

● Multi-path Ultrasonic Flowmeter(UR-1000)



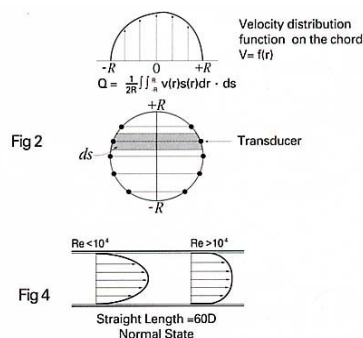
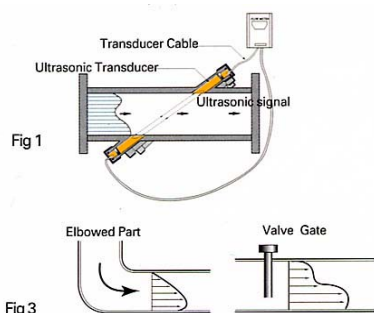
1. Discription

An epochal level meter that can measure the fluid level over the wide range (maximum 150 meters) with high accuracy everywhere.

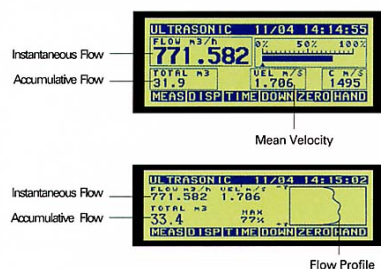
2. Measurement Principle

Sonic transmitter on top of the guide pipe and multiple receiving sensors at various depth points in the guide pipe measure the distance between the base point on top of the guide pipe and the changing surface of

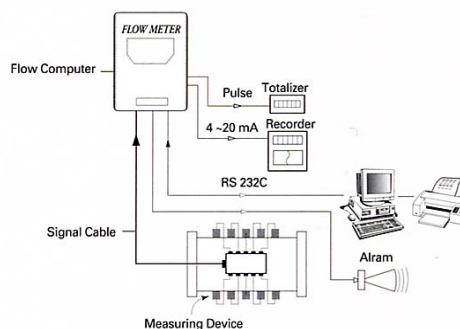
the fluid. Use of sonic wave instead of ultrasonic wave and multiple receiving sensors in the protecting guide pipe minimizes the effect of temperature, wind directions, high waves, and humidity. This feature also minimizes the measurement errors over the whole range.



Various flow Features in Pipes



LCD Display



Input-Output Connection Diagram

3.Features and Applications

a. High accuracy measurement technology

Reynolds number and friction coefficient have no effect. No errors occur due to the pipe's properties such as its radius, pipes thickness, lining scale and signal sensing time.

b. High accuracy with the short straight pipe and slow flow velocity

c. With large measurement range (max/min flow)

Measurement based on the measured value (MV), not the full scale deflection (FSD), nullifies the effect of flow range.

d. Installation without stopping flow

Ultrasonic transducers directly mounted into the existing pipe without stopping the fluid flow. This installation method is excellent for the large diameter pipes with its low cost and convenience. Also It can achieve higher accuracy.

e. On-site calibration test (Dry Calibration Method)

Domestic and overseas patent rights were acquired and certified by the Korea Standard Scientific Research Center for this feature.

f. Applications

Tap water, sewage, industrial water, sea water, petroleum, waste water, beverage, processing water, and coolant and cold water circulation for chemical and still manufacturing plants.

g. Warranty

One year full labor and parts.

h. Price

Very competitive

4.Measurement Error

* With Elbow

Path Nos.	L1	L2	Accuracy
5	3D	2D	±1.0 %
	5D	2D	±0.5 %
	10D	2D	±0.25 %

* With T

Path Nos.	L1	L2	Accuracy
5	3D	2D	±1.0 %
	5D	2D	±0.5 %
	10D	2D	±0.25 %

* With Expansion pipe

Path Nos.	L1	L2	Accuracy
5	3D	2D	±1.0 %
	5D	2D	±0.7 %
	10D	2D	±0.5 %

* With Reducing pipe

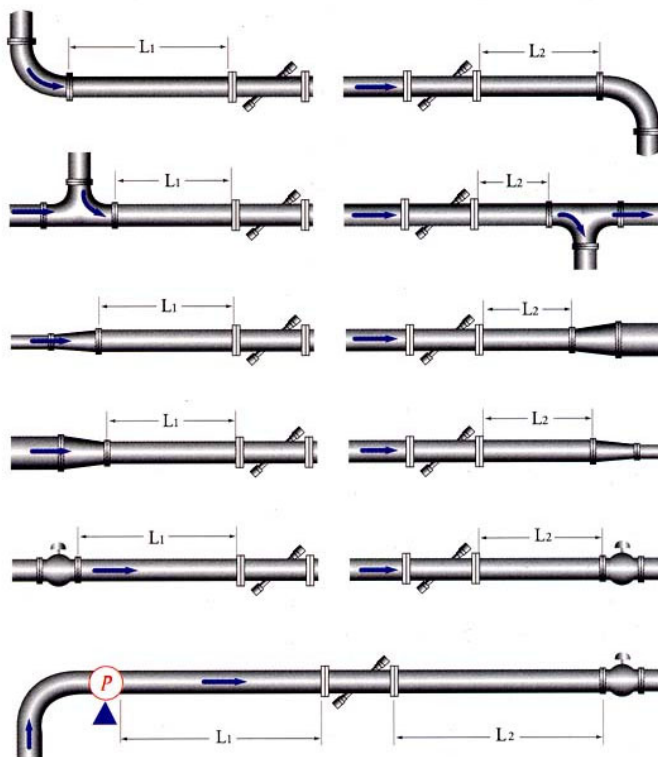
Path Nos.	L1	L2	Accuracy
5	3D	2D	±1.0 %
	5D	2D	±0.5 %
	10D	2D	±0.25 %

* With Valve

Path Nos.	L1	L2	Accuracy
5	3D	2D	±1.0 %
	5D	2D	±0.7 %
	10D	2D	±0.5 %

* With Pump

Path Nos.	L1	L2	Accuracy
5	3D	2D	±1.0 %
	5D	2D	±0.7 %
	10D	2D	±0.5 %



5.Dimension

Measurement range	velocity : 0.03~20m/s diameter : D25~D5000		
Accuracy	±0.5 % (MV)		
Path Nos.	(1. 2.) 3. 5 path		
Control and Computing Device			
Model	Unit type	Separate type	Explosion Proof Type(Ex d IIB T6)
CPU	32bit Micro Processor		
Display	Instantaneous & Accumulative Flow, Velocity, Profile etc.		
Output Signal	4-20mA, Pulse, RS232C, Alarm(0~10V, R486, BCD ;option)		
Ambient Temp	-20℃ ~ +60℃, -40℃ ~+80℃(option)		
Ambient Humidity	90% RH		
Flow Unit	m ³ , gallon, liter		
Power source	AC110 ~ 220V (50~60Hz)		
Power Consumption	10W	18W	10W
External Dimension	275×195×130 (2.5kg)	265×340×150(5.5kg) MILD STEEL	400×300×150(25kg) AL CASE
Measuring Device			
Installation	FLANGE		Hot TAPPING
Adoption Range	D25mm ~ D2000mm		D200mm ~ D5000mm
Flange Unit	ISO, KSD, ANSI, JIS		
Frequency	200kHz ~ 1.5MHz		
Operation Emp	-40℃ ~ +150℃		
Material	Brass, STS316L, Titanium		
	Steel, STS, PE, etc		
Pressure Permission	PN10(10kgf/cm ²), PN20(20kgf/cm ²), PN40 (Option)		
Structure	IP68)		Ex d IIB T4
Signal Cable			
Material	Sensor : JYT - 108		
	Output : AWG 20×2P Shield		

6.Installation Method

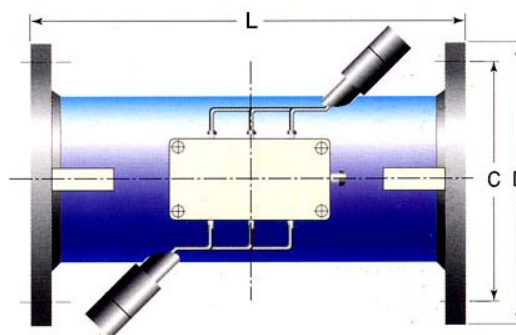
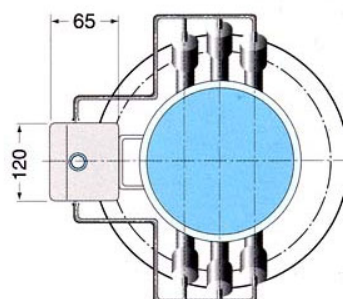
A.Flange Type

Flange : KS D 357 F15

(Unit:mm)

Pipe Diamete	L	D	C	Hole Nos	W(kg)	Bott size
50	310	165	125	4	8	M16
65	330	185	145	4	10	
80	360	200	160	8(4)	12	
100	380	220	180	8	15	
125	420	250	210	8	20	
150	450	285	240	8	25	M20
200	550	340	295	8	38	
250	620	400	350	12	60	
300	680	455	400	12	70	
350	750	505	460	16	80	
400	850	565	515	16	105	M24
500	1000	670	620	20	155	M27
600	1100	780	725	20	210	
700	1150	895	840	24	290	
800	1200	1015	950	24	380	M30
900	1300	1115	1050	28	455	M33
1000	1350	1230	1160	28	570	
1200	1450	1455	1380	32	830	
1400	1600	1675	1590	36	1200	M39
1600	1700	1915	1820	40	1680	M45
1800	1800	2115	2020	44	2145	
2000	2000	2325	2230	48	2915	
2200	2200	2550	2550	52	3600	M52
2400	2400	2760	2760	56	4400	
2600	2600	2960	2960	60	5200	

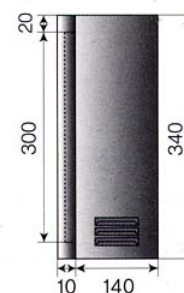
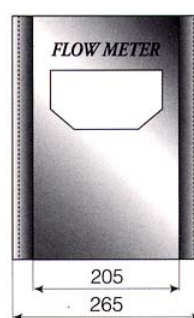
Case of 80mm, may be reduced to 4 in order to permit coupling with an existing flange of an old pipe line.



Measuring Device



Explosion Proof Type



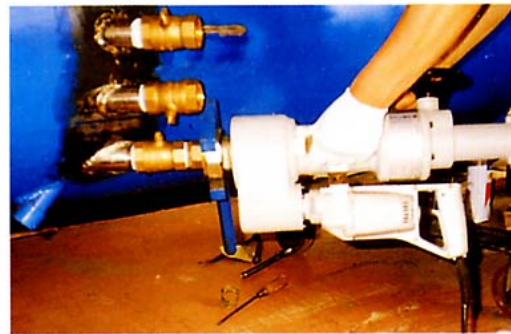
Flow Computer
(control and Computing Device)

B.Hot tapping installations without interrupting flow.

: Insert sensor to the existing pipe not disturbing Fluid.



Welding saddles and connecting stop-cocks



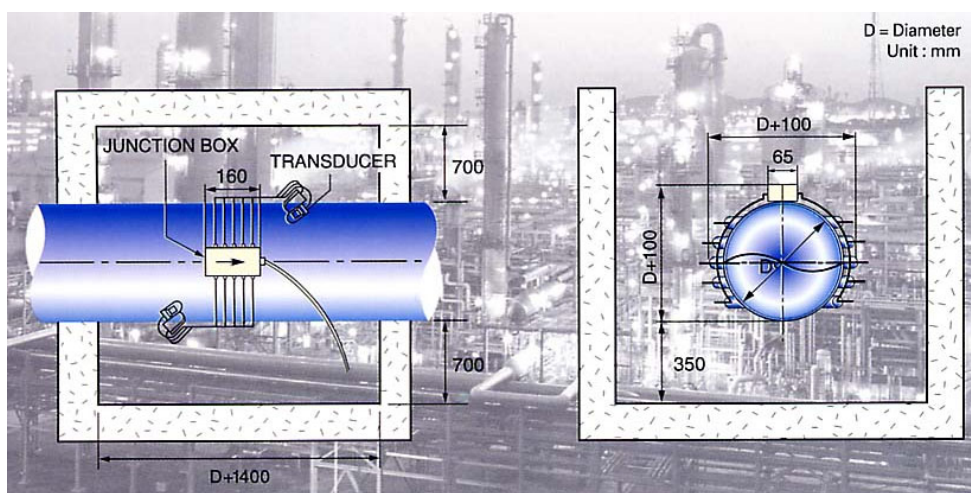
Drilling



Inserting Transducers



Removing Cocks and Completion

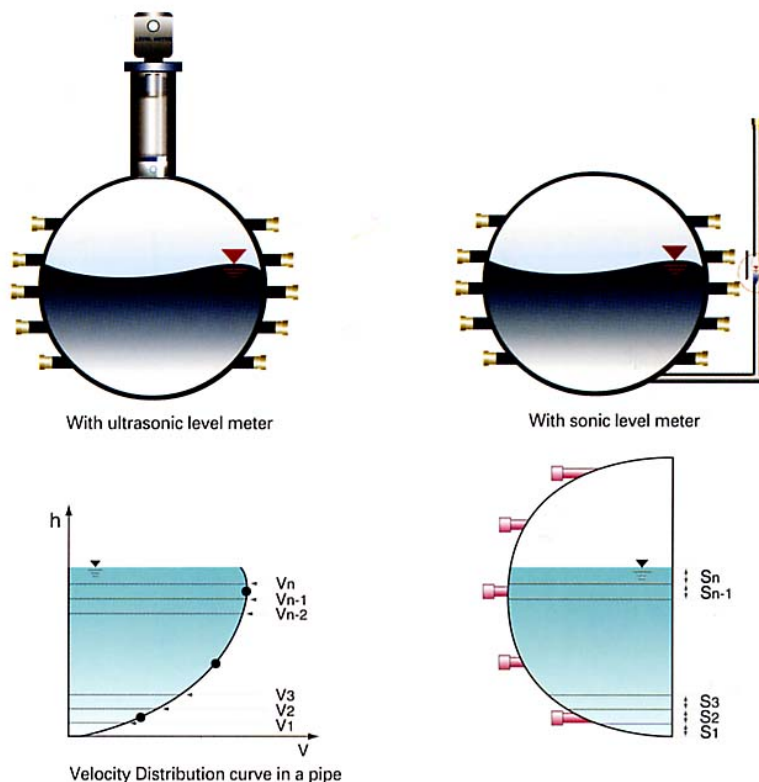


Required space for the Hot-tapping

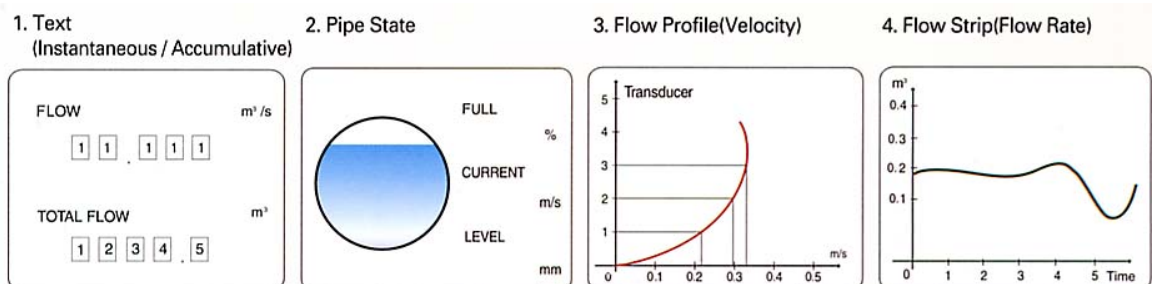
● Multi-path Ultrasonic Flowmeter for Partially full pipe(UR-1010)

A special version of UR-1000 using velocities measured by multiple ultrasonic transducers and the fluid level measured by the sonic level meter or ultrasonic level meter to calculate area(s). Flow volume is calculated by dividing the area into n sub-areas.

$$Q = \sum_{i=1}^n S_i \times V_i$$

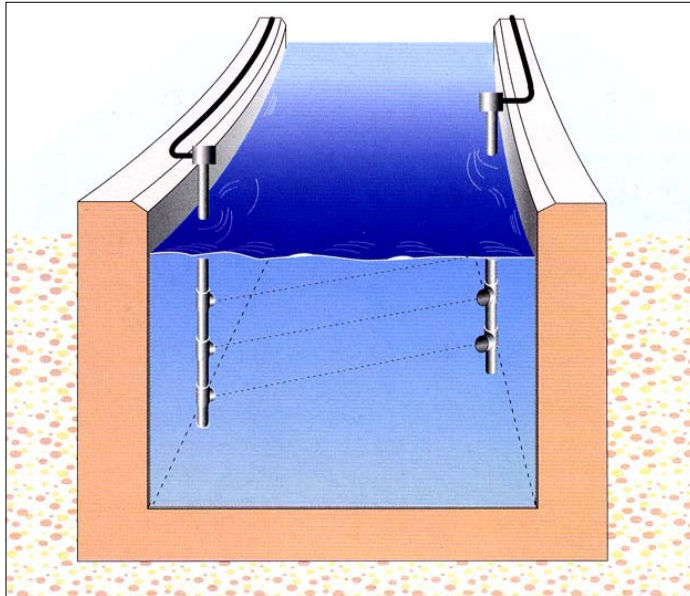


Adopting Principle



LCD Display

● Multi-path Flowmeter for Open Channel(UR-2000)

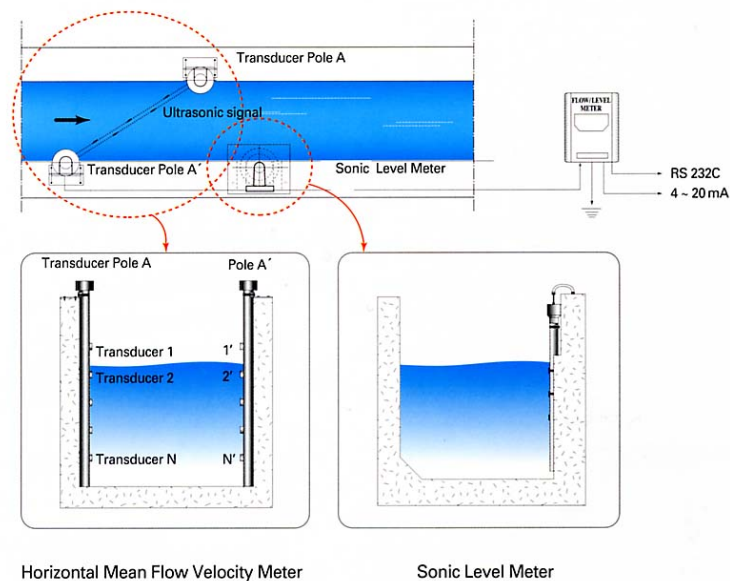


1. Discription

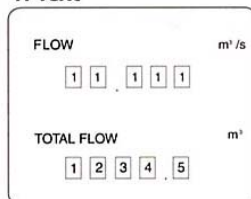
An open channel flow meter for efficient management of open sewage, industrial water treatment, and irrigation water in the open channel

2.Measurement Principle

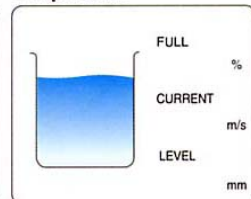
First, mean velocities at various depths are measured using multiple sensors mounted on staffs that are located in 450 angle to each other at both sides of the channel. Then, the fluid level is measured using the sonic level meter or the ultrasonic depth meter that is separately installed. Finally, the flow volume is calculated from the velocities and the level.



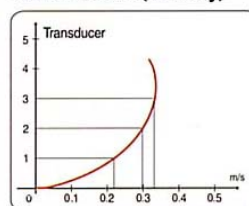
1. Text



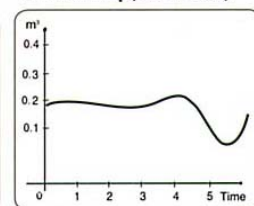
2. Pipe State



3. Flow Profile(Velocity)



4. Flow Strip(Flow Rate)



LDC Display

3.Features and Applications

a. Flow measurement in the open irrigation waterway

Agricultural irrigation water discharge can be controlled for efficient water supply.

b. Flow measurement of tap water, sewage and industrial water

Water inflow and outflow can be controlled with accurate flow measurement in open channels.

c. Flow measurement in streams when there is a wide variation of flow with high velocity

Water can be controlled efficiently in the flood season with accurate flow measurement.

d. Flow measurement for backward flow

Backward flow can be measured efficiently in the lower stream leading to the sea with very high tide. Also backward flow can be measured efficiently in the upper stream leading to the dam and reservoir with high level.

e. Flow measurement at floodgate

Loss of water between the upper stream and the lower stream due to evaporation, leakage into the soil or volume changes due to the addition of underground water to the ground water from the bed and the banks can be measured efficiently. The inflow and outflow at the dam and reservoir can be measured.

f. Warranty

One year full labor and parts.

g. Price

Very competitive

4.Dimension

Adopting Principle		Ultrasonic Transit-time type
Accuracy	Velocity	±0.25 %(MV)
	Level	±0.25 %(MV)
	Flow rate	±0.5 %(MV)
Measurement Range		0.03m/s ~ 20m/s
Control and computing Device		
CPU		32 bit Micro Processor
Display		Instantaneous & Accumulative Flow, Velocity, Level Channel state, flow profile, flow strip
Power Consumption		30W
Power Source		110/220VAC(50~60Hz), 12/24VDC
Ambient Temp		-20℃ ~ +60℃
Ambient Humidity		90%RH
Output Signal		4-20mA, RS232C, Alarm, Pulse(BCD:option)
Measuring Device		
Horizontal Mean		Multi-path type
Current-Meter		IP68 270kHz ~ 1.5MHz -40℃ ~ +150℃
Level Measuring Device		Sonic Level Meter