Reliability Creativity Service	**Product Specifications**	Ver. 1	1/5
	Ultrasonic Flow Meter for Fuel Gas Management (External Power Supply 100 VAC Type)	Model	UW [Nominal diameter] - [Pressure] AC - [Flow direction] - [Gas type]

1. Specifications

⊙ Model UW [Nominal diameter] - [Pressure] AC - [Flow direction] - [Gas type]

Nominal diameter	Pressure	Flow direction	Gas type
☐ 80 ☐ 100 ☐ 150	☐ 0 (Type without pressure sensor) ☐ 500 (Type with pressure sensor: 500kPa) ☐ 1000 (Type with pressure sensor: 1000kPa)	☐ L (left to right) ☐ R (right to left) ☐ D (Downward) ☐ U (Upward)	☐ 13A (natural gas 12A,13A) ☐ N2 (nitrogen)

Connection diameter

Model	UW80	UW100	UW150
Connection diameter	JIS10K 80A flange	JIS10K 100A flange	JIS10K 150A flange

Flow range (Actual flow) [m^3/h]

Model	UW80	UW100	UW150
Flow range	+3.3 to 330	+5 to 500	+12 to 1200

Accuracy

• Flow measurement accuracy (Actual flow) [m^3/h]

Model		UW80	UW100	UW150
Accuracy	±0.5%FS	+3.3 to 33	+5 to 50	+12 to 120
	±2.0%RD	+33 to 330	+50 to 500	+120 to 1200

• Conversion accuracy

±1.5%RD (at 500 kPa or 1000 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 operating environment : 0.0 to 200.0 kPa (In unit of0.1 kPa, absolute pressure)

Low flow cutoff

In case the measurement flow is lower than Qcut, 0 m^3/h is displayed for instantaneous flow.

Qcut (can be changed by button operation and communication)

Model	UW80	UW100	UW150
Initial setting value	1.3	2.0	4.8

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

Display

Main display : The following is switched and selected using the “left button”.
Accumulated flow volume (m^3)·Trip accumulated flow volume (m^3)

Sub display : The following is switched and selected using the “right button”.
Conversion flow type Instantaneous flow (m^3/h)·Pressure (kPaG)·Temperature (°C)
Actual flow type Instantaneous flow (m^3/h)·working gas pressure setting value (kPaG)·Temperature (°C)

"⊙" are selectable items.

Number of digits displayed

Main display

Forward accumulated flow volume [m^3] : 0000000000 10 digits*

Forward trip accumulated flow volume [m^3] : ⊦ 000000000 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^3	Standard m^3	m^3

*In 80A type, "Forward accumulated flow volume" and "Forward trip accumulated flow volume" are displayed with 1 decimal places when Actual flow display (m3) is selected.

Sub display

Instantaneous flow [m^3/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^3/h	Standard m^3/h	m^3/h

Pressure [kPa] : 0000.0 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 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

• Alarm output Nch open drain output 1 channel

Flow upper or lower limit alarm, upper limit alarm of accumulated flow volume, or error alarm(which one is selected by button operation)

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.)

Upper limit alarm of accumulated flow volume output

When the accumulated flow volume for 1 hour 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 hour measurement is started when the power supply is turned on.

Error alarm output

An alarm signal is output when an abnormal flow measurement, abnormal temperature value, or abnormal pressure value is detected.

Current output Output method : 4 to 20 mA Discharge method

Output accuracy : ±0.1 mA (flow measurement accuracy, temperature measurement accuracy and pressure measurement accuracy are excluded)

External load : 400 Ω 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	UW80	UW50	UW150
Initial setting value	5000	7000	17000

Unit: Correlated to unit of sub display value

When pressure is selected (conversion flow type only)

Output method : 4.0 mA: 0 kPa, 20.0 mA: 500 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: ±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 details on the communication features, communication specifications are available for download on our website.

Measurable fluid	Natural gas (12A,13A), nitrogen
Working fluid temperature	-10 to +40°C(Natural gas),-10 to +60°C(Nitrogen)
Working pressure	Type without pressure sensor : 0 to 1000 kPa (gauge pressure) Type with pressure sensor (500 kPa) : 0 to 500 kPa (gauge pressure) Type with pressure sensor (1000 kPa) : 0 to 1000 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	UW80	UW100	UW150
Mass	12.3 kg	10.6 kg	19.3 kg

Material

・80A
- ○ Measurement portion: : Engineering plastic (PPS etc.)
- ○ Outer casing : Stainless alloy
- ○ Sensor rubber : FVMQ (Fluoro silicone rubber)
- Display potion casing : Aluminum alloy

*○ symbol indicates the gas contacting parts.

・100A,150A
- ○ Measurement portion: : Stainless alloy
- ○ Sensor holder : PPS
- ○ Sensor rubber : FVMQ (Fluoro silicone rubber)
- Display potion casing : Aluminum alloy

*○ 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, flange gasket(optional accessories), bolt set(optional accessories), sunshade cover(optional accessories)
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, use a sunshade cover.

(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.
Utilize an isolated power supply or an external connection equipment, as necessary.

(5) The meters do not conform to ATEX (explosion-proof) directive (2014/34/EU).

(6) When opening and closing the valve installed at upstream and downstream sides of the meter, do not operate the valve at once. Open and close it slowly.

2-2. Piping conditions

(1) There are cases that lengths of the straight pipe sections are recommended more than 20D when installing the flow meter at confluence pipe, enlarge pipe, or narrowing pipe.

(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 the flow meter near a pressure reducing valve or a flow control valve, the piping conditions vary greatly depending on usage conditions. Please check the instruction manual.