 Reliability Creativity Service	<b>Product Specifications</b>	Ver. 3		1/4
	<b>Ultrasonic Flow Meter for Fuel Gas (External Power Supply 100 VAC Type)</b>	Model	UX [Nominal diameter] - [Pressure] AC - [Flow direction] - [Gas type]	

## 1. Specifications

### ◎ Model UX [Nominal diameter] - [Pressure] AC - [Flow direction] - [Gas type]

Nominal diameter	Pressure	Flow direction	Gas type
<input type="checkbox"/> 25s	<input type="checkbox"/> 0 (Type without pressure sensor)	<input type="checkbox"/> L (Left to right)	<input type="checkbox"/> 13A (city gas 13A)
<input type="checkbox"/> 32	<input type="checkbox"/> 100 (Type with pressure sensor)	<input type="checkbox"/> R (Right to left)	<input type="checkbox"/> PRO (propane)
		<input type="checkbox"/> D (Downward)	<input type="checkbox"/> BTN (butane)
		<input type="checkbox"/> U (Upward)	<input type="checkbox"/> N2 (nitrogen)
			<input type="checkbox"/> AR (argon)

### Connection diameter

Model	UX25s	UX32
Connection diameter	Rc1	Rc1 · 1/4

### Flow range (Actual flow) [m<sup>3</sup>/h]

Gas type	13A, PRO, BTN, N2, AR
Flow range	+0.7~35

### Accuracy

#### • Flow measurement accuracy (Actual flow) [m<sup>3</sup>/h]

Gas type	13A, PRO, BTN, N2, AR	
Accuracy	±0.5%FS	+0.7~3.5
	±4.0%RD*	+3.5~35

\* 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: ±2.0%RD

#### • Conversion accuracy

±1.5%RD (at 100 kPa, 23°C)

Conversion standard temperature : -10 to +60°C (In unit of 1°C)

Conversion standard pressure : 0.00 to 10.00 kPa (In unit of 0.01 kPa, gauge pressure)

Atmospheric pressure under working environment : 0.0 to 200.0 kPa (In unit of 0.1 kPa, absolute pressure)

**Low flow cutoff** In case the measurement flow is lower than Qcut, 0 m<sup>3</sup>/h is displayed for instantaneous flow.


Qcut (can be changed by button operation and communication)

Initial setting value: ±0.14

Unit: Correlated to unit of sub display value

Response-ability	Instantaneous flow display value	0.5 second (smoothing by moving average method (initial setting value: 4 times))
	Pressure display value	0.5 second (smoothing by moving average method (initial setting value: 10 times))
	Temperature display value	0.5 second

"◎" are selectable items.

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**Display**

**Main display :** The following is switched and selected using the “left button”.  
 Accumulated flow volume (m<sup>3</sup>)-Trip accumulated flow volume (m<sup>3</sup>)

**Sub display :** The following is switched and selected using the “right button”.  
 Type with pressure sensor Instantaneous flow (m<sup>3</sup>/h)-Pressure (kPaG)  
 Temperature (°C)

Type without pressure sensor Instantaneous flow (m<sup>3</sup>/h)-Working gas pressure setting value (kPaG)-Temperature (°C)

**Number of digits displayed**

**Main display**

Forward accumulated flow volume [m<sup>3</sup>] : 00000000.00 10 digits

Forward trip accumulated flow volume [m<sup>3</sup>] : 卜 00000000.00 9 digits

Unit: Selected by button operation and communication

When NORMAL flow is selected	When standard flow is selected	When actual flow is selected
NORMAL m <sup>3</sup>	Standard m <sup>3</sup>	m <sup>3</sup>

**Sub display**

Instantaneous flow [m<sup>3</sup>/h]:000.00 (less than 1000) 5 digits

0000.0 (1000 or more and less than 10000) 5 digits

00000 (10000 or more) 5 digits

Unit: Selected by button operation and communication

When NORMAL flow is selected	When standard flow is selected	When actual flow is selected
NORMAL m <sup>3</sup>	Standard m <sup>3</sup>	m <sup>3</sup>

Pressure [kPa] : 0000.0 (Type with pressure sensor) 5 digits

000.00 (Type without pressure sensor) 5 digits

\* In the type without pressure sensor, the working gas pressure setting value is displayed.

Temperature [°C]: 00.0 3 digits

**Contact output Nch open drain output 2 channels**

- Pulse output Nch open drain output 1 channel

Pulse unit : 1000 L/P (initial setting value) (can be changed by button operation)  
 (can be changed to 1, 10, 100, 1000 and 10000 L/P)


Maximum load : 26.4 VDC·50 mA

Duty : 20 to 80%

Saturated voltage when ON : 1.5 V or less

Current when OFF : 50 μA or less

Maximum frequency : 10 Hz

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- Alarm output Nch open drain output 1 channel  
Accumulated value upper limit alarm and flow upper or lower limit alarm (either one is selected by button operation)

Accumulated value upper limit alarm

When the accumulated flow volume for 1 h becomes higher than the set accumulated flow volume upper limit value, an alarm signal is output.

(The accumulated flow volume upper limit value can be set by communication.)

\*The 1 h measurement is started when the power supply is turned on.

Flow upper and lower limit alarm output

When the instantaneous flow becomes higher or lower than the set flow, an alarm signal is output. (The alarm output upper and lower limit flow and alarm judgment value hysteresis width can be set by button operation.)

Current output Output method : 4 - 20 mA Discharge method  
Output accuracy :  $\pm 0.1$  mA (flow measurement accuracy, temperature measurement accuracy and pressure measurement accuracy are excluded)  
External load : 400  $\Omega$  or less  
(“Instantaneous flow”, “Pressure” and “Temperature” can be switched by a button operation and communication.)

When instantaneous flow is selected

[Forward flow display mode]

Zero output current : 4.0 mA (reverse flow to low flow cutoff)

Output current lower limit : 4.0 mA (clip at 4.0 mA)

Output current upper limit : 22.0 mA (clip at 22.0 mA)

Full scale flow (can be changed by button operation and communication)

Model	Type with pressure sensor	Type without pressure sensor
Initial setting value	100	35

Unit: Correlated to unit of sub display value

When pressure is selected (type with pressure sensor only)

Output method : 4.0 mA: 0 kPa, 20.0 mA: 100 kPa (fixed)

Output current lower limit : 4.0 mA (clip at 4.0 mA)

Output current upper limit : 22.0 mA (clip at 22.0 mA)

When temperature is selected

Output method : 4.0 mA: -10°C, 20.0 mA: output as +60°C (fixed)

Output current lower limit : 2.0 mA (clip at 2.0 mA)

Output current upper limit : 22.0 mA (clip at 22.0 mA)

Communication Communication method : Half duplex communication method (RS485 communication)

Communication speed : 4800 bps, 9600 bps (Allowable range:  $\pm 1.0\%$ )

Synchronization method : Asynchronous


Bit configuration : 8 bits, no parity, stop bit length 1 bit

Bit transmission order : Order from b0 to b7 (low order prioritized sending)

Error control : CRC

\*For the detailed communication specifications, download the communication specifications from the product introduction page.

Measurable fluid City gas (13A), butane (butane 70%, propane 30%), propane (propane 98%, butane 2%), nitrogen, argon

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Working fluid temperature	-10 to +60°C
Working pressure	0 to 100 kPa (gauge pressure)
Working ambient temperature	-10 to +60°C 90%RH or less (there must be no condensation)
Storage ambient temperature	-20 to +70°C 90%RH or less (there must be no condensation)
Power supply	100 VAC (85 to 115 VAC, 50/60 Hz) Power consumption: 10 W or less
Protection structure	IP 64 (JIS C0920: dust-proof, splash-proof type) which can be installed outdoors
Flow direction	Free in upward, downward, left to right, and right to left (direction indicated by arrow is forward flow)
Installation position	Horizontal or vertical (cannot be installed with the position that the display portion faces downward or the cable introduction portion faces upward)
Pressure drop	500 Pa or less (air, standard atmospheric pressure, at maximum flow)

Mass	Model	UX25s	UX32
	Mass	2.6kg	2.6kg

Material	<input type="radio"/> Measurement portion Engineering plastic (PPS etc.), Aluminum alloy <input type="radio"/> Outer casing Aluminum alloy Display portion casing Aluminum alloy * <input type="radio"/> symbol indicates the gas contacting parts.
Standard working period	10 years (at ambient temperature of 20°C and ambient humidity of 65%RH) *10 years is not the warranty period.
Accessories	M4 Hexagonal wrench
Others	RoHS Directive compliant

## 2. Precautions in handling

### 2-1. Installation environment

- (1) Although the high weather-proof electronic display is adopted, in case of installation at a place subjected to direct sunlight, provide a sunshade.
- (2) Do not install the flow meter at a place with much electromagnetic noise, in corrosive atmosphere, or with high humidity liable to cause dew condensation
- (3) This product is designed for outdoor installation, but avoid areas where there is a risk of water submergence and water always splashes.
- (4) The GND (signal ground) is connected to the casing. Take the following measures, as necessary.
  - For DC24V type, use an insulation type power supply.
  - Install a pulse isolator to isolate signals between the flow meter and a receiver.
  - Use an insulating bolt, insulating washer, etc., to isolate the casing and pipes.
- (5) The meters do not conform to ATEX (explosion-proof) directive (2014/34/EU).

### 2-2. Piping conditions

- (1) In case propane or butane is the fluid to be flown, make sure to use the flow meter under conditions that the fluid does not become oil mist state due to re-liquefaction, etc.
- (2) Even though the meter is installed indoor, it cannot be installed with the position that the display portion faces downward or the cable introduction portion faces upward.
- (3) When installing it at the upstream or downstream of the governor, install it 10D or more away from the governor.