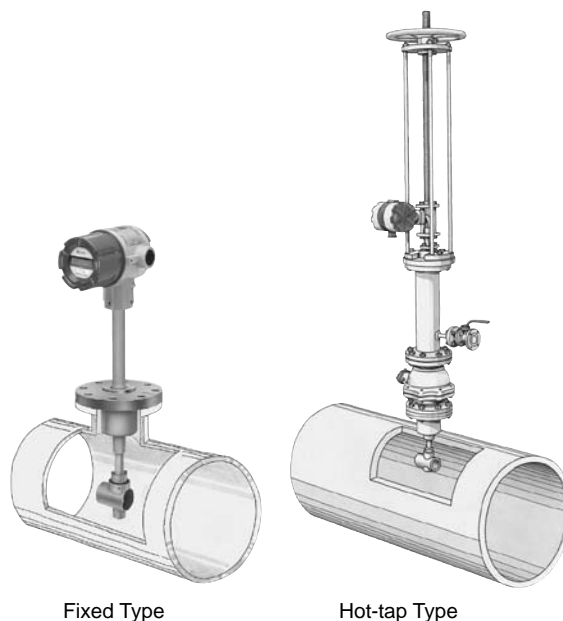
■ GENERAL

The Insertion Type Smart EX DELTA has various functions, i.e., conversion computing, intelligent functions such as setting, changing, self-diagnosis and loop check with calling of range and every factor to be entered.

Furthermore, additionally provided communication function utilizing a Smart Communication Unit(EL2310), can execute those operations such as setting and calling of each parameter and also communication with an upper ranked computer. There are two types of the sensors, one is fixed type and the other is hot-tap type. In case of the latter, check and replace are possible without interrupting of metering flow.

■ FEATURES

1. Offers high accuracy measurement over a wide flow-range.
2. Applicable for flow measurement of gas, liquid and steam.
3. The sensor, completely isolated from wetted parts, has a long service life.
4. Absence of any moving parts means that dust and mist in the medium measured are less likely to pose a problem.
5. Materialization of 2 wires transmission system for cost reduction and simplification of a system to be applied.
6. Ease to data setting.
7. Maintenance cost saving means increasing of security operation.
8. Maintenance operation such as range and parameter setting, and calibration can be performed.



■ GENERAL SPECIFICATIONS

Item	Description	
Mounting type	Fixed Type	Hot-tap Type
Nominal size to be applied	200, 250, 300, 400, 500, 600, 800, 1000, 1500, 2000mm	400, 500, 600, 800, 1000, 1500, 2000mm
Nominal size of the probe	50mm	
Materials	Meter body	Stainless Steel (SUS304)
	Bluff body	Stainless Steel (SUS304)
Pressure rating	JIS 10K, ASME 150, JPI 150	
Mounting flange	100mm (4") JIS 10 K, ASME 150, JPI 150	
Installation	Horizontal or Vertical	Horizontal
Max. operating pressure	Depends on flange rating	
Operating temperature rang ☆	-10 to +300°C	
Velocity range	Air (Atm.press.): 12 to 50m/s Water: 0.6 to 6m/s	
Standard insertion depth	Nominal size of Piping: D < 500mm ; 0.5D D ≥ 500mm ; 0.2D D=Inner Dia.of Piping(mm)	
Accuracy ★	Within ± 2% of FS	
Fluid to be metered	Liquids (Water, Hot Water, Chemical Liquids) Gases (Oxygen, Nitrogen, Carbon Dioxide, Compressed Air, etc.) Steam (Saturated Steam, Super Heated Steam)	

☆: Operating temperature range depends on condition of the fluid to be measured.
★: Accuracy shall be guaranteed only for the specified actual nominal size.

■ CONVERTER SPECIFICATIONS

Item	Description	
Model	PA25 (No Display)	PA25S (w/Totalizer, Digital Indicator)
Mounting	Select one of the followings : ①Integral with flowmeter ②Separate type (installed on 2"pipe)	
Waterproof configuration	JIS C 0920, jet-proof (IP66)	
Explosionproof configuration	Select one of the followings : ①Non-explosionproof configuration ②Flameproof configuration T1IS: ExdIIB+H ₂ T1 to T6 ③Flameproof configuration ATEX: II2G ExdIIB+H ₂ T6 to T1 ④Flameproof configuration NEPSI: ExdIIB+H ₂ T4	
Ambient Temperature	Non-explosionproof construction: -40 to +80°C Explosionproof construction : -20 to +60°C	Non-explosionproof construction : -20 to +60°C Explosionproof construction : -20 to +60°C
Ambient Humidity	5~100%RH without dew condensation	
Housing Material	Aluminum alloy	
Housing Finish	Finished in baked melamine Finish Munsell 2.5G8/2 (Cover: Munsell 2.5BG5/6)	
Output	Current signal 2 wires system (Both as Power line) Select one of the followings : ①Factored pulse (Scaled pulse) Pulse level : "0" : 4mA, "1" : 20mA Pulse Width : 10 to 1000ms (St'd : 50ms) ②Unfactored pulse (Vortex synchronized pulse) Pulse level : "0" : 4mA, "1" : 20mA Pulse Width : 200 μs ③Analog 4 to 20mADC at 0 to FS Time constant : 0 to 100s (St'd : 2.5s)	
Display (Option)	Display : 7 segments LCD Content : One of the following 4 ways display is possible with switching over of an internal switch or a EL2310 ①Totalizing flow throughput : 6 digits Unit of Totalizing : Same as Factored pulse output Unit of Flow rate Indication : Refer to (※2) · Upon power interruption, Totalized counts are held by Non-volatized memory · Totalized counts are resettable by an internal switch or EL2310 ②Actual instantaneous flow rate : 7 digits (3 1/2 digits are effective) Unit of Flow rate Indication : Refer to (※2) ③% Instantaneous flow rate : Unit of Display : % FS Discrimination : 0.1% Full Scale : Same as that of Analog output ④8 scaled % Bar Graph Display : % FS Full Scale : Same as that of Analog output	
Power Supply	12 to 45V DC (See Load Resistance Range curve) NOTE: If you connect OVAL communication unit EL2310, use a power supply below 35V DC.	
Cable Entry	G1/2 internal threads (Explosionproof construction converter is furnished with pressuretight gasket)	
Cables (※1)	Converter to receiving instrument : 1.25mm ² Min., 2-conductor shield cable Sensor to converter : 1.25mm ² Min., 3-conductor shield cable (applicable to separate type) Finished cable outside diameter : Non-explosionproof φ 13.5mm Max Flameproof φ 8.5 to φ 11mm	
Transmission Length	Converter to receiving instrument : 1km Max Sensor to converter : 200m Max (applicable to separate type)	
Communication	HART Protocol Communication (※3)	
Computation	· Actual flow rate computation (Liquid, Gas, Steam) · Temp./Press. correcting computation (Gas)	

※1 : In an environment where ambient temperature exceeds 55°C, use cables that withstand 70°C or higher.
NOTE: Even if ambient temperature does not exceed 55°C, use cables heat resistant to 60°C, or higher, specified by individual products used.

※2 : Unit of Totalized Flow Counts of Flow and Instantaneous Flowrate Indication can be selected from following table.

Unit of Instantaneous Flowrate Unit of Totalized Flow	Computation	
	Actual Flow	Temp./Press Correction
L/min, L/h, m ³ /min, m ³ /h, kL/min, kL/h	○	×
L, m ³ , kL	○	○
L/min (normal), L/h (normal), m ³ /min (normal), m ³ /h (normal), L (normal), m ³ (normal)	×	○
g/min, g/h, kg/min, kg/h, t/min, t/h	○	○
g, kg, t	○	○
ton (US)/min, ton (US)/h	○	○
ton (US)	○	○

※3 : In case a specification for Pulse output is given, Communication function is available only under the following conditions:

- ①During flow interruption
- ②Upon Power "ON" (Continuous communication is possible it started within 15 sec. after Power "ON")

- Guidelines to set the analog output and indicator full scale are given below:
3 times the minimum flowrate ≤ Full scale ≤ 1.3 times the max. flowrate
For minimum and maximum flowrates, refer to the section "Flow Ranges."
If you want to set up a full scale outside the range above, consult the factory.

■ CONFORMITY EN DIRECTIVES

Item	Description
Applicable EU Directives	EMC Directive (89/336/EEC, 92/31/EC, 93/68/EC) ATEX Directive (94/9/EC)
Applicable EN Standards	EMC Directive : EN55011 : 1998/A1 : 1999 Group 1, Class B : EN61000-6-2 : 1999 ATEX Directive: EN60079-0 : 2006 : EN60079-1 : 2007

■ FLOW RANGE

Table A, B, C, E are given value calculated from a nominal size. In order to determine flow range for actual piping nominal size, correction should be made according to the following equation.

$$Q = Q_0 \times (D/D_0)^2 \dots \dots \dots [A]$$

Q :Flow rate based on actual nominal size.

Q₀:Flow rate based on nominal size.

D :Actual nominal size.

D₀:Nominal size.

● Flow Range for Liquid in General

Select the minimum flow rate from Table A (based on specific gravity) or Table B (based on viscosity), whichever is greater.

Table A: Calculated value from specific gravity

Unit in m³/h

Nominal size mm (inch)	Sp.Gr. Velocity (m/s)	Minimum Flow Rate								Maximum 6
		0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	
		0.90	0.82	0.76	0.71	0.67	0.64	0.61	0.58	
200 (8")		102	93	86	80	76	72	69	66	678
250 (10")		158	145	134	125	118	112	107	102	1060
300 (12")		228	208	193	180	170	161	154	147	1520
400 (16")		405	370	342	320	302	287	273	262	2710
500 (20")		633	578	535	500	472	447	427	409	4240
600 (24")		911	831	770	720	679	644	614	588	6100
800 (32")		1620	1480	1370	1280	1210	1150	1100	1050	10800
1000 (40")		2530	2310	2140	2000	1890	1790	1710	1640	16900
1500 (60")		5690	5200	4810	4500	4250	4030	3840	3680	38100
2000 (80")		10200	9240	8550	8000	7540	7160	6820	6530	67800

Table B: Calculated value from viscosity

Unit in m³/h

Nominal size mm (inch)	Kinematic Viscosity (mm ² /s) Velocity (m/s)	Minimum Flow Rate									
		1	2	3	5	10	15	20	25	30	40
		0.13	0.26	0.39	0.65	1.30	1.95	2.60	3.25	3.90	5.20
200 (8")		Refer to table A.		45	74	147	221	294	368	441	589
250 (10")		Refer to table A.		69	115	230	345	460	575	690	919
300 (12")		Refer to table A.		100	166	331	497	662	827	993	1330
400 (16")		Refer to table A.		177	294	589	883	1180	1470	1770	2360
500 (20")		Refer to table A.		276	460	919	1380	1840	2300	2760	3680
600 (24")		Refer to table A.		397	662	1330	1990	2650	3310	3970	5300
800 (32")		Refer to table A.		706	1180	2360	3530	4710	5890	7060	9410
1000 (40")		Refer to table A.		1110	1840	3680	5520	7360	9190	11100	14700
1500 (60")		Refer to table A.		2490	4140	8270	12400	16600	20700	24900	33100
2000 (80")		Refer to table A.		4410	7360	14700	22100	29400	36800	44100	58900

Table C&D

● Flow Range for General Gases

In this table, flow rates are specified in [actual] base. Therefore, in case of [normal] base, make it sure to convert the flow rate to [actual] condition and determine the flow range and the nominal diameter based on this table.

Nominal size mm (inch)	Density kg/m ³ Velocity m/s	Minimum Flow Rate (m ³ /h)										Max. Flow Rate (m ³ /h) 50
		0.38	0.7	1.2	2.0	3.6	6	11	19	34	(60)	
		20.3	15.0	11.8	10.0	8.2	6.9	5.7	4.7	3.9	3.2	
200 (8")		2300	1690	1330	1130	923	778	636	530	437	362	5650
250 (10")		3590	2640	2080	1760	1450	1220	994	828	682	565	8830
300 (12")		5160	3810	3000	2530	2080	1750	1430	1200	982	813	12700
400 (16")		9180	6760	5330	4490	3690	3120	2550	2120	1750	1450	22600
500 (20")		14400	10600	8320	7020	5770	4870	3980	3320	2730	2260	35300
600 (24")		20700	15200	12000	10100	8310	7010	5730	4770	3930	3250	50800
800 (32")		36700	27100	21300	18000	14800	12500	10200	8480	6990	5780	90400
1000 (40")		57400	42300	33300	28100	23100	19500	15900	13300	10900	9030	141000
1500 (60")		129000	95100	74900	63200	51900	43800	35800	29800	24600	20400	318000
2000 (80")		230000	169000	133000	113000	92300	77800	63600	53000	43700	36200	565000

Type of Gases	Density kg/m ³	Gas Pressure (MPa (gauge)) at 20 °C										(Ref.) Viscosity of Gas
		0.38	0.7	1.2	2.0	3.6	6	11	19	34	(60)	
Acetylene	1.175	-	-	0	0.08	0.23	0.55	0.9	1.65	3	-	0.00943 (mPas)
Argon	1.785	-	-	-	0.02	0.12	0.26	0.55	1.05	2	3.6	0.007
Ammonia	0.771	-	0	0.07	0.21	0.42	0.75	1.45	2.55	4.6	-	0.0092
Carbon Monoxide	1.250	-	-	0	0.07	0.21	0.42	0.85	1.55	2.8	-	0.0166
Ethane	1.357	-	-	0	0.06	0.18	0.37	0.8	1.4	2.6	-	0.0085
Ethylene	1.264	-	-	0	0.07	0.21	0.42	0.85	1.55	2.8	-	0.0097
Air	1.293	-	-	0	0.07	0.20	0.4	0.85	1.5	2.7	-	0.017
Oxygen	1.429	-	-	0	0.05	0.17	0.35	0.75	1.35	2.5	4.4	0.0192
Hydrogen	0.0899	0.35	0.73	1.33	2.3	4.2	-	-	-	-	-	0.0084
Carbon Dioxide	1.977	-	-	-	0.01	0.1	0.23	0.5	0.95	1.7	3.3	0.0138
Nitrogen	1.251	-	-	-	0.07	0.21	0.42	0.85	1.55	2.8	-	0.0166
City Gas	0.802	-	0	0.06	0.17	0.38	0.7	1.4	2.45	4.5	-	0.01
Natural Gas	0.828	-	0	0.06	0.16	0.37	0.68	1.35	2.4	4.3	-	0.0107
Freon-12	5.533	-	-	-	-	0	0.02	0.12	0.27	0.56	1.1	0.0127
Propane	2.020	-	-	-	0.01	0.09	0.22	0.49	0.9	1.7	3.2	0.0075
Butane	2.703	-	-	-	0	0.04	0.14	0.34	0.65	1.2	2.4	0.0069
Methane	0.717	-	0	0.08	0.2	0.44	0.8	1.55	2.8	-	-	0.0103

How to Determine the Minimum Flow Rate

Find a value D, follow the same column upwards and find a value intersecting the desired diameter in Table C for the minimum flow rate.

● Flow Range for Saturated Steam

Table E

Unit in t/h

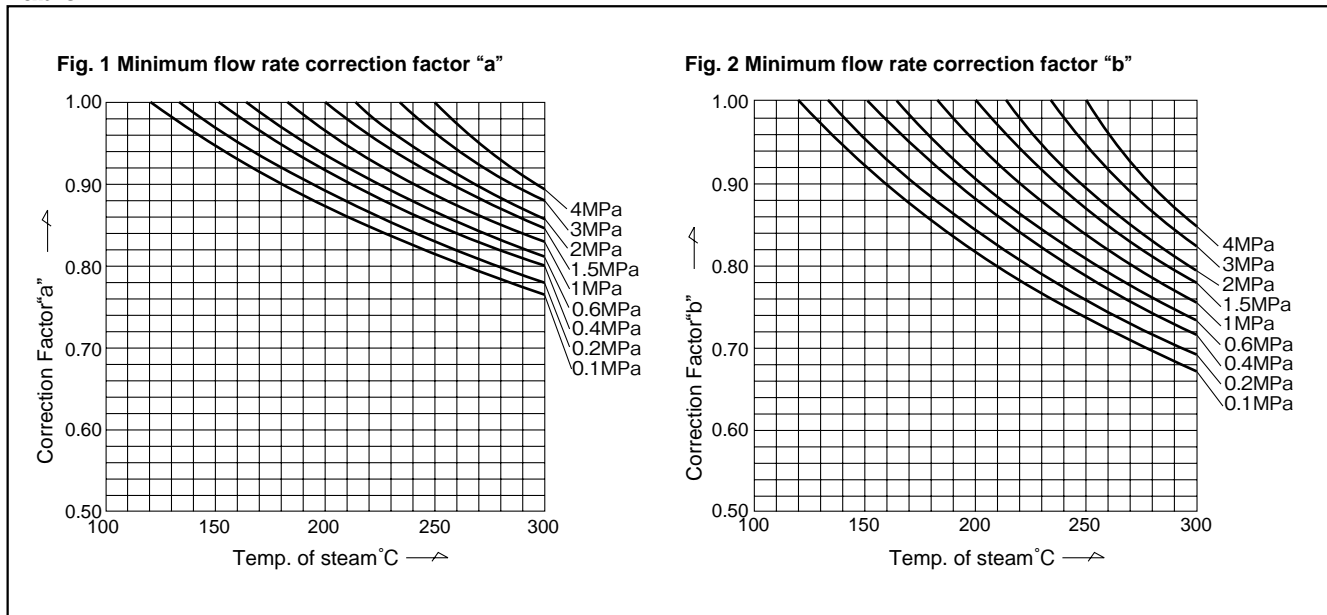
Press. MPa(gauge)	200 (8")		250 (10")		300 (12")		400 (16")		500 (20")		600 (24")		800 (32")		1000 (40")		1500 (60")		2000 (80")	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
0.049	1.32	4.89	2.06	7.64	2.96	11.0	5.26	19.5	8.22	30.5	11.9	44.0	21.1	78.2	32.9	122	74.0	275	132	489
0.098	1.50	6.37	2.35	9.94	3.38	14.3	6.00	25.4	9.38	39.7	13.5	57.3	24.0	101	37.5	159	87.4	358	150	636
0.196	1.97	9.26	3.07	14.4	4.42	20.8	7.86	37.0	12.3	57.8	17.7	83.3	31.5	148	49.2	231	111	521	197	926
0.294	2.35	12.1	3.67	18.9	5.29	27.2	9.39	48.4	14.7	75.6	21.2	108	37.6	193	58.7	302	132	680	235	1210
0.392	2.70	14.9	4.22	23.2	6.07	33.5	10.8	59.6	16.9	93.1	24.3	134	43.2	238	67.5	372	152	838	270	1490
0.490	3.03	17.6	4.73	27.6	6.81	39.7	12.1	70.7	18.9	110	27.2	159	48.4	282	75.6	442	170	994	303	1760
0.588	3.33	20.4	5.21	31.9	7.50	45.9	13.4	81.7	20.9	127	30.0	183	53.3	327	83.3	511	188	1140	333	2040
0.686	3.62	23.1	5.66	36.2	8.15	52.1	14.5	92.7	22.7	144	32.6	208	58.0	370	90.6	579	204	1300	362	2310
0.785	3.90	25.9	6.10	40.4	8.78	58.2	15.6	103	24.4	161	35.1	233	62.4	414	97.5	647	220	1450	390	2590
0.883	4.17	28.6	6.52	44.7	9.38	64.4	16.7	114	26.1	178	37.6	257	66.7	458	105	715	235	1610	417	2860
0.981	4.44	31.4	6.93	49.0	9.98	70.6	17.8	125	27.7	196	39.9	282	71.0	502	111	785	250	1760	444	3140
1.08	4.69	34.1	7.32	53.3	10.6	76.7	18.8	136	29.3	213	42.2	307	75.0	545	118	852	264	1910	469	3410
1.18	4.93	36.8	7.70	57.5	11.1	82.8	19.8	147	30.8	230	44.4	331	78.9	588	124	920	278	2070	493	3680

● Flow Range for Superheated Steam

The flow range for superheated steam is determined by first finding the correction factors "a" and "b" for the minimum flow rate and maximum flow rates from the table

below and then multiplying the applicable connection diameter and pressure readings in the flow range table of saturated steam by those correction factors.

Table F:



Example:

Measurement of super heated steam having pressure of 0.098MPa and temperature of 160 °C by actual nominal size 477.8mm. From table E, minimum flow rate and maximum flow rate for 0.098MPa saturated steam with nominal size 500mm are determined as 9.38t/h and 39.7t/h.

Correction factor "a" is determined as 0.93 from Fig. 1 and Correction factor "b" is determined as 0.9 from Fig. 2 and consulting from Table E and formula [A].

Min. flow rate

$$Q_{min} = 9.38 \times 0.93 \times \left(\frac{477.8}{500}\right)^2 \doteq 8 \text{ t/h}$$

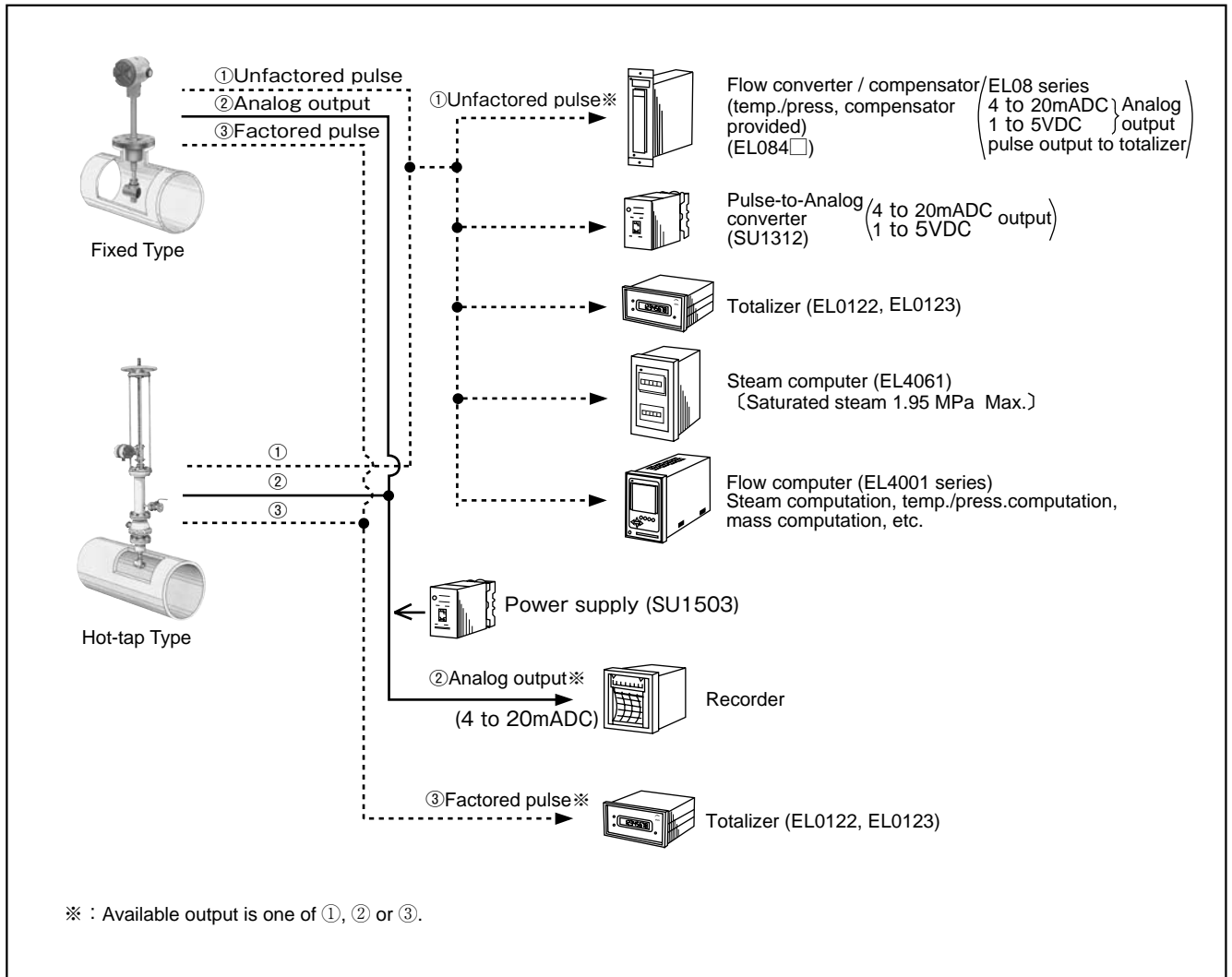
Max. flow rate

$$Q_{max} = 39.7 \times 0.9 \times \left(\frac{477.8}{500}\right)^2 \doteq 32 \text{ t/h}$$

● Nominal Meter Factor

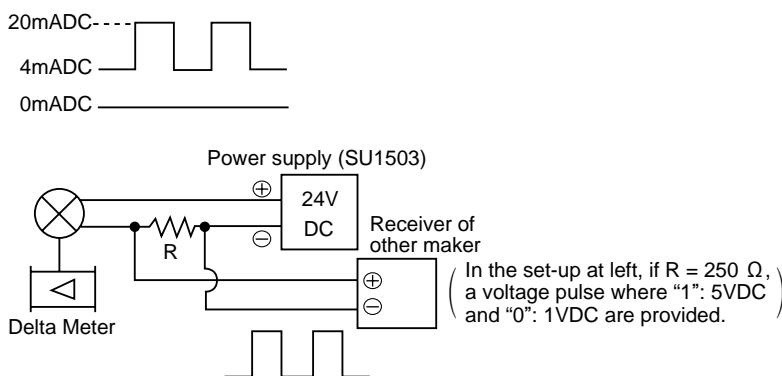
Nominal size of Piping mm (inch)	Nominal Meter Factor L/p
200 (8)	2.42
250 (10)	3.89
300 (12)	5.75
400 (16)	10.7
500 (20)	18.9
600 (24)	27.7
800 (30)	49.2
1000 (40)	76.9
1500 (60)	173
2000 (80)	309

■ HOOK-UP WITH RECEIVING INSTRUMENTS

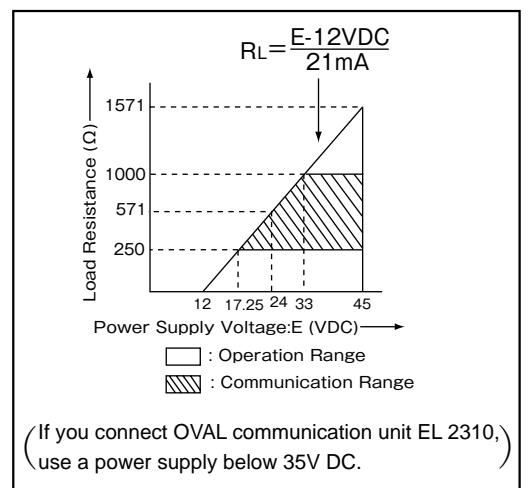


- Shown above are typical examples. Depending on individual applications and specifications, hookup with many other electrical instruments are acceptable.
- For any arrangement with an electrical instrument, indicator, indicator, etc. other than those supplied by OVAL, a 24VDC power supply is required. Use OVAL Model SU1503 power supply.
- As to individual receiving instruments, see respective General Specification sheets.

※ That the unfactored and factored pulse output levels are "1": 20mADC and "0": 4mADC, respectively, means as illustrated below. Therefore, if you plan to use any instrument designed to accept a voltage pulse signal, couple a resistor in series as shown. The resistance value of load resistor is given in the Acceptance Load Resistance Range diagram.



● Acceptable Load Resistance Range

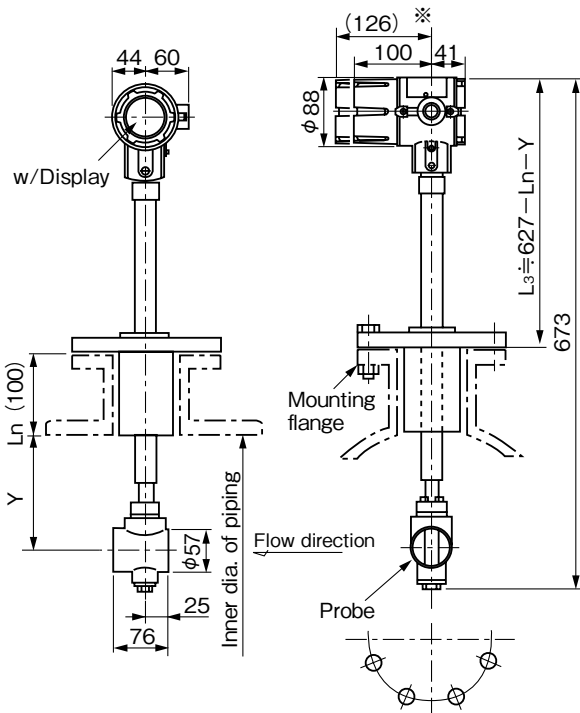


OUTLINE DIMENSIONS (Unit in mm)

Fixed Type

Converter: Integral type
 Nominal size to be applied: 200 to 1000 mm
 In case of nominal size more than 1300 mm, consult factory.

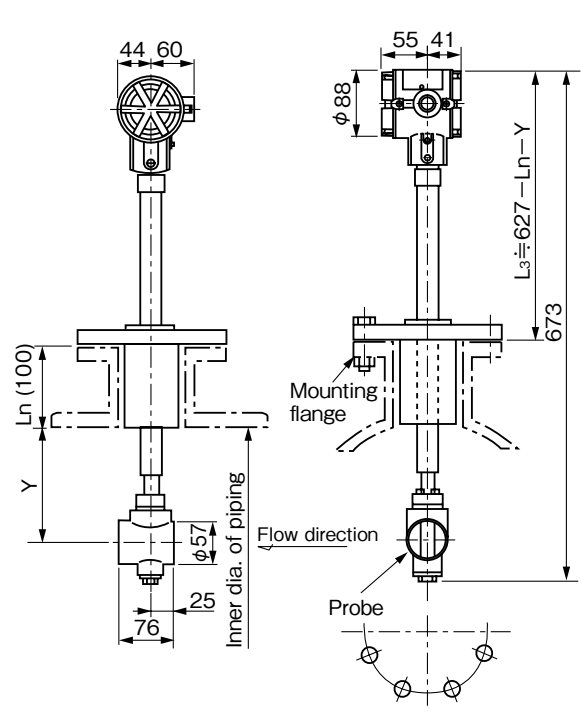
Ln: Height of mounting neck (st'd. 100 mm)
 Y : Length of insertion
 Nominal size < 500 mm; $0.5 \times D$
 Nominal size ≥ 500 mm; $0.2 \times D$
 D = Inner dia. of piping



Fixed Type

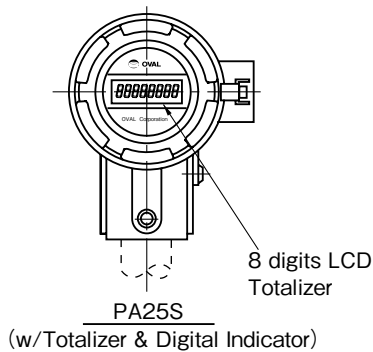
Converter: Separate type
 Nominal size to be applied: 200 to 1000 mm
 In case of nominal size more than 1300 mm, consult factory.

Ln: Height of mounting neck (st'd. 100 mm)
 Y : Length of insertion
 Nominal size < 500 mm; $0.5 \times D$
 Nominal size ≥ 500 mm; $0.2 \times D$
 D = Inner dia. of piping



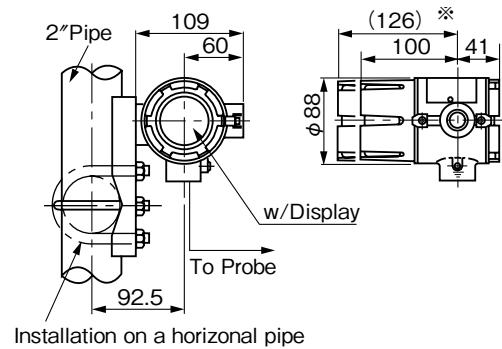
Approx. Weight : 13 kg

Converter



- ① Direction of mounting of the converter is changeable with 90° step being rotated around the center of a mounting bracket.
- ② Direction of a display is also changeable with 90° step being rotated within the converter.
- ※ In case of w/indicator

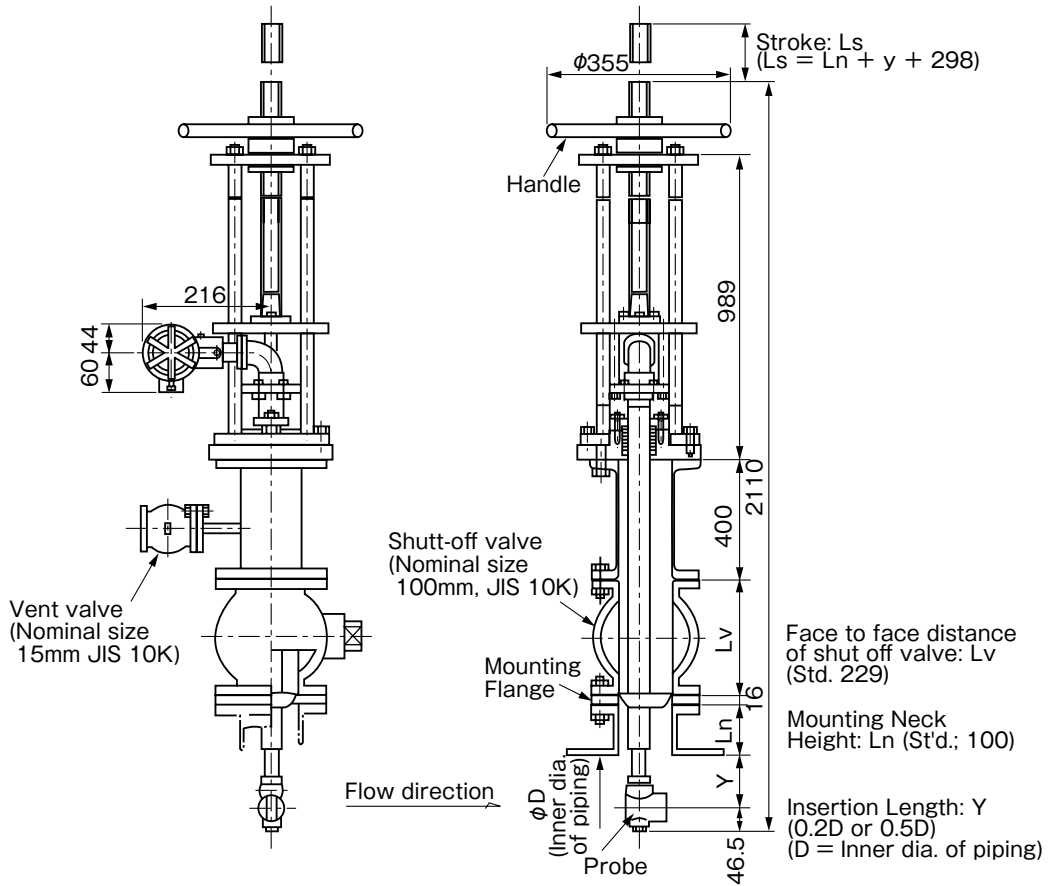
Separate Type Converter



Approx. Weight (kg)	
No Display	w/Display
1.9	2.1

● Hot-tap type

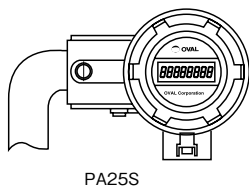
Nominal size to be applied: 400 to 2000mm



Approx. Weight : 140 kg

● Mounting Direction of Transducer

Standard: Down to the left when viewing from upper side, upstream.
 Converter with totalizer or indicator (PA15S): Direct reading face shall be down side of stream.
 Conduit connection port should come to down side to prevent water invasion.



PA25S

■ PRESSURE LOSS

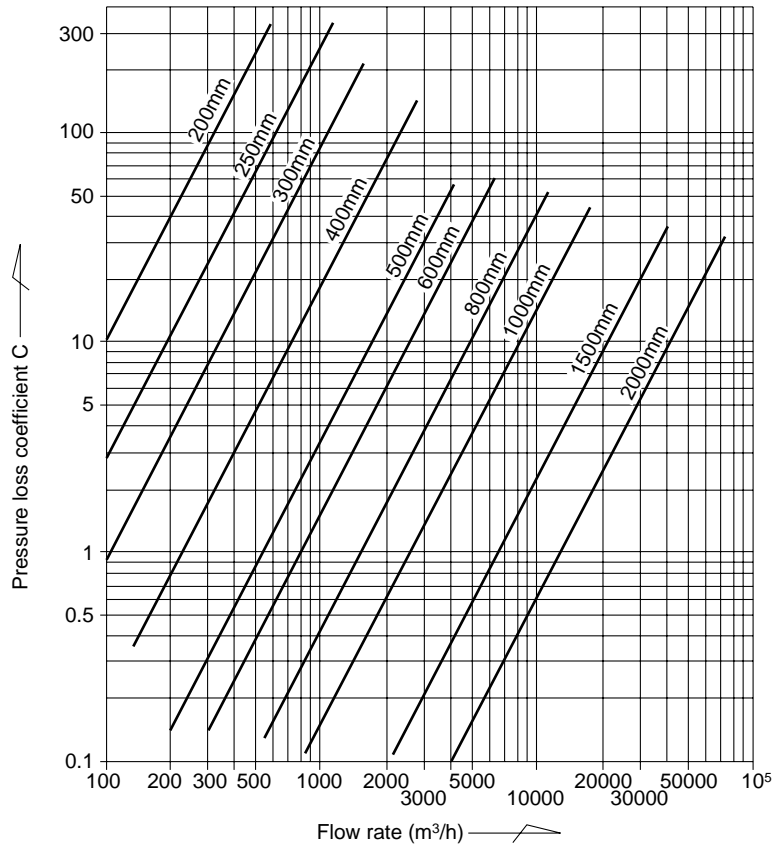
● **Liquid Service**

$$\Delta P = \frac{C \times \rho}{10^5}$$

ΔP = Pressure loss (kPa)

ρ = Density (kg/m³)

C = Pressure loss coefficient



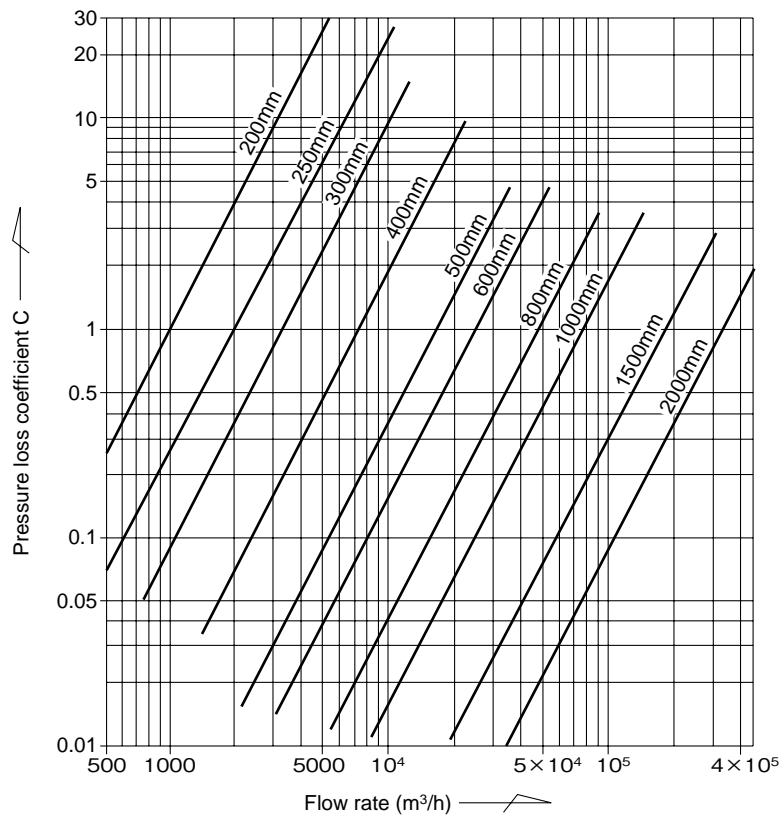
● **Gas, Steam Service**

$$\Delta P = \frac{C \times \rho}{100}$$

ΔP = Pressure loss (kPa)

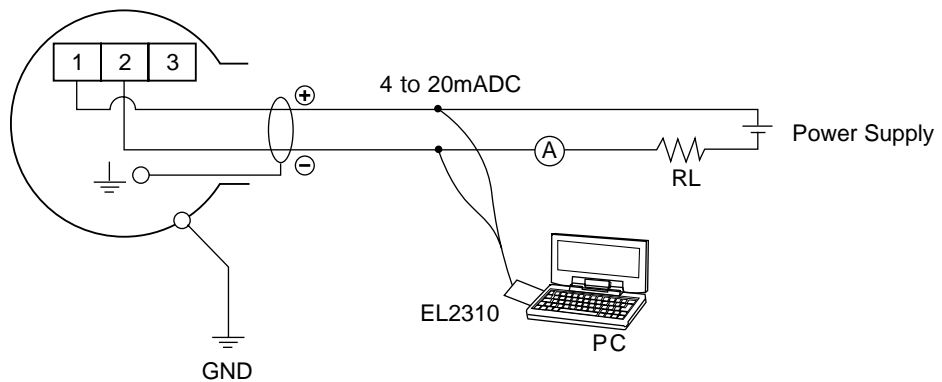
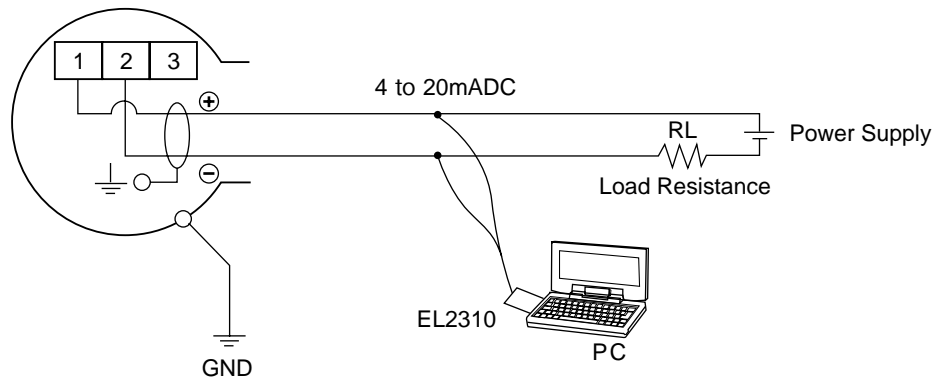
ρ = Density (kg/m³)

C = Pressure loss coefficient

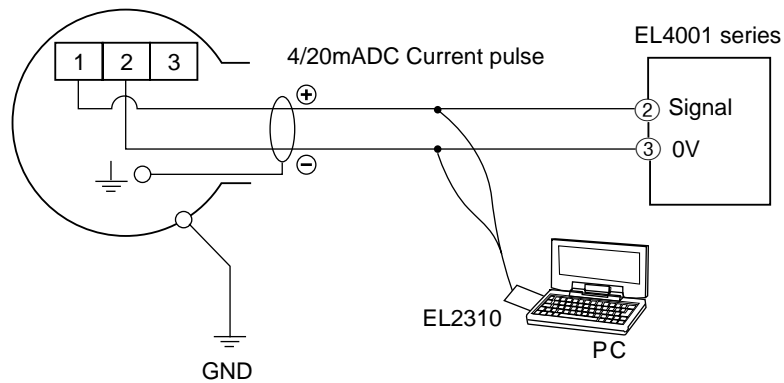
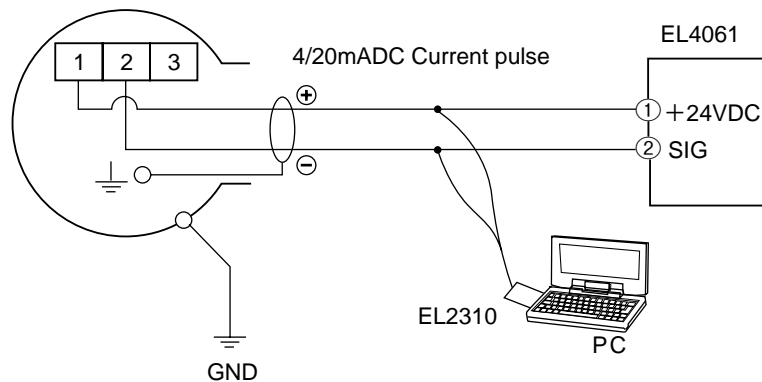


■ WIRING CONNECTIONS (an example)

Analog Output



Pulse Output



※For EL2310 : Smart Communication Unit, refer to GS No.GEL104E

TYPICAL PIPING INSTRUCTIONS

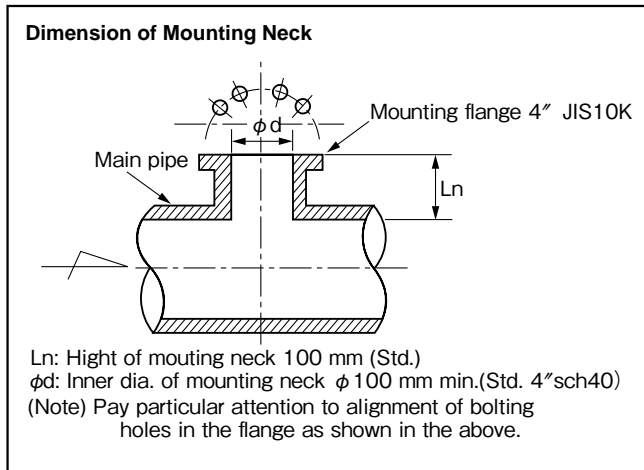
In making flow measurements with inferential flowmeters, it is generally desired that the flow pattern of fluid coming into the meter be as uniform as possible. For this reason, take flow straightening into consideration when you plan to install a Delta Flowmeter.

With OVAL flow straightening devices (flow straightener and downstream pipe), straight pipe sections are in most cases not required. But if you plan to use straight pipes only, secure the straight pipe section required in accordance with the ISO standards, using a Sch. 40 pipe, as shown in the table.

Mounting:

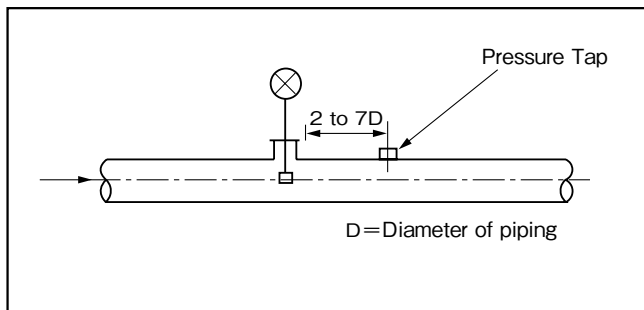
Shorten span of a meter fixing part so as to be less affected by piping vibration.

Mounting Neck:



Pressure Gage and Thermometer Installation

For pressure detection, provide the probe downstream of the flowmeter (see figure below). To avoid disturbances in the flow, temperature detection should be made downstream of the flowmeter and, at the same time, upstream of the control valve.



Where Straight Pipe is Used

Piping Connection	Req'd of Length (L)	Description
<p>Reducer</p>	15D min.	A concentric reducer upstream of meter
	23D min.	An elbow upstream of meter
	25D min.	Two elbows in horiz. plane upstream of meter
	40D min.	Two elbows in vertical. plane upstream of meter
<p>Sluice Valve</p>	15D min	A fully open sluice valve upstream of meter

The minimum length required for downstream pipe is 5D.

D = Piping I.D.

• Fluid to be measured shall be full in a pipe. Air vent valve is needed when non-filling flow is possible.

• Construction of working stage is recommended for securing safety maintenance operation. Lifting device is also required, in case of Hot-tapping type.

Pulsation

Installing this flowmeter in a line where a roots-blower, compressor, etc. that produce pulsating pressures are used as blowers could subject the meter to the effects of pulsation. If such is the case, consult factory.

The value of allowable fluctuating pressure shall be given according to the following equation.

$$N < \frac{0.73\rho V^2}{100} \text{ (kPa)}$$

where N: Fluctuating pressure (kPa)

rho: Density of liquid to be measured (kg/m³)

V: Min. velocity (m/s)

Thermal Insulation

If it is desired to thermally insulate the pipe line, simple lagging (without mortar finish) is suggested to facilitate servicing. This arrangement will permit taking off flowmeter connecting bolts without destroying the lagging.

■ PRODUCT CODE EXPLANATION

Item	Code No.																Description			
	①	②	③	④	⑤	⑥	⑦	-	⑧	⑨	⑩	⑪	-	⑫	⑬	⑭		⑮	⑯	
Model	V	X																	EX DELTA	
Body Style			S																Fixed Type	
			H																Hot-tap Type	
Application				1															Standard (Under 180°C)	
				3															High Temp. Service (Over 180°C)	
Probe Size				0	5	0	-												50mm (2")	
Major Parts Material								D											Stainless Steel SUS304	
								Z											Special	
Flange Rating								1											JIS 10K	
								5											ASME 150 (※1)	
								7											JPI 150	
								9											Others	
Sensor Construction								1											Standard	
Fluids to be Metered								G	-										Gas, Steam	
								L	-										Liquid	
Converter Construction																			1	Integral type
																			2	Separate type
Explosionproof configuration																			0	None (non-explosionproof)
																			1	Flameproof configuration (TIIS) (※2)
																			2	Flameproof configuration (ATEX)
																			7	Flameproof configuration (NEPSI)
Display																			0	None
																			1	Totalizer, Digital Indicator (※3)
Output Signal																			4	Unfactored pulse: Smart type
																			5	Factored pulse: Smart type
																			6	Analog: Smart type
Version cord																			A	

※1 : Flange serration for ASME standard : ASME B 16.5 – 1996.

※2 : Make it sure to use cable gland in case of Explosionproof application.

※3 : Display item is selected by Internal switch or EL2300 from one of the following items:

- (1) 6 digits Totalizer
- (2) Digital instantaneous flow rate indicator
- (3) % instantaneous flow rate indicator
- (4) 8 divided bar graph indicator.

■ When making inquiries, please specify the following:

Fill in the blanks or check with mark.

Item	Description
1. Fluid to the metered	
2. Flow range	Max. _____ Normal _____ Min. _____ <input type="checkbox"/> m³/h[normal] <input type="checkbox"/> m³/h[actual] <input type="checkbox"/> kg/h
3. Temp. range	Max. _____ Normal _____ Min. _____ °C
4. Press. range	Max. _____ Normal _____ Min. _____ <input type="checkbox"/> MPa <input type="checkbox"/> MPa[gauge]
5. Density or Sp. Gr.	Density _____ <input type="checkbox"/> kg/m³ [normal] <input type="checkbox"/> kg/m³ [actual] Sp. Gr. _____
6. Viscosity	_____ <input type="checkbox"/> mPa·s, <input type="checkbox"/> mm²/s at _____ °C
7. Actual inner Dia. of mainline pipe	_____ mm Actual inner Dia _____ mm
8. Type of mounting	<input type="checkbox"/> Fixed Type. <input type="checkbox"/> Hot-tap Type
9. Flow straightening device:	<input type="checkbox"/> Req'd (Straightener and downstream pipe) <input type="checkbox"/> Not req'd (Please prepare the straightening pipe of specific length, bore and Sch. No.)
10. Compensation	<input type="checkbox"/> Requested <input type="checkbox"/> Not requested
11. Compensation range	Temp. _____ to _____ °C , Pressure _____ to _____ <input type="checkbox"/> MPa <input type="checkbox"/> MPa[gauge]
12. Compensation ref.	Ref. temp. _____ °C Press. ref. _____ <input type="checkbox"/> MPa <input type="checkbox"/> MPa[gauge]
13. Compensation coeff. (In case of gas measurement)	Z (service conditions) = _____ Zo (standard conditions) = _____
14. Converter	Type : <input type="checkbox"/> Integral construction <input type="checkbox"/> Separate construction Explosionproof construction : <input type="checkbox"/> Non-explosionproof <input type="checkbox"/> Intrinsic safe
15. Output	<input type="checkbox"/> Unscaled pulse, <input type="checkbox"/> Scaled pulse, Pulse unit _____ / P <input type="checkbox"/> Analog output, Full scale _____ to _____ / h
16. Receiving instrument	<input type="checkbox"/> Separate-mount LCD counter <input type="checkbox"/> Remotely located receiver (Specify model and spec.)
17. Explosion-proof construction	<input type="checkbox"/> Not requested <input type="checkbox"/> Requested
18. Miscellaneous	

The specification as of May, 2011 is stated in this GS Sheet. Specifications and design are subject to change without notice.



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