



RELIABILITY CREATIVITY SERVICE

for fuel gas control

## Ultrasonic Flow Meter

# ATZTA UX/UZ

Developed jointly by Tokyo Gas Co., Ltd. and our company



No straight  
pipe section  
required for  
installation

Wide  
operatin  
range

Battery  
replaceable

# Developed for customer's "NEEDS"

## LINE UP



**Want 1** Customer wants to install a flow meter immediately after a bend part in the piping



**No straight pipe section required for installation**

It is possible to connect the flow meter directly to a bend such as an elbow piece and a flexible pipe



The flow meter has to be located 10D or more distant from a governor irrespective whether it is placed upstream or downstream of the governor. Falling to meet this condition may lead to inaccurate Measurements. (D= pipe diameter)

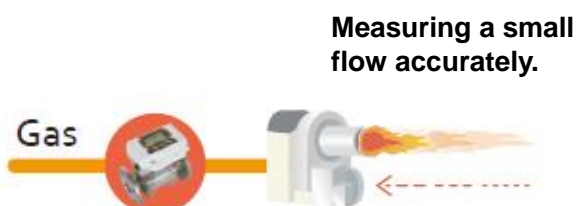
**Want 2** Customer wants to measure a small flow range



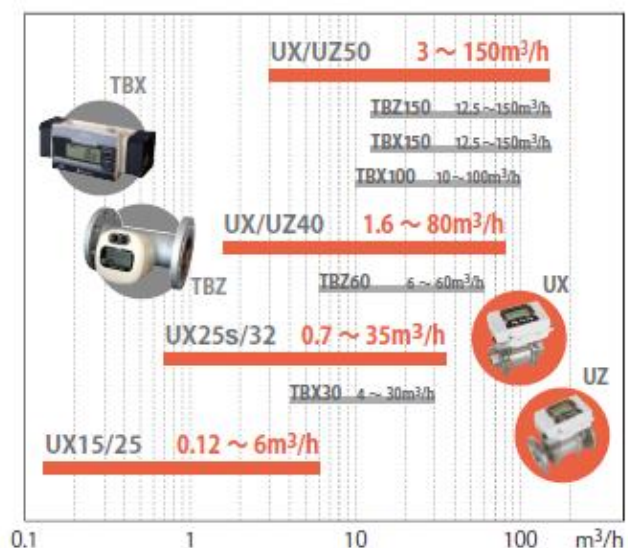
**As wide as a 1:50 turn down ratio**

Applicable also for measuring gas flow of a burner having a large turn down ratio.

Gas type: city gas



**Measuring a small flow accurately.**



### Want 3 Customer wants to replace batteries



#### Easy to replace batteries

Users can replace batteries without removing the meter from the piping



Battery pack for replacement \*

\* Exchangeable battery pack is of separately sold parts

For battery life, see the specifications on the backside of this print.

You can choose one of the three power supply options

100V AC

24V DC

Exclusive lithium battery



Customer's option to be chosen when buying the product

### Want 4 The frequency of maintenance should be reduced!



#### High resistance to oil mists



As preventive measures against oil mists generated by reliquefaction of butane or propane, installation in vertical piping (bottom → top) is recommended.

### Want 5 As a guide conversion should be done.



#### Simplified conversion can also be selected.

Conversion is enabled just by setting the pressure manually.

Constant pressure



It is a function of actual flow rate type.

### Want 6 Customer wants to use outdoors



#### IP64 Protection available for outdoor use



High temperature can cause the electronic circuit board to be deteriorated and batteries to be consumed. To avoid unnecessary rise in temperature, the product is recommended to be fitted with a sunshade.



Sunshade cover\*

\*Available as an optional item.

# Specifications of Ultrasonic Flow Meter UX/UZ for Fuel Gas Management

Model		UX15	UX25	UX25s	UX32	UX40	UX50	UZ40	UZ50
Pipe connection		Screw						Flange	
		Rc1/2	Rc1	Rc1	Rc1/1/4	Rc1/1/2	Rc2	JIS10K	
Maximum working pressure		100kPa						500kPa	
gas type *1		City gas (13A), butane (butane=70%,propane=30%) *2, propane (propane=98%,butane=2%), nitrogen			City gas (13A), butane (butane=70%,propane=30%) *2, propane (propane=98%,butane=2%), nitrogen, argon				
Power / consumption *3	Battery	Exclusive lithium battery ( life: 5 years at 20°C and 65%RH)							
	AC power	100VAC±15% /max 10W (for 22mA)							
	DC power	24VDC±10% / max 2W ( for 26.4V and 22mA)							
Flow range (actual flow )	City gas, nitrogen, argon	0.12-6m³/h		0.7-35m³/h		1.6-80m³/h	3-150m³/h	1.6-80m³/h	3-150m³/h
	Butane, and propane						3-80m³/h		3-80m³/h
Accuracy *4		Qmax-Qmax/10: ± 2%RD, Qmax/10-Qmax/50: ± 0.5%FS		Qmax-Qmax/10: ± 4%RD, Qmax/10-Qmax/50: ± 0.5%FS					
Temperature and pressure compensation *5		No (actual flow *6)		No (actual flow *6), YES (normal/standard conversion)					
Conversion accuracy		±1.5%RD(at 23°C and 100kPa)						±1.5%RD(at 23°C and 500kPa)	
Display	Main display	Accumulated flow (actual flow,converted flow) 8-digit integer +2 decimal places,(accumulated flow of trip function) 7-digit integer +2 decimal places		Accumulated flow (actual flow) 8-digit integer +2 decimal places,(converted flow) 8-digit integer +1 decimal places, (accumulated flow of trip function)7-digit integer +2 decimal places					
		Alam indication (for ultrasonic sensor,temperature sensor,power voltage(for battery operation only))		Alam indication (for ultrasonic sensor,temperature sensor,presure sensor, External memory and power voltage(for battery operation only))					
	Sub display	Instantaneous flow : 5 digits, temperature: 3 digits, and pressure: 5 digits							
Output	Analog	(for 100VAC or 24VDC only) 4-20mADC(load resistance = max 400 Ω) Choose among options of instantaneous flow and temperature (default = instantaneous flow)		(for 100VAC or 24VDC only) 4-20mADC(load resistance = max 400 Ω) Choose among options of instantaneous flow , temperature and pressure (default = instantaneous flow)					
	Pulse	Nch open-drain output (maximum load 24VDC, 50mA)							
		Output 1 ( accumulated flow volume pulse) : standard = 1000L/P (choose 1,10,100,1000 or 10000L/P) duty: 20 - 80%		Output 1 ( accumulated flow volume pulse) : standard = 1000L/P (choose 10,100,1000 or 10000L/P) duty: 20 - 80%					
		Communication *7	Output 2 (alarms) : upper & lower limits,or upper limits of accumulated flow (for 100VAC or 24VDC drive) Low voltage, or upper & lower limits (for battery drive) (For 100VAC or 24VDC drive) RS485 Modbus / RTU, standard: 9600bps (4800 and 9600bps)						
Fluid temperature		-10 to +60°C under unfrozen condition							
Ambient working temperature and humidity		-10 to +60°C, max 90%RH , no condensation permissible.							
Protective structure		Indoors and outdoor use *8 IP64(JIS C 0920)							
Applicable standard		CE : Only the battery/DC power supply types The meters do not conform to ATEX(explosion-proof) directive(2014/34/EU)							
Mass		About 1.7ka	About 1.7ka	About 2.6ka	About 2.6ka	About 4.7ka	About 6.3ka	About 7.0ka	About 8.8ka

\*1 The gas type can be set at the site.

\*2 little degradation in measuring accuracy.

\*3 It should be selected at the time of order placement.

\*4 in case a distance from an elbow of minimum 10D in the upstream side and 5D in the downstream side of the meter can be secured ±2%RD(for a range of 10% to 100% of the max flow) and ±0.5%F.S.(for a range of 2% to 10% of the max. flow)  
the distance to ba governor should be greater than 10D for both the upstream and downstream sides of the meter. Falling to meet this condition may lead to naccurate measurements. for other conditions for installation,please contact us.

\*5 Normal flow:conversion of measurement into a flow at 0°C and 1atm, standard flow = conversion of measurement into a flow at the reference temperature and 1atm.

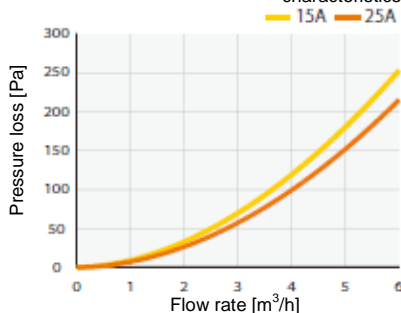
\*6 The meter is provided with simplified conversion functions. (40 and 50A are not provided with the functions. It is planned that these types will be provided with the functions from now on.) Simplified conversion represents compensation for the pressure value with an arbitrary value (fixed value).

\*7 The communication specifications can be downloaded from our product website.

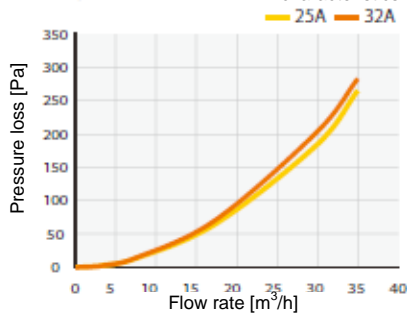
\*8 Exposure to high temperatures can cause degradation of the electronic substrate or battery consumption. To avoid temperature rise, installation of a sunshade cover is recommended.

## Pressure loss charts

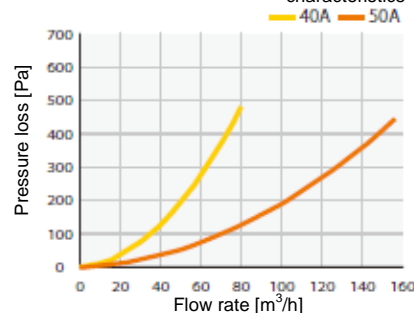
UX15/25 Flow - pressure loss characteristics



UX25s/32 Flow - pressure loss characteristics



UX/UZ40/50 Flow - pressure loss characteristics



This data shows a pressure loss in air.

In the case of town gas 13A, the value shall be multiplied by the specific gravity (=0.64). (In the case of LPG, the specific gravity ≈ 1.55.)



## Equation conversion

$$\begin{aligned}
 \text{Normal flow} &= \text{Actual flow} \times \frac{\text{Atmospheric pressure (101.325kPa)} + \text{Gauge pressure (kPa)}}{\text{Atmospheric pressure (101.325kPa)}} \times \frac{\text{Absolute temperature scale value of } 0^{\circ}\text{C (273.15K)}}{\text{Absolute temperature scale value of } 0^{\circ}\text{C (273.15K)} + \text{Fluid temperature } (^{\circ}\text{C})} \\
 \text{Standard flow} &= \text{Actual flow} \times \frac{\text{Atmospheric pressure (101.325kPa)} + \text{Gauge pressure (kPa)}}{\text{Atmospheric pressure (101.325kPa)} + \text{Converted reference pressure (kPa)}} \times \frac{\text{Absolute temperature scale value of } 0^{\circ}\text{C (273.15K)} + \text{Reference temperature for conversion } (^{\circ}\text{C})}{\text{Absolute temperature scale value of } 0^{\circ}\text{C (273.15K)} + \text{Fluid temperature } (^{\circ}\text{C})}
 \end{aligned}$$

## Conversion Normal flow : example (at fluid temperature of 15°C)

Maximum flow : 6 m<sup>3</sup>/h

m <sup>3</sup> /h (normal)						
Gauge pressure	2kPa	2.8kPa	15kPa	60kPa	100kPa	
Actual flow	0.12 m <sup>3</sup> /h	0.12	0.13	0.18	0.23	
	6 m <sup>3</sup> /h	5.80	5.84	6.53	9.06	11.30

Maximum flow : 35 m<sup>3</sup>/h

m <sup>3</sup> /h (normal)						
Gauge pressure	2kPa	2.8kPa	15kPa	60kPa	100kPa	
Actual flow	0.7 m <sup>3</sup> /h	0.7	0.8	1.1	1.3	
	35 m <sup>3</sup> /h	33.8	34.1	38.1	52.8	65.9

Maximum flow : 80 m<sup>3</sup>/h

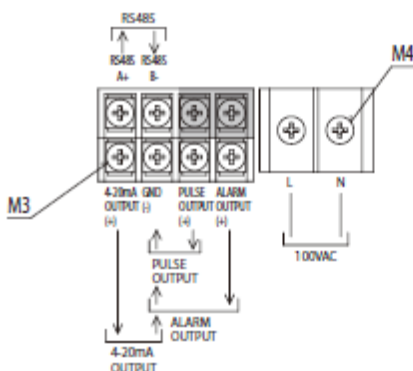
m <sup>3</sup> /h (normal)									
Gauge pressure	2kPa	2.8kPa	15kPa	60kPa	100kPa	150kPa	300kPa	500kPa	
Actual flow	1.6 m <sup>3</sup> /h	1.5	1.6	1.7	2.4	3.0	3.8	6.0	9.0
	80 m <sup>3</sup> /h	77.3	77.9	87.0	120.7	150.7	188.1	300.4	450.1

Maximum flow : 150 m<sup>3</sup>/h

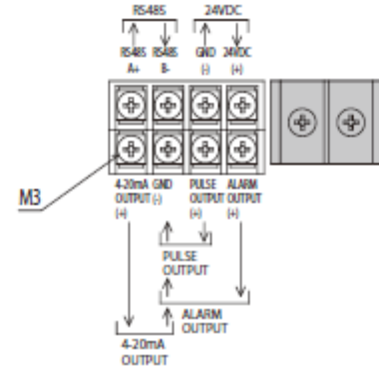
m <sup>3</sup> /h (normal)									
Gauge pressure	2kPa	2.8kPa	15kPa	60kPa	100kPa	150kPa	300kPa	500kPa	
Actual flow	3 m <sup>3</sup> /h	2.9	2.9	3.3	4.5	5.7	7.1	11.3	16.9
	150 m <sup>3</sup> /h	145.0	146.1	163.2	226.4	282.5	352.7	563.2	843.9

## Terminal stands and connection Applicable cable size for external output: ϕ4 - 6.8mm, for external power supply: ϕ6.5 - 12.5mm

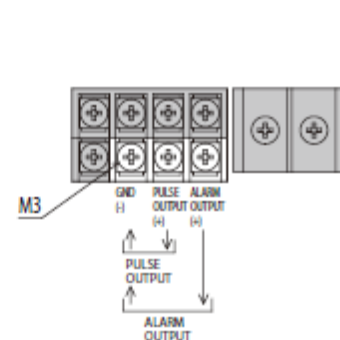
AC power



DC power



Battery



## Model code

Screw code

Basic type	Diameter	Compensation class	Power supply	Flow direction	Gas type	Contents
UX	15 25 25se 32 40 50	0 100	BT DC AC	L R U D	13A PRO BTN N2 AR	screw 15A 25A(6m <sup>3</sup> /h) 25A(35m <sup>3</sup> /h) 32A 40A 50A Actual flow (No compensation) Temperature and pressure compensation type *1 Exclusive lithium battery 24VDC 100VAC Left of Right Right of Left Bottom to Top *1 Top to Bottom *1 13A Propane Butane Nitrogen Argon

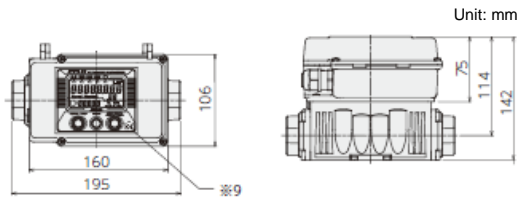
Flange code

Basic type	Diameter	Compensation class	Power supply	Flow direction	Gas type	Contents
UZ	40 50	0 500	BT DC AC	L R U D	13A PRO BTN N2 AR	Flange 40A 50A Actual flow (No compensation) Temperature and pressure compensation type *1 Exclusive lithium battery 24VDC 100VAC Left of Right Right of Left Bottom to Top Top to Bottom 13A Propane Butane Nitrogen Argon

\*1 15A, 25A(6m<sup>3</sup>/h) cannot be selected.

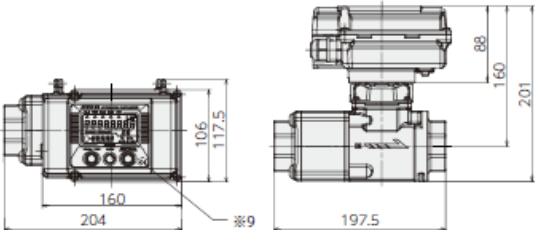
# Outline drawings

UX15/25



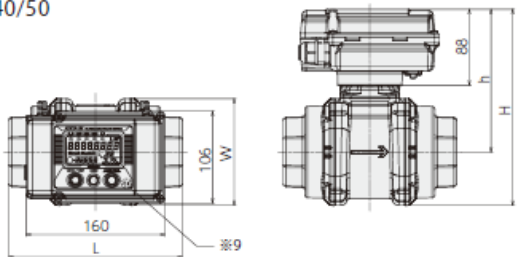
UX25s/32

Unit: mm



UX40/50

Unit: mm

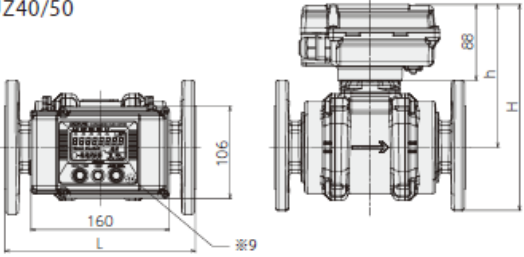


Model	L	H	W	h	Connection size
UX40	170	212	108	157	Rc1-1/2
UX50	200	227	123	165	Rc2

\*9 CE : Only the battery/DC power supply types  
 The meters do not conform to ATEX(explosion-proof)  
 directive(2014/34/EU)

UZ40/50

Unit: mm



Model	L	H	h	Connection size
UZ40	200	222	157	JIS10K40A flange
UZ50	220	238	165	JIS10K50A flange

In order to avoid interference with the display,  
 part or body, 55mm should be used as the  
 length of the hexagon bolt. (Recommended  
 bolt size: M16x55mm)!

Opening and closing dimensions of the display part

