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

Model		UX40	UX50	UZ40	UZ50
Pipe connection		Screw		Flange	
		Rc1·1/2	Rc2	JIS10K	
Maximum working pressure		100kPa		500kPa	
Gas type ※1		City gas (13A), butane (butane = 70%, propane = 30%), propane (propane = 98%, butane 2%), nitrogen and argon			
Power/ consumption	Battery ※2	Exclusive lithium battery (life = 5 years @20℃ 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 and argon	1.6~80m³/h	3~150m³/h	1.6~80m³/h	3~150m³/h
	Butane and propane		3~80m³/h		3~80m³/h
Accuracy ※3		±4%RD (for a range of 10% to 100% of the max flow) ±0.5%FS (for a range of 2% to 10% of the max flow)			
Temperature and pressure compensation ※4		Yes/No (Normal/Standard conversion)			
Conversion accuracy		±1.5%RD(@23℃ and 100kPa)		±1.5%RD(@23℃ and 500kPa)	
Display	Main display	Accumulated flow (actual flow: 8-digit integer + 2 decimal places, converted flow: 8-digit integer + one decimal place, accumulated flow of trip function) Alarm indication (for ultrasonic sensor, temperature sensor, pressure sensor, external memory and power voltage (for battery operation only))			
	Sub display	Instantaneous flow: 5 digits; temperature: 3 digits; and pressure: 5 digits			
Output	Analogue	(For 100VAC or 24VDC only) 4-20mADC (load resistance = max 400Ω): 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 10, 100, 1000 or 10000 L/P); duty = 20 - 80% 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)			
	Communication ※5	(For 100VAC or 24VDC drive) RS485 Modbus/RTU (4800/9600 bps)			
Fluid temperatur		-10℃ to +60℃, under unfrozen condition			
Ambient working temperature and humidity		-10℃ to +60℃, max 90%RH, no condensation permissible			
Protective structure		Indoor and outdoor use *6, IP64 (JIS C 0920)			
Mass		About 4.7kg	About 6.3kg	About 7.0kg	About 8.8kg

*1 Gas type (composition) can be changed on site among those specified here with little degradation in measuring accuracy.
*2 Replaceable without removing the meter from the piping
*3 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%FS (for a range of 2% to 10% of the max. flow). The distance to a governor should be greater than 10D for both the upstream and downstream sides of the meter. Failing to meet this condition may lead to naccurate measurements. For other conditions for installation, please contact us.
*4 Normal flow: Conversion of measurement into a flow at 0℃ and 1atm. Standard flow = conversion of measurement into a flow at the reference temperature and 1 atom
*5 For communication specifications, see our company's website to download it.
*6 High temperatures can cause the electronic circuit board to be deteriorated and the batteries to be consumed. To avoid unnecessary rise in temperature, the product is recommended to be fitted with a sunshade.

Conversion into Normal flow: example (at fluid temperature of 15℃)

○ Diameter of 40A

m³/h (normal)

Gauge pressure		2kPa	2.8kPa	15kPa	60kPa	100kPa	150kPa	300kPa	500kPa
Actual flow	1.6 m³/h	1.5	1.6	1.7	2.4	3.0	3.8	6.0	9.0
	80 m³/h	77.3	77.9	87.0	120.7	150.7	188.1	300.4	450.1

○ Diameter of 50A

m³/h (normal)

Gauge pressure		2kPa	2.8kPa	15kPa	60kPa	100kPa	150kPa	300kPa	500kPa
Actual flow	3 m³/h	2.9	2.9	3.3	4.5	5.7	7.1	11.3	16.9
	150 m³/h	145.0	146.1	163.2	226.4	282.5	352.7	563.2	843.9

Equation for conversion

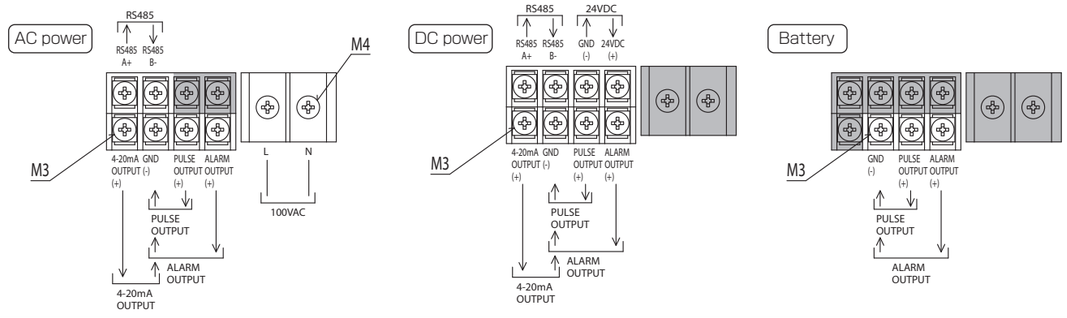
Normal flow

$$\text{Actual flow} \times \frac{\text{Atmospheric pressure (101.325kPa)} + \text{Gauge pressure (kPa)}}{\text{Atmospheric pressure (101.325kPa)}} \times \frac{\text{Absolute temperature scale value of 0℃ (273.15K)}}{\text{Absolute temperature scale value of 0℃ (273.15K)} + \text{Fluid temperature (℃)}}$$

Standard flow

$$\text{Actual flow} \times \frac{\text{Atmospheric pressure (101.325kPa)} + \text{Gauge pressure (kPa)}}{\text{Atmospheric pressure (101.325kPa)} + \text{Reference pressure for conversion (kPa)}} \times \frac{\text{Absolute temperature scale value of 0℃ (273.15K)} + \text{Reference temperature for conversion (℃)}}{\text{Absolute temperature scale value of 0℃ (273.15K)} + \text{Fluid temperature (℃)}}$$

Terminal stands and connection



Technical specifications in this catalog are up-to-date as of February 2019.

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.

1.4

201902-UXUZ-005

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 operation range

Battery replaceable

S&S Sensors, Systems & Services

Aichi tokei

Developed for customer's "NEEDS"

Need1 Customer wants to install a flow meter immediately after a bend part in the piping

No straight pipe section required for installation

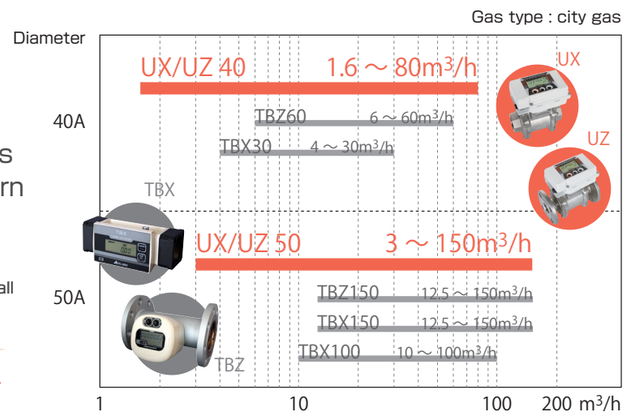
It is possible to connect the flow meter directly to a bend such as an elbow piece and a flexible pipe.

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)

Need2 Customer wants to measure a small flow range

As wide as a 1:50 turn down ratio

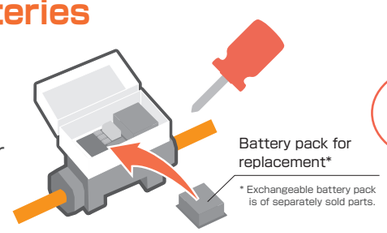
Applicable also for measuring gas flow of a burner having a large turn down ratio.



Need3 Customer wants to replace batteries

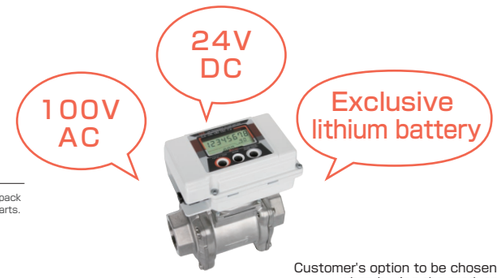
Easy to replace batteries

Users can replace batteries without removing the meter from the piping.



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

You can choose one of the three power supply options:



Customer's option to be chosen when buying the product

Need4 Customer wants to reduce maintenance work

Strong against dust, and high durability

Use the product in such a condition that does not allow the gas to re-liquefy into oil mist.

Need5 Customer wants to use it 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.

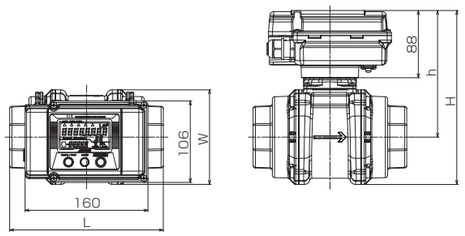
External dimension

* The overall length (L) is as same as that of our company's turbine meter (TBX/TBZ) of the same diameter.

UX

Model	L	H	W	h	Connection diameter
UX40	170	212	118	157	Rc1・1/2
UX50	200	227	123	165	Rc2

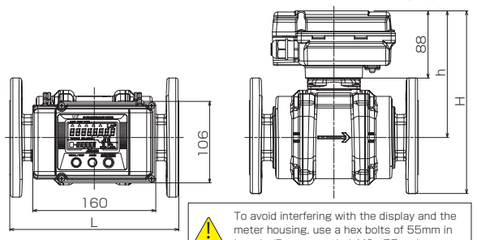
Unit: mm



UZ

Model	L	H	h	Connection diameter
UZ40	200	222	157	JIS10K 40A Flange
UZ50	220	238	165	JIS10K 50A Flange

Unit: mm



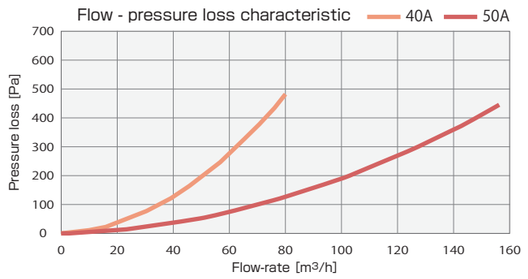
To avoid interfering with the display and the meter housing, use a hex bolts of 55mm in length. (Recommended: M6×55mm)

Model code

Basic Model	Dia-meter	Compensation	Power supply	Flow direction ※1	Gas type	Description
UX						Screw connection
UZ						Flange connection
	40					40A
	50					50A
		0				Actual flow (No compensation)
		100				Temperature and pressure compensation UX
		500				Temperature and pressure compensation UZ
			BT			BT: exclusive lithium battery *2
			DC			DC:24VDC±10%
			AC			AC:100VAC±10%
				L		Left to right
				R		Right to left
				U		Bottom to top
				D		Top to bottom
					13A	13A
					PRO	Propane
					BTN	Butane
					N2	Nitrogen
					AR	Argon

*1 The display's orientation is changeable on site.
*2 The battery is changeable on site.

Pressure loss chart



This date stands for pressure loss for air.
For city gas 13A, multiply the reading by 0.64 (specific gravity of the gas).
For LPG, multiply the reading by about 1.55 (specific gravity of LPG).