

# 02

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## Golden Rules Co.,Ltd

Thermal Mass Flow Meter  
Specialty Manufacture  
Bio Gas

KC-2600BF

### Thermal Mass Flow Meter



The nation's development item, 100% domestic goods, Patent NO. 10-1660226



## 02. THERMAL MASS FLOW METER (Bio Gas)

### 2-4 Inline type KC-2600BF Series

#### Inline Type Thermal Mass Flowmeter



#### Features

- Rate & total, volume, mass flow, indication
- Input Power DC 24 V or 100-240VAC
- Output accuracy  $\pm 0.1\%$ ,  $\pm 2.5\ \mu\text{A}$  (4~20 mA)
- Field validation of flowmeter calibration settings  
Smart program interface (RS-485 standard)
- Direct mass flow monitoring eliminates need for Temperature and pressure compensation
- Simple signal Processing & calibration
- Excellent reproducibility
- Excellent long-term stability
- Best price-performance ratio
- Easy adaptable for different application or into housings
- No mechanical moved components
- Greatly reduces upstream piping requirements (7-5D)
- Outstanding range ability (Turn down ratio 1000:1)
- 0.1-second response to changes in flow rate
- Ex(IP66), KC

#### Description

Golden Rules' KC-2600BF Series Smart inline mass flowmeter accommodates the change measurement requirements and instrument-validation demands of fluid flow monitoring installations.

The versatile microprocessor-based transmitter integrates the function of flow measurement, flow-range adjustment, meter validation and diagnostics, in either a probe-mounted or remote housing.

Mass flow rate and totalized flow, as well as other configuration variables are displayed on the meter's optional 2X16 LCD panel. The programmable transmitter is easily configured via an RS-485 communication port and Golden Rules Smart interface software, or via the display and magnetic switches in the instrument panel.

The Golden Rules KC-2600BF Series allows you to configure or change the following parameters: flow range, totalize, time response, low flow cutoff and a calibration correction factor that compensates for flow profile flow variations. Golden Rules's Smart interface software guides you through a procedure to fully validate instrument performance. The meter is available with variety of input signal, mounting and packaging option.

**Performance Specification**

- ◆ **Accuracy of Point Velocity**  
±1.0% of Reading(Option : ±0.5 % of RD)
- ◆ **Repeatability**  
±0.2 % of Full Scale
- ◆ **Temperature Coefficient**  
±0.03 % Reading / ±(10 ~ 38) °C내에서 °C  
±0.06 % Reading / ±(25 ~ 50) °C내에서 °C
- ◆ **Pressure Drop**  
It can be ignored within ± 50 psig (3.4 bara).
- ◆ **Response Time**  
1 second 63% of final velocity value
- ◆ **Measuring Range**  
0.01 ~ 66.2 m/sec
- ◆ **Function**  
Flow & Total

**Mass Flow Rates (질량유량)**

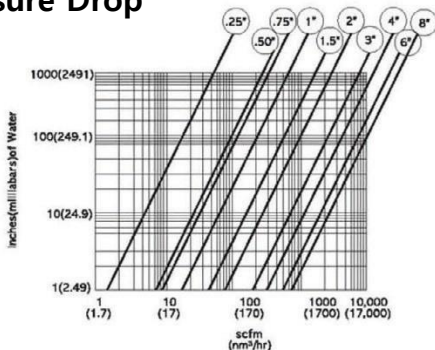
Air Flow Ranges(공기 유량 범위)							
Pipe Size (배관경)		Minimum (최소)		Maximum (최대)		Weight	
A	B	Scfm	Nm <sup>3</sup> /h	Scfm	Nm <sup>3</sup> /h	방폭	일반
8A	1/4-inch	0.5	0.7	9	14	5kg	3kg
15A	1/2-inch	2	3.0	40	60	5kg	3kg
20A	3/4-inch	4	5.9	75	120	5kg	3kg
25A	1-inch	6	8.9	120	180	6kg	4kg
40A	1 1/2-inch	15	22	280	440	7.2kg	5.2kg
50A	2-inch	23	33	470	680	8.6kg	6.6kg
80A	3-inch	50	74	1000	1500	11kg	9kg
100A	4-inch	90	130	1800	2700	16.2kg	14.2kg
150A	6-inch	200	300	4000	5900		
200A	8-inch	50	520	7000	10,000		

Notes: Air or N2 Flow Standard Condition :21°C(70°F) & 21°C(70°F) scfm:0°C, Nm<sup>3</sup>/h 1atm

**Operating Specification**

- ◆ **Fluid**  
Bio gas & Mixed gas
- ◆ **Pressure (limitation)**  
Compression Fittings : 508 psig (35 barg) option  
150 lb Flange, JIS 10k RF PN16 DIN (-40 ~ 150) °C (-40 ~ 302) °F : 230 psig (15.9 barg)  
150 lb Flange, JIS 10k RF PN16 DIN 121 °C (250 °F) : 185 psig (12.8 barg)  
150 lb Flange, JIS 10k RF PN16 DIN 400 °C (752 °F) : 155 psig (10.7 barg)  
NPT -40 ~ 150 °C ((-40 ~ 302) °F) : 508 psig (35 barg)  
High Pressure Retract Valve : 1000 psig (70 barg)

◆ **Pressure Drop**



**◆ Fluid & Ambient temp'**

Gases : (-40 ~ 302) °F ((-40 ~ 150) °C)

Ambient : (-4 ~ 185) °F ((-20 ~ 85) °C)

**◆ Input Power (selection)**

DC24 V ±10 %, 200 mA

(100 ~ 240) V AC ±10 %, 10 watts

**◆ Output Signal**

Linear (4 ~ 20) mA & Pulse

**◆ Display**

Adjustable variables via remote control switch or Smart interface software

Adjustable : Full scale : (0 ~100) %

Flow: m<sup>3</sup>/h(m<sup>3</sup>), L/h(L), mL/h(mL), kg/h(kg)

Time response 1 ~ 7 sec / Correction factor setting 0.5 ~ 5 /

Zero & Span

**Totalizer**

Seven digits (9,999,999,999 Count) in engineering units Reset table by Software or remote control switch

**◆ Software**

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 Part Mat'l**

Sensor Probe – Ceramic + 303SS (Platinum) Option : 316SS, 316LSS

Flow Body – 304SS (Option 316SS, 316LSS)

**Enclosure**

Hazardous-Area CASE (Ex d[ib] IIC T4 : IP66)

General-Area CASE (IP67)

**◆ Electrical Connection**

2 X ½"NPT or Exp Cable Gland(SS) 22C

**◆ Mounting (selection)**

¾" Compression Fitting과 ¾" Male NPT (Standard)

ANSI 150lb Flange, JIS 10k RF Flange (Option)

¾" Compression Fitting과 1" Male NPT (Option)

Ball Valve System (Option)

**◆ Certification**

Ex (Ex d[ib] IIC T4)

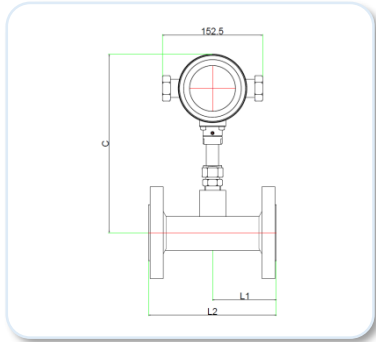
CE (CASE 전체)

KGS Certificate

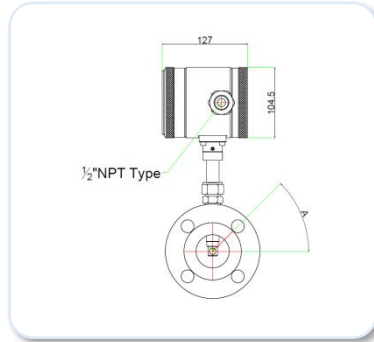
KC Certificate

**Dimension Spec' & Chart I General KC-2610BF (IP67)**

● 1 1/2,"부터 8" 150lb & JIS 10k RF Flange  
- Front View (EN2)

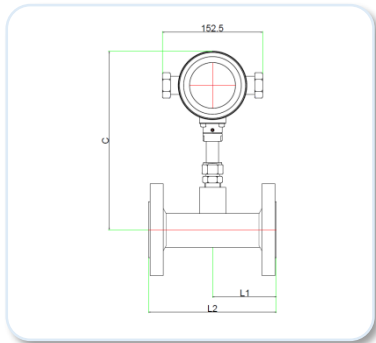


● 1 1/2,"부터 8" 150lb & JIS 10k RF Flange  
- Side View (EN2)

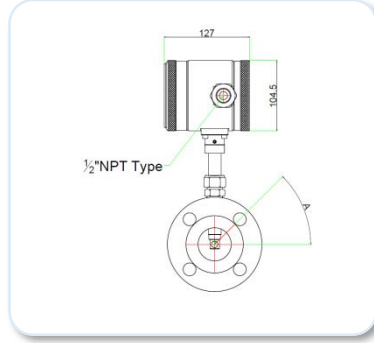


Size for ANSI 150lb Flange				
Size	C	L1	L2	A
1.5 inch	283.5	101.5	203	45°
2 inch	283.5	101.5	203	45°
3 inch	344.6	127	254	45°
4 inch	344.6	127	254	22.5°
6 inch	344.6	127	254	22.5°
8 inch	404.6	127	254	22.5°

● DIN Flange - Front View (EN2)



● DIN Flange - Side View (EN2)

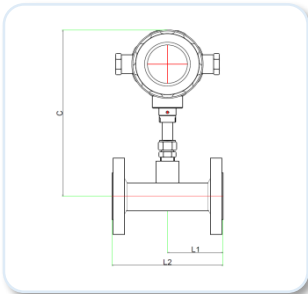


Size for DIN PN16 Flange			
Size	C	L1	L2
DN40	283.5	101.5	203
DN50	283.5	101.5	203
DN80	344.6	127	254
DN100	344.6	127	254
DN150	344.6	127	254
DN200	404.6	127	254

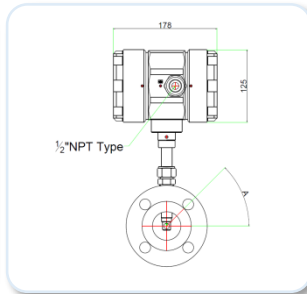
**Dimensional Specification & Chart II Ex-proof**

**General Remote type KC-2610BF-R**

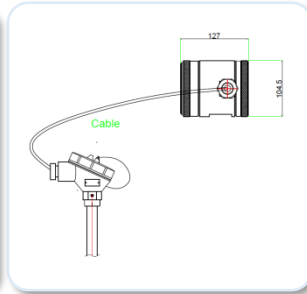
● 1 1/2,"부터 8" 150lb & JIS 10k RF Flange  
- Front View (EN2)



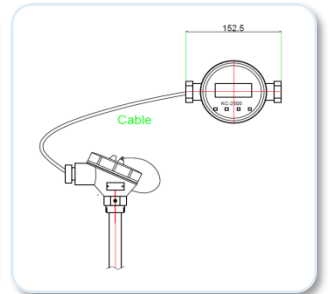
● 1 1/2,"부터 8" 150lb & JIS 10k RF Flange  
- Side View (EN2)



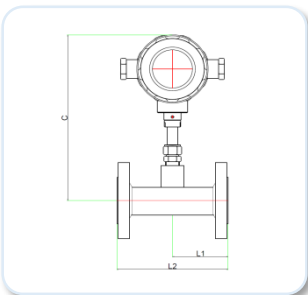
● Remote Mount Junction Box  
- Front View (EN4)



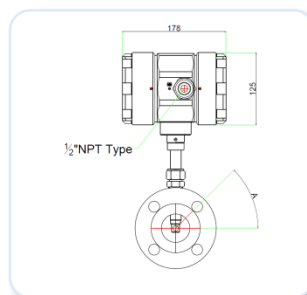
● Remote Mount Junction Box  
- Front View (EN4)



● DIN Flange - Front View (E2)

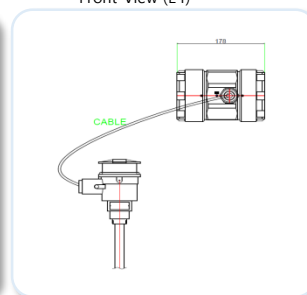


● DIN Flange - Side View (E2)

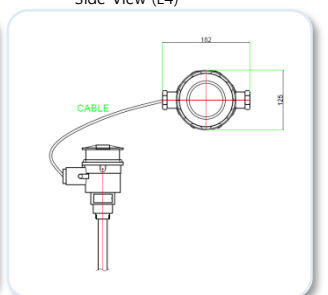


**Ex-proof Remote type KC-2620Ex-R**

● Remote Mount Junction Box  
- Front View (E4)



● Remote Mount Junction Box  
- Side View (E4)

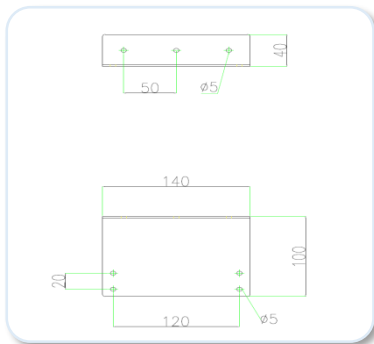
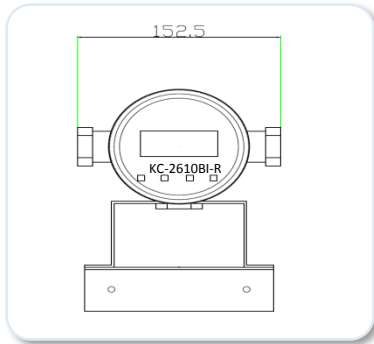


※ The shape of the sensor and Housing manufacturers are Subject to Change.

## Dimensional Specification & Chart II (IP67)

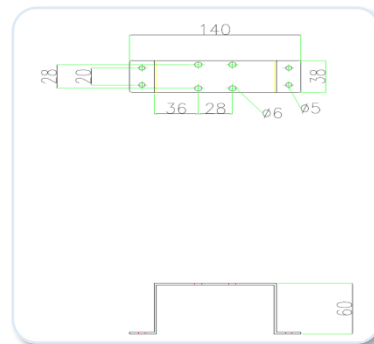
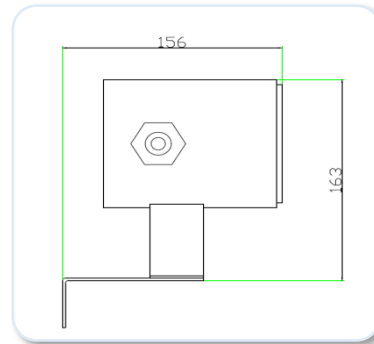
### General Remote type KC-2610BF-R

● Remote Rear Bracket Electronics (EN4)



● panel mounting bracket 1

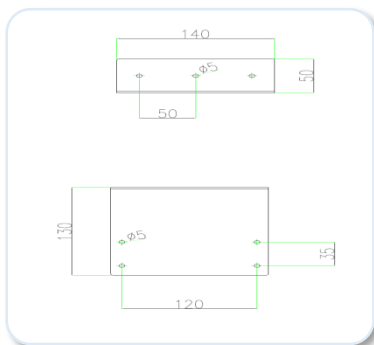
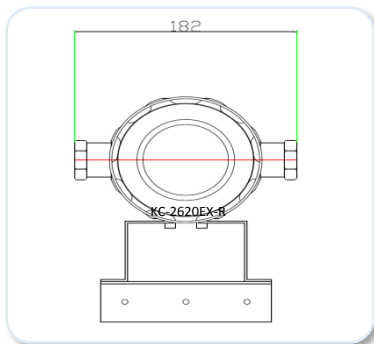
● Remote Side Bracket Mounted Electronics (EN4)



● panel mounting bracket 2

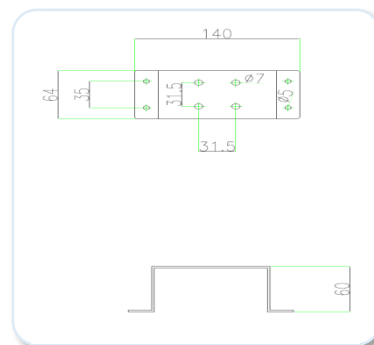
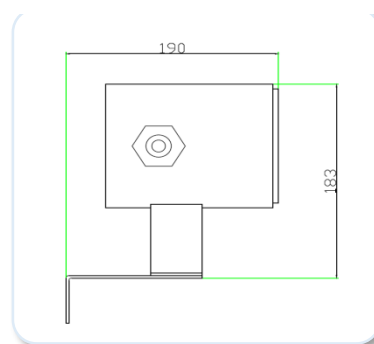
### Ex-proof Remote type KC-2620EX-R

● Remote Rear Bracket Electronics (EN4)



● panel mounting bracket 1

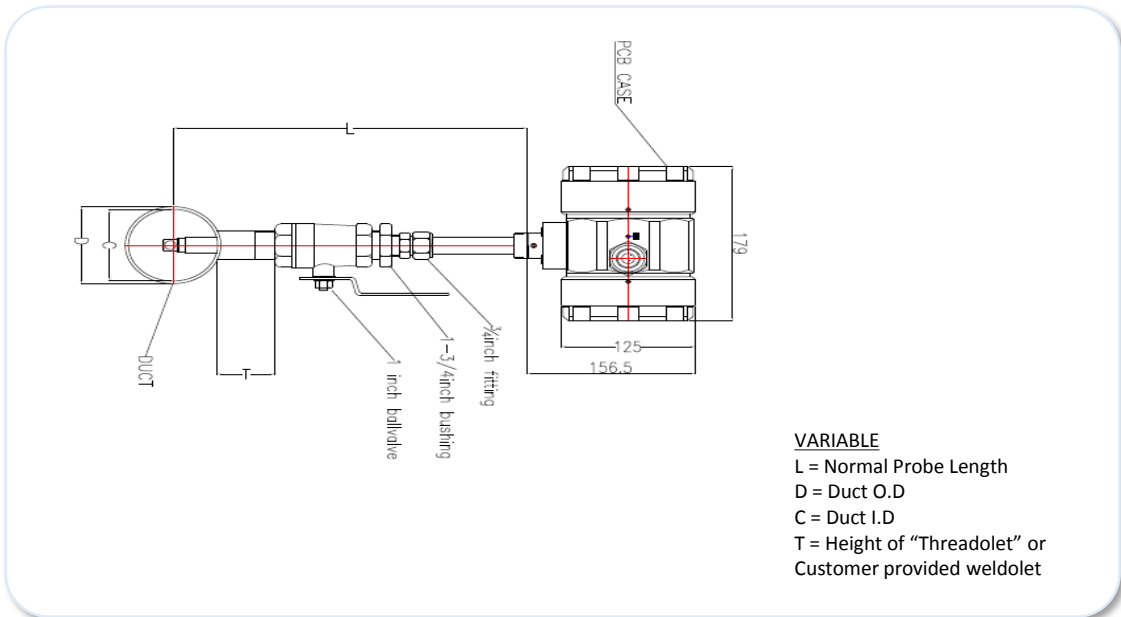
● Remote Side Bracket Mounted Electronics (EN4)



● panel mounting bracket 2

## Ball Valve Low Pressure Ball Valve Dimensional & Chart III

●side view



±0.25 inch(6.4 mm) or ±0.25 All dimensions are inches. Millimeters are in parentheses. All drawings save a ±0.25 inch(6.4 mm) tolerance. Certified and available be on request.

## Piping Requirement (KC-2600BF inline type)

Straight Pipe Length Requirements at 1 atm			
Piping condition	KC-2600BF Smart- IN™		Orifice Plate(3)
	Upstream(1)	Downstream(2)	
90° Elbow or T-Piece	10D	5D	28D
Reduction (4:1)	10D	5D	14D
Expansion (4:1)	10D	5D	30D
After Control Valve	10D	5D	32D
Two 90° Elbows (in same plane)	10D	5D	36D
Two 90° Elbows (in same plane)	10D	5D	62D

Note : (1) Number of diameters (D) of straight pipe required between upstream disturbance and the flowmeter.  
 (2) Number of diameters (D) of straight pipe required downstream of the flowmeter.  
 (3) For comparison purposes only. Table shows number of diameter(D) of upstream straight pipe length required for an ISO Standard 5167 Orifice plate with a beta ration of 0.7  
 (4) Consult factory for pressure effects.







**Golden Rules**

• GOLDEN RULES

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Air & Gas & Steam & Liquid

**MASS FLOWMETER**

Specialized manufacturer

**Distributor**

Certified in accordance with

KC Q ISO 9001 : 2015

KC Q ISO 14001 : 2015

 (주)골든룰