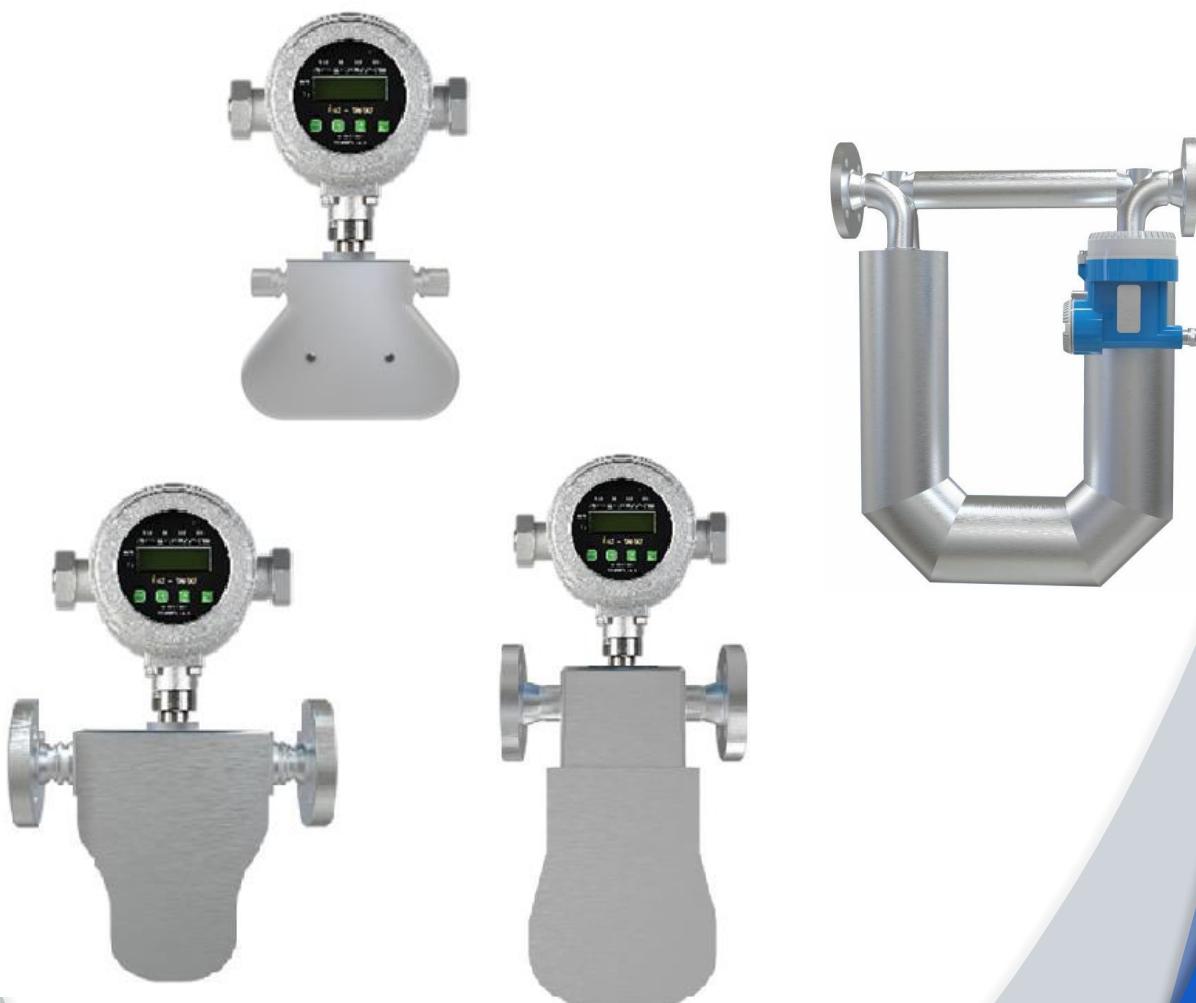


CORIOLIS MASS FLOWMETER KC-7777-U (U-tube type : Liquid, Steam, Gas)



CORIOLIS MASS FLOW METER (KC-7777-U)

Product Features

- **Measuring diameters:** DN01, DN02, DN03, DN04, DN08, DN15, DN20, DN25, DN40, DN50, DN80, DN100, DN150, DN200, DN250.
- **Instantaneous and totalized flow rate, volumetric and mass flow rate, temperature, and density display**
- **Power supply:** AC 85–265 V (50/60 Hz), DC 18–36 V
- **Output accuracy:** $\pm 0.005\%$ F.S. (HART 4–20 mA)
- **Interface (RS-485)** allows on-site adjustment in case of flow meter malfunctions
- **Direct mass flow measurement** eliminates the need for separate temperature and pressure compensation
- **Simple on-site signal processing and calibration** (precision calibration: 5–8 calibration points)
- **Short upstream and downstream straight pipe sections** (10D front end ~ 5D rear end)
- **Excellent reproducibility and outstanding long-term stability**
- **Hygienic design with 3A certification**
- **CIP/SIP cleaning capability** to ensure product quality
- **Best price-to-performance ratio**
- **Easy adaptability to different applications**
- **Wide measurable flow rate range (100:1 turndown ratio)**
- **Fast response to flow rate changes (0.1 second)**
- **No moving parts**
- **CE, IP66, IP67**



KC-7777-U U-tube type
Liquid, Steam, Gas

Application

- Precision measurement from 0 to 2,9000 kg/min
- Suitable for process control of crude oil trade transfers and loading/unloading in industries such as petrochemicals, shipyards, power plants, aerospace, semiconductors, paper, power, steel, and metals.

Product Introduction

The structure consists of two parts: the sensor and the transmitter, and features ARM pure digital drive, DSP signal processing, and high oscillation frequency.

It features a high-performance microprocessor and LCD display for convenient and fast parameter setting and self-checking and self-diagnosis functions.

It boasts high stability, high shock resistance, fast response, high accuracy, low pressure loss, and multi-parameter measurement (including mass flow rate, density, temperature, and percentage).

It has a wide range of applications (it can be used to measure all types of non-Newtonian fluids, slurries, suspensions, and high-viscosity fluids).

It has low installation requirements (straight pipe requirements before and after the Coriolis mass flow meter are low).

It is stable and requires minimal maintenance.

Coriolis Mass Flowmeter (KC-7777-U)

Product Performance

- **Accuracy**

Liquid, Oil : R.D 0.15 / 0.2

Gas : R.D $\pm 0.5\%$, $\pm 1.0\%$

- **Repeatability**

R.D 0.075%, 0.1%, 0.25%, 0.5%

- **Density Measurement**

Density range : 0.3 ~ 3.0 g/cm³

Accuracy : ± 0.001 g/cm³(± 1 kg/m³)

- **Response Time**

Within 0.1 second

- **Measurement Range**

0~29,000kg/min

- **Function**

Flow Rate & Total, Volume, Mass, Density, Temperature Measurable

Operating Specification

- **Fluid**

Liquid, Oil, Steam, Liquid+Solid, Liquid+Gas Mixed Mass & Volume Measrement

- **Input Power (Optional)**

24VDC, 220VAC/24VDC self-adaption

- **Output Signal (Optional)**

pulse+4~20mA+RS485

pulse+4~20mA+HART

- **Pressure Drop**

0.15 kpa

- **Fluid & Environment Temperature**

Fluid : -50~+150 °C 옵션 : -50~+230 °C, -50~+350 °C

-200~+150 °C, -255~+150 °C

Environment : -20 ~ 60 °C (-4 ~ 140 °F) Options : -40~60 °C (-40~140 °F)

Coriolis Mass Flow Meter (KC-7777-U)

- **Pressure (limitations)**

16 Bar Std.

40, 63, 100, 160, 200, 250, 300, 350, 400, 700, 900, 1200Bar (Option)

- **Displays**

Display instructions: instantaneous & integration, volume, mass measurement

Alphanumeric 2 X 16 backlight LCD

Adjustable variables via remote control switch or Smart interface software

Adjustable : Full scale : (0 ~100) %

Flow: m³/h(m³), L/h(L), mL/h(mL), kg/h(kg)

Time response 0.1 sec / Correction factor setting 0.5 ~ 5 /

Zero & Span

- **Totalizer**

Flow rate and total oxygen point (0000. / 000.0/ 00.00 / 0.000)

Seven digits (9,999,999,99.9 Count) in engineering units Reset table by Software

- **Software (Option)**

Smart interface Windows® -based Software 8MB RAM of RAM, preferred 16MB of RS-485

communication Additional features: Zero cut-off adjustment / Linearization adjustment / Save /

Load configuration / For meter validation

Physical Specification

- **Wetted Materials**

Measuring Tube – SS 316L / HC Hastelloy, Titanium, PTFE (Option)

Body – SS 304, SS 316L

- **Enclosure**

General type IP66 & Waterproof, dustproof, explosion-proof IP67

(Ex d ib IIc T6 Gb : Ex db ia IIc T6 Gb Ex tb IIIC T80°C Db)

- **Electrical Connection**

2 X 1/2" NPT , M20X1.5

- **Mounting (Selection)**

ANSI 150lb Flange, JIS 10k RF Flange

ANSI 300lb Flange, JIS 20K RF Flange (Option)

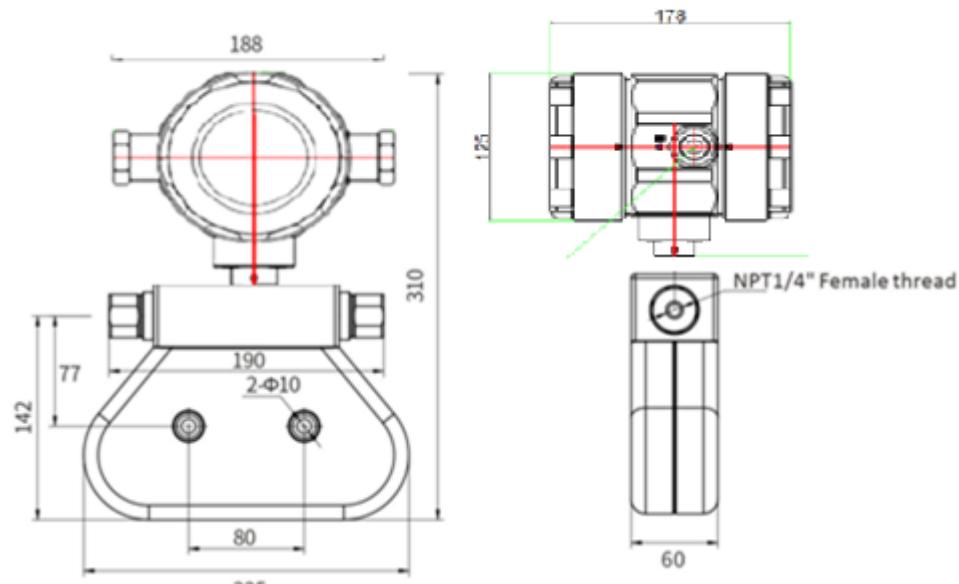
- **Certification**

CE (All Case)

[Korea Gas Safety Corporation is preparing for hydrogen explosion-proof certification.]

Coriolis Mass Flow Meter (KC-7777-U)

❖ Drawing Dimension Specifications & Chart "U" (U-Tube sensor) Type



❖ Specifications by size (flow rate, temperature, pressure)

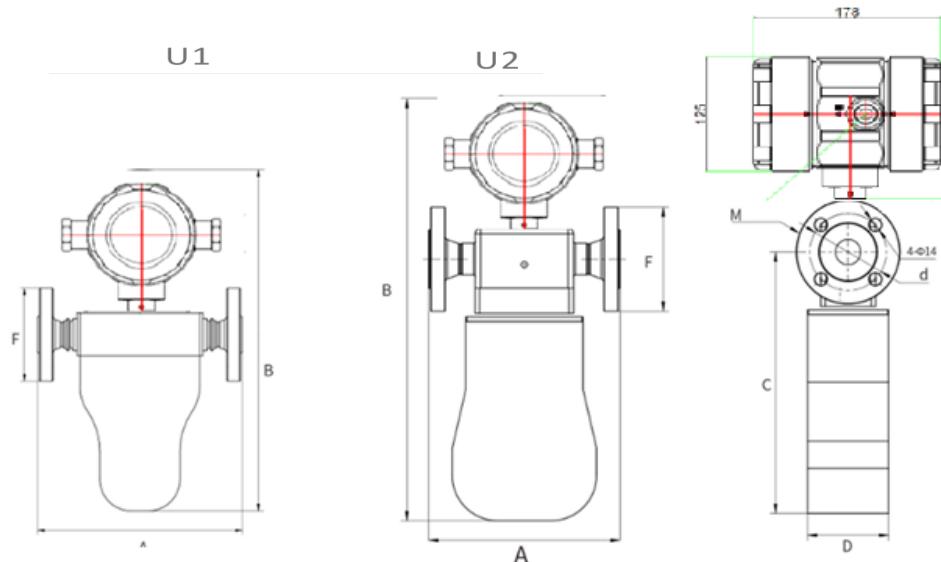
| Size | | Max. Flow Rate | | Medium temp' | Max. Working Pressure |
|-------|------|----------------|--------|--------------|-----------------------|
| inch | mm | Kg/min | Lb/min | | |
| 1/12" | DN01 | 0.2 | 0.44 | -50~150°C | ≤100Bar |
| 1/10" | DN02 | 1.6 | 3.53 | | |

❖ Zero stability

| Size | | Zero stability(Kg/min) | Size | | Zero stability(Kg/min) |
|-------|------|------------------------|--------|-------|------------------------|
| 1/12" | DN01 | 0.0002 | 1-1/2" | DN40 | 0.020 |
| 1/10" | DN02 | 0.0005 | 2" | DN50 | 0.025 |
| 1/8" | DN03 | 0.001 | 3" | DN80 | 0.050 |
| 1/6" | DN04 | 0.001 | 4" | DN100 | 0.100 |
| 1/4" | DN08 | 0.002 | 6" | DN150 | 0.200 |
| 1/2" | DN15 | 0.006 | 8" | DN200 | 0.300 |
| 3/4" | DN20 | 0.010 | 10" | DN250 | 0.750 |
| 1" | DN25 | 0.010 | | | |

Coriolis Mass Flow Meter (KC-7777-U)

❖ Drawing Dimension Specifications "U" (Small Size) Type



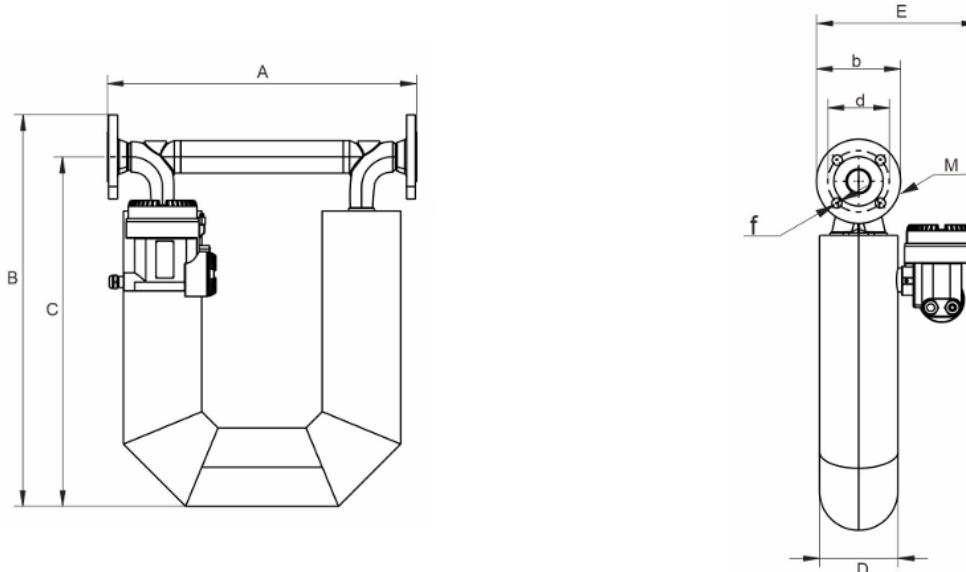
| Type | A | B | F | C | D | d | M |
|------|-----|-----|-----|--------|----|-----|------------------------|
| U1 | 210 | 325 | 95 | 156.50 | 54 | Φ65 | NPT 1/4" Female thread |
| | | 348 | | 180 | | | DN15 PN40 Flange |
| U2 | 212 | 458 | 115 | 289 | 90 | Φ85 | DN20 PN40 Flange |
| | | 458 | 115 | 289 | | | DN25 PN40 Flange |

❖ Specifications by size (flow rate, temperature, pressure)

| Size | | Max. Flow Rate | | Medium temp' | Max. Working Pressure |
|------|-------|----------------|--------|--------------|-----------------------|
| inch | mm | Kg/min | Lb/min | | |
| 1/8" | DN03 | 3 | 6.61 | -50~150°C | 10Bar |
| 1/6" | DN04 | 5 | 11 | | |
| 1/4" | DN08 | 20 | 44 | | |
| 1/2" | DN15 | 60 | 132 | | |
| 3/4" | DN20 | 100 | 220 | | |
| 1" | DN25 | 200 | 440 | | |
| 3" | DN80 | 2000 | 4409 | | 63Bar |
| 4" | DN100 | 3000 | 6613 | | |
| 6" | DN150 | 12000 | 26455 | | 40Bar |
| 8" | DN200 | 18000 | 39683 | | |
| 10" | DN250 | 29000 | 63934 | | |

Coriolis Mass Flow Meter (KC-7777-U)

❖ Drawing Dimension Specifications "U" (U-pipe sensor) Type



| Size | A | B | C | D | E | d | b | F | M |
|-------|------|------|------|------|-----|------------|------|------|-------------------|
| DN40 | 552 | 699 | 624 | Φ140 | 288 | 4-Φ18 | Φ110 | Φ150 | DN40 PN40 Flange |
| DN50 | 600 | 747 | 665 | Φ159 | 205 | 4-Φ18 | Φ125 | Φ165 | DN50 PN40 Flange |
| DN80 | 763 | 950 | 850 | Φ219 | 353 | 8-Φ18 | Φ160 | Φ200 | DN80 PN40 Flange |
| DN100 | 963 | 1079 | 962 | Φ273 | 416 | 8-Φ22 | Φ190 | Φ235 | DN100 PN40 Flange |
| DN150 | 1164 | 1144 | 994 | Φ324 | 467 | 8-Φ26 | Φ250 | Φ300 | DN150 PN40 Flange |
| DN200 | 1266 | 1445 | 1257 | Φ377 | 423 | 12- Φ30 | Φ320 | Φ375 | DN200 PN40 Flange |
| DN250 | 1360 | 1904 | 1683 | Φ448 | 500 | 12- Φ30 | Φ385 | Φ450 | DN40 PN40 Flange |

❖ Specifications by size (flow rate, temperature, pressure)

| Size | | Max. Flow Rate | | Medium temp' | Max. Working Pressure |
|--------|------|----------------|--------|--------------|-----------------------|
| inch | mm | Kg/min | Lb/min | | |
| 1-3/4" | DN40 | 450 | 992 | -50~150°C | 10Bar |
| 2" | DN50 | 650 | 1433 | | |

Coriolis Mass Flow Meter (KC-7777-U)

The Coriolis mass flow meter realizes the following control with the current output signal:

| | |
|---|---|
| 01 – Mass flow(kg/h) Control | 02 – Density (g/cm ²) Measuring |
| 03 – Volume flow(m ³ /h) Control | 04 – Temperature('C) Measuring |

Application : Batch Control / Mixed / Process Control / Filling & Dispensing / Loading & UnLoading / Measurement of commercial and process liquids and oils

 Respond to customer needs with fast response speeds and achieve energy savings with $\pm 0.1\%$ F.S. precision control, minimizing losses in industrial setting

Upstream and downstream straight pipe conditions (**KC-7777-U U tube type**)

| Vertical pipe length required for measurement | | | |
|---|--------------------|---------------|------------------|
| Line Condition | KC-7777 Smart- IN™ | | Orifice Plate(3) |
| | upstream(1) | downstream(2) | |
| 90° Elbow or T-Junction | 10D | 5D | 28D |
| Reduction (4:1) | 10D | 5D | 14D |
| Expansion (4:1) | 10D | 5D | 30D |
| After the control valve | 10D | 5D | 32D |
| Two 90° elbows (same horizontal plane) | 10D | 5D | 36D |
| Two 90° elbows (different horizontal planes) | 10D | 5D | 62D |

Note:

- (1) The straight pipe diameter multiple (D) is the straight pipe required between obstructions upstream of the flow meter.
- (2) The required straight pipe length can be shortened due to field-specific calibration.
- (3) For comparison with our flow meter, this is the straight pipe required for an orifice flow meter with a diameter ratio of 0.7, as defined by ISO-5167.
- (4) For pressure effects, please contact the manufacturer.

Order Code-Coriolis Mass Flow Meter (KC-7777-U)

Type Flange Conn' Spec' Enclosure Power Output Display Direction Cal1 Cal2 Press' Option

KC-7777- - - - - - - - -

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

| | |
|-------------------------------------|--------|
| Type | Code 1 |
| (Liquid) U-Tube type | UL |
| (Steam) U-Tube type | US |
| (Gas) U-Tube type | UG |
| (Mix) U-Tube type | MX |
| Agency approved, customer specified | W |

| | |
|-------------------------------------|--------|
| Input Power | Code 8 |
| DC 24V, 500mA | 2 |
| AC 220V or 22-245V, 60Hz | 3 |
| Agency approved, customer specified | W |

| | |
|---------------------------------------|---------|
| Calibration ²⁹ (Liquid) | Code 13 |
| 64.4 °F(18 °C) 14.7 psig (1.103 barg) | A |
| 32 °F(0 °C) 14.7 psig (1.103 barg) | B |
| Agency approved, customer specified | W |

| | |
|-------------------------------------|-----------|
| Process Connection | Code 2 |
| Thread | T |
| Tri-clamp | TC |
| Lok Fitting | L |
| DIN / ANSI / JIS Flange | D / A / J |
| Agency approved, customer specified | W |

| | |
|---|--------|
| Output Signal (Selection) | Code 9 |
| Modbus RTU / RS-485S, Pulse active | 1 |
| Profinet PA Modbus RTU / RS-485, Pulse active | |
| DC 4~20 mA Hart or Current Loop | 2 |
| Agency approved, customer specified | W |

| | |
|-------------------------------------|---------|
| Pressure Limit | Code 14 |
| 16 bar | 1 |
| 40 bar | 2 |
| 900 bar | 3 |
| Agency approved, customer specified | W |

| | | | |
|-------------------------------------|---------------|-------|--------|
| Connection Spec' ^{1,3} | Code 3,4,5 | | |
| Size | DIN | 150lb | JIS10k |
| 1/12" (DN01) | Thread or Lok | | |
| 1/10" (DN02) | | | |
| 1/8" (DN03) | | | |
| 1/6" (DN04) | | | |
| 1/4" (DN08) | | | |
| 1/2" (DN15) | D2 | F2 | J2 |
| 1" (DN20) | D3 | F3 | J3 |
| 1" (DN25) | D4 | F4 | J4 |
| 3" (DN80) | D9 | F9 | J9 |
| 4" (DN100) | D11 | F11 | J11 |
| 6" (DN150) | D13 | F13 | J13 |
| 8" (DN200) | D15 | F15 | J15 |
| 10" (DN250) | D16 | F16 | J16 |
| Agency approved, customer specified | W | | |

| | |
|---|---------|
| Flow Direction | Code 11 |
| Horizontal Left to Right or Vertical UP | 1 |
| Horizontal Right to Left or Vertical Down | 2 |
| Agency approved, customer specified | W |

| | |
|--------------------------------------|---------|
| Option | Code 15 |
| High Temp'(-50~+230 or -255~150°C) | ST |
| High Press' (max.1,200 Bar) | HP |
| Mat'l : HC Hastelloy, Titanium, PTFE | SM |

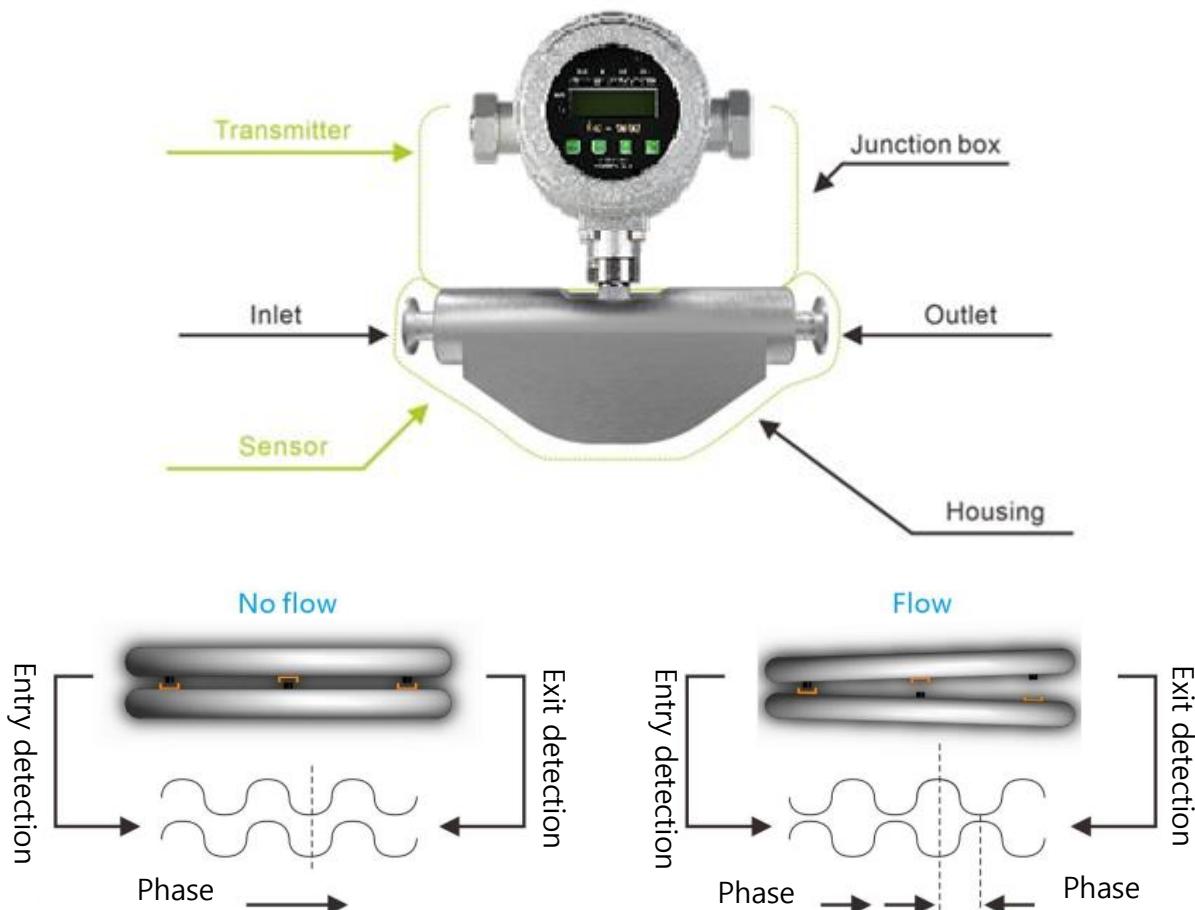
| | |
|--|---------|
| Calibration ¹⁹ (Liquid) | Code 12 |
| Standard Calibration | |
| Water, only for 1/2" and small pipe Size | A |
| Water, only for 2" and large pipe size | D |
| Customer Calibration | B |
| Water | |
| Agency approved, customer specified | W |

| | |
|--|----------|
| Enclosure ⁵ | Code 6,7 |
| Hazardous-Area Location Enclosure | 2 |
| Remote Hazardous-Area Location Enclosure(Only with Meter) | 3(Ft) |
| Remote Hazardous-Area Location Enclosure(Only with Junction Box) | 4(Ft) |
| IP66 or IP67 | N2 |
| Remote IP66 with Junction Box | N4(Ft) |
| Agency approved, customer specified | W |

Coriolis Mass Flow Meter (KC-7777)

Measurement Principle

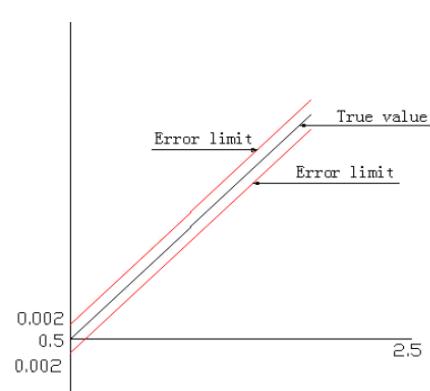
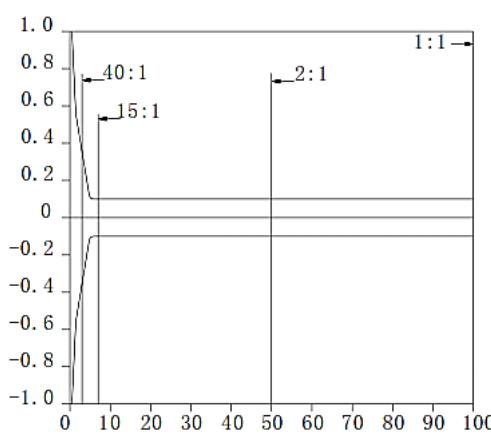
A Coriolis mass flow meter vibrates a flowmeter tube as fluid passes through it, based on the Coriolis principle. A sensor detects and analyzes the frequency, phase difference, and temperature changes in the flowmeter tube. This allows for direct measurement of the fluid's mass flow rate, and density is calculated from the vibration frequency. Other process variables, such as mass flow rate, volume flow rate, density, and temperature, can also be obtained.



Instantaneous Flow Accuracy: $\pm 0.20\%$
 $\text{Flow Rate} \pm [(\text{Zero Stability}/\text{Flow Rate}) * 100] \%$

Flow Rate Response Time: Factory set to 1 second (user adjustable)

Density measurement accuracy:
 $\pm 0.002 \text{ g/cm}^3$ (applicable to liquids only)
As shown in the graph below, the origin coordinates start at 0.5.



<Density accuracy curve>

Coriolis Mass Flow Meter (KC-7777)

KOLAS Standard equipment : SONIC NOZZLE(Gas)



CORIOLIS MASS FLOW METER (Liquid)



Disclaimer:

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Related technical details are subject to change for further improvement.

Coriolis Mass Flow Meter (KC-7777)

※ Just choose the one that suits your needs.

| Application | Type | Mass Flowmeter | |
|-----------------------|--|-------------------------|-----------------------------|
| | | Coriolis Mass | |
| Object of Measurement | Liquid, Oil | O | |
| | Gas | O | |
| | Vaper | O | |
| | steam | O | |
| Application | control | O | |
| | Monitor | O | |
| | Supply | O | |
| Operating condition | Temperature (max) | Gas, Liquid | -50 ~ 230°C -255 ~ 155°C |
| | Pressure (max) | Max 1,200 Bar (120 MPa) | |
| | Pressure loss | Negligible | |
| | Range ability | Large | |
| Installing condition | Bore | Ø3 to Ø150 | |
| | Straight | upstream | 10D |
| | Pipe length | downstream | 5D |
| | Piping work | | Required |
| | Explosion-proofing | | O |
| Performance | Accuracy | Liquid | ±0.15~0.2% R.D |
| | | Gas | ±0.5%, 1.0% R.D |
| | Flow Range Velocity | Liquid, Gas | 0.2 ~ 29,000 kg/min |
| Turndown Ratio | Up to 100:1 ~ max 1000:1 (for low frequencies) | | |

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Related technical details are subject to change for further improvement.

www.goldenrules.co.kr

**Gas, Liquid, Steam, Mixed type Mass & Volume Flow Meter
specialized manufacturing company**

Detailer

Certified in accordance with

KC Q ISO 9001 : 2015

KC Q ISO 14001 : 2015

032-817-1240

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(주)골든룰