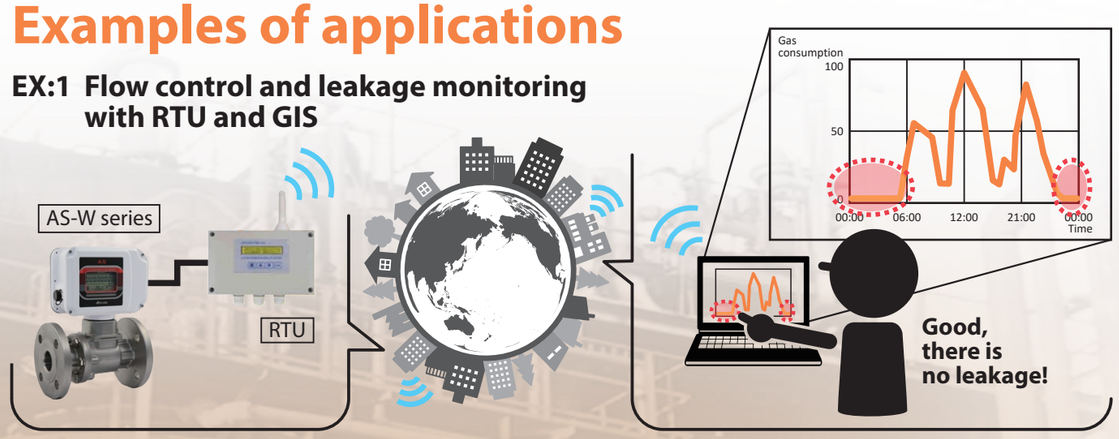
Examples of applications

EX:1 Flow control and leakage monitoring with RTU and GIS



EX:2 Adaptability under wide changes in flow volume

☐ No need to prepare meters separately for each production site and canteen.

☐ 1 piece of AS meter with wide rangeability allows for covering expansion of plant equipments.

EX:3 Space saving and work-efficiency-improvement

☐ Improvement in space and accuracy by replacing from a large-sized diaphragm gas meter at a hotel, a restaurant, a canteen, etc.

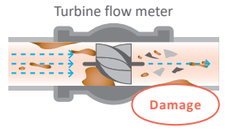
☐ Wide rangeability enables size down of pipes and equipments, and it contributes to construction cost reduction and work-efficiency improvement.

AS series solved these problems.

CASE1 | Customer A

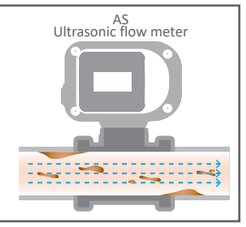
Problem

At their middle supply pressure site, when natural gas was supplied, failure that impurities in the pipes damage the rotating parts of existing rotary meters and turbine meters often occurred.



After implementation

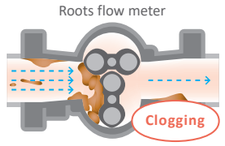
AS meter does not have any obstacle inside the measurement tube, so impurities contained in gas are blown away to downstream side of AS meter, and do not damage AS meter. Performance stability of AS meter under middle pressure supply was also proved.



CASE2 | Customer B

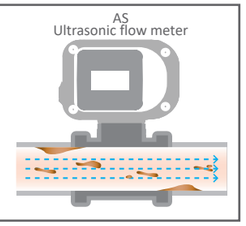
Problem

Because the factory used LPG gas until 2015, a lot of drains from LPG were remaining in the pipes. Rotary meters were affected by the drains.



After implementation

Correct measurement of AS meter is not affected by residue such as LPG drains in pipes. Operation status of all installed AS meters in the factory are in good condition.



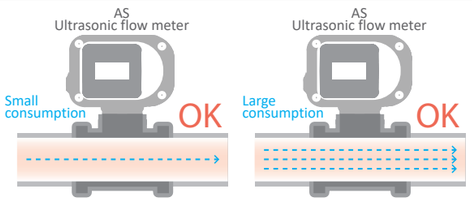
CASE3 | Customer C

Problem

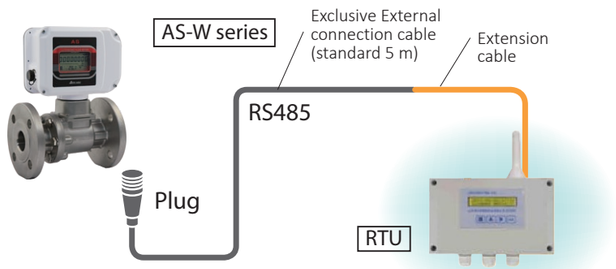
Gas consumption of the manufacturer, whose products are mainly for overseas markets, varies widely depends on quantities of orders from overseas, which changes very much due to economic trends.

After implementation

Wide flow-rate range of AS ultrasonic flow meters enabled accurate measurement both under small and large consumption.

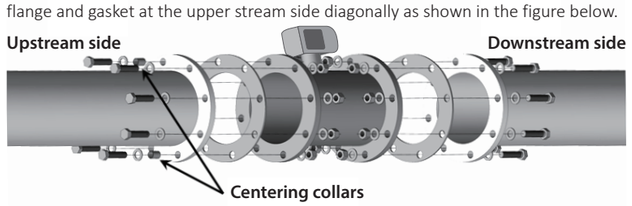


System configuration example



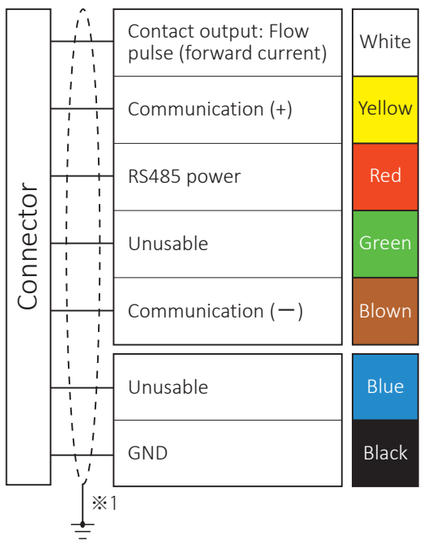
Installation method

Make sure to align the central axis of the meter with that of the piping. In order to minimize the deviation of the central axes of the flow meter and piping, please use the centering collars provided as an accessory. Not using the centering collars leads to be out of the warranty accuracy.Insert the centering collars into the holes of flange and gasket at the upper stream side diagonally as shown in the figure below.



Connection between power supply and indicator

External Cable Connection Diagram



※1. The main body and GND are electrically common. Use an isolated power supply and indicator as required.

Piping condition

Conditions	Upstream	Downstream
90°elbow・Full-bore valve fully opened	Screw connection type (AS-W-25, 32): 20D or longer Flange connection type (AS-W-40, 50, 80, 100,150,200): 10D or longer	5D or longer
Joining	20D or longer	10D or longer
Enlarge pipe	20D or longer	5D or longer
Narrowing pipe	10D or longer	10D or longer

Please consult with us if the meter is to be installed near a pressure reducing valve or a flow control valve.

Other solutions we offer

Please contact us for requirements of measuring other type of gas and smaller flow-rate, or of meter installation where straight pipe section cannot be secured. The following product lineup is available.

model UX/UZ Ultrasonic Flow Meter for Fuel Gas Management

☐ No straight pipe section required, wide rangeability, and easy to replace batteries!

☐ City gas, Butane, Propane, Argon(only for DN40, 50), and Nitrogen can be measured.

Solutions for Houses

☐ Calculation of gas and water used in houses.

Solutions for Industry

☐ Compressed air measurement
☐ Cooling and coolant water monitoring
☐ Chemical injection monitoring
☐ Microstream flow control

Product Specifications

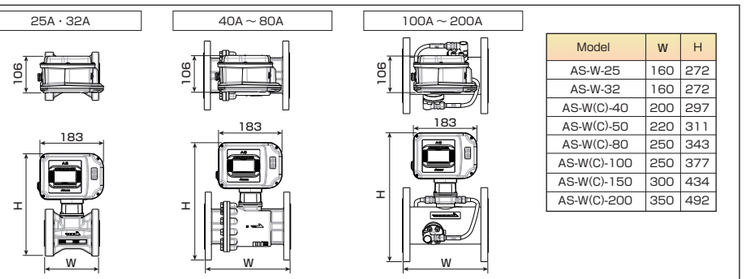
Model	AS-W (For Natural Gas)	AS-W-25	AS-W-32	AS-W-40	AS-W-50	AS-W-80	AS-W-100	AS-W-150	AS-W-200
		–		AS-C-40	AS-C-50	AS-C-80	AS-C-100	AS-C-150	AS-C-200
Nominal diameter		25A	32A	40A	50A	80A	100A	150A	200A
Power supply		Built-in lithium battery , battery life 10 years (at surrounding temperature of 20℃)(Excluding 1 year of storage period)							
Measurable fluid		Natural gas (AS-W) , Air (AS-C)							
Working pressure (Absolute pressure)	AS-W	0.07 ~ 0.5MPa (AS-W-□-500BA/5) 0.07 ~ 0.2MPa (AS-W-□-200BA/5) 0.07 ~ 0.5MPa (AS-W-□-0BA/5) 0BA : No pressure compensated		0.07 ~ 1.0MPa (AS-W-□-1000BA/5) 0.07 ~ 0.5MPa (AS-W-□-500BA/5) 0.07 ~ 0.2MPa (AS-W-□-200BA/5) 0.07 ~ 1.0MPa (AS-W-□-0BA/5) 0BA : No pressure compensated				0.07 ~ 1.0MPa (AS-W-□-1000BA/5) 0.07 ~ 0.5MPa (AS-W-□-500BA/5) 0.07 ~ 0.2MPa (AS-W-□-200BA/5) 0.07 ~ 1.0MPa (AS-W-□-0BA/5) Except EU&UK (Max. 0.15MPa abs) 0BA : No pressure compensated	
	AS-C	–		0 ~ 1.0MPa (AS-C-□-1000BA/5)					
Flow rate measurement precision *1	±5%RD (m^3/h)	±0.7 ~ 7	±1.3 ~ 13	±1.6 ~ 16	±3 ~ 30	±6 ~ 60	±10 ~ 100	±24 ~ 240	±40 ~ 400
	±2%RD (m^3/h)	±7 ~ 35	±13 ~ 65	±16 ~ 80	±30 ~ 150	±60 ~ 300	±100 ~ 500	±240 ~ 1200	±400 ~ 2000
Low flow cut off (start flow rate) *2	Flow rate (m/s)	0.05 m/s or less							
	Actual flow rate (m^3/h)	±0.1	±0.2	±0.2	±0.4	±0.8	±1.5	±3.2	±5.7
Fluid temperature and humidity		-20 ~ +60℃, 90% RH or less							
Pressure loss		Zero (equivalent to straight tube part)							
Display: Accumulated flow volume		Accumulated flow volume: 00000000.0 (9 digits/m^3 or Nm^3)					Accumulated flow volume: 0000000000 (10 digits/m^3 or Nm^3)		
Display: Instantaneous flow rate *3		(1) Maximum indication value: ±19999Nm^3/h (converted flow rate) (2) Maximum indication value: ±19999m^3/h (actual flow rate) (Two decimal places for a value less than 200, one decimal place for a value from 200 to less than 2000, integer only for a value of 2000 or more)							
Display: Temperature *3		00.0℃ (3 digits)							
Display: Pressure *3		0000.0kPa (5 digits)							
Display: Maintenance *3		The measurement success rate of ultrasonic measurement (the successful number of ultrasonic measurements in 10 measurements) is indicated in 4 levels.							
Output: Contact output		Open drain output: Unit pulse (forward current), pulse unit: 100,1000,10000 (L/P or NL/P)							
Output: Electronic statement signal communication		RS485 MODBUS/RTU							
Connection method		ISO7005-1 (GB/T9119-2000 PN1.6MPa Flange) equivalent *4							
Installation position		Horizontal, vertical							
Installation		Indoor, outdoor (protection level IP 64 or equivalent)							
Case material		Aluminum alloy		Stainless alloy					
Gas contact part material		Aluminum alloy, engineering plastic		Stainless alloy, engineering plastic					
Weight		3.5kg	4.2kg	8.4kg	10.4kg	14.1kg	14kg	21.2kg	36.2kg

*1. The flow rate measurement range is ±5% RD: Inclusive before "~" and not inclusive after "~" and ±2% RD: Inclusive for both before and after "~".
*2. When the flow rate is less than 0.25% of the maximum flow rate, the instantaneous flow rate is indicated as 0 m^3/h. For the normal conversion type, the low flow cut off value is the normal conversion flow rate corresponding to 0.05 m/s.
*3. Automatically switched in every 4 seconds.
*4. This flowmeter guarantees the flow measurement accuracy with the pipes listed in the right table.
(If you use pipes with the different pipe standard and size not listed in the table, the flowmeter may not satisfy the flow measurement accuracy. Consult us in advance if it is considered to use different pipes out of this range.)

Piping standard	ISO7005-1		EN10208					
Nominal diameter (mm)	25	32	40	50	80	100	150	200
Outer diameter (mm)	32	38	48.3	57	88.9	108	159	219.1
Thickness (mm)	3.5	3	4	3.5	4.5	4	4.5	10

External dimensions

Unit : mm



Model	W	H
AS-W-25	160	272
AS-W-32	160	272
AS-W(C)-40	200	297
AS-W(C)-50	220	311
AS-W(C)-80	250	343
AS-W(C)-100	250	377
AS-W(C)-150	300	434
AS-W(C)-200	350	492

Caution regarding to methane

Depending on concentration (%) of methane in natural gas (NG), for each nominal diameter, requirement of the working pressure condition is provided as described in the below table. (Do not use if the working pressure does not satisfy the conditions below. Also, do not use if there is a possibility that methane concentration may change greatly after installation so that the conditions below will not be satisfied.)

Size	Methane Concentration(%)	Working pressure(absolute)
200A	99%～100%	250kPa or higher
	97%～99%	150kPa or higher
	97% or lower	No restriction
150A	98%～100%	100kPa 以上
	98% or lower	No restriction

* No restriction for the 100A or smaller models.

◯ Conversion table for actual flow rate and standard flow rate (for absolute pressure 0.54 MPa at 30℃)

	AS-W-40(40A)	AS-W-50(50A)	AS-W-80(80A)	AS-W-100(100A)	AS-W-150(150A)	AS-W-200(200A)
	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum
Actual flow rate (m^3/h)	80	150	300	500	1200	2000
Standard flow rate (Nm^3/h)	382	716	1432	2386	5726	9543

Formula

$$\text{Standard flow rate } (Nm^3/h) = \frac{\text{Absolute temperature at } 20℃\ (273.15K+20K)}{\text{Absolute temperature of working temperature}\ (273.15K+t)} \times \frac{\text{Absolute pressure of working pressure (P)}}{\text{Absolute pressure at 1 atm}\ (0.10133\ MPa)} \times \text{Actual flow rate } (m^3/h)$$

Technical specifications in this catalog are up-to-date as of September 2022.

Manufactured and Distributed by

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To Our Customers

Please understand that product specifications may be changed without notice in order to improve performance. We are always happy to provide the latest catalogs and brochures, and respond to inquiries made to our offices.

1.5

202209-AS_W-000

Reliability, Creativity, Service

Ultrasonic Flowmeter

AS-W (For Natural Gas)
AS-C (For Air)

Measures gas consumption at high sensitivity and high precision

Safe and secure by gas leakage detection

WIDE Wide rangeability of 1:400
Even small flow is measurable, so it enables pipe leakage detection.

Zero pressure loss and zero energy loss achieved by no obstacle inside the measurement tube.
No change of accuracy in long time use and free from maintenance.

Easy-to-read and large-sized digital display, which is rotatable by 90 degrees on the spot.

6600 data logs Enhanced logging function
Eleven data log items including timestamp, temperature, pressure, instantaneous flow rate, accumulated flow rate, etc. can be stored for up to 6600 sets. Data acquisition interval can be set to 5 minutes to 24 hours.

Temperature and pressure sensors are installed. Normal and standard conversion functions are equipped.

OUTPUT Remote measurement
RS485 output in addition to unit pulses allows for remote indication and energy management.

LONGLIFE Runs with a built-in lithium battery and no necessity of electric construction.
battery life 10 years

S&S Sensors, Systems & Services

Aichi tokei