

## OVAL GEAR FLOW METER GC



### Principle of flow meter



The working principle of oval gear flowmeter is that liquid pushes a pair of oval gears to rotate. The volume of each cavity is a fixed volume; The speed of the gear is led out, the sensor sends out synchronous pulse counting, and the rotation of the oval gear is transmitted to the counter through the magnetic sealing coupling and the transmission reduction mechanism to directly indicate the total flow rate through the flowmeter.

### Features

- Oval gear flow meter is mainly used to measure high viscosity media
- High precision and repeatability
- Microprocessor type transmitter
- Robust construction with a long service life
- Able to measure different kinds of viscous media, max can measure 10,000 cP (MPa.s) fluids
- Measurement of resin, glue, hydraulic oil, lubricating oil, grease, fuel oil, printing ink, asphalt, liquid nitrogen, refrigerant, solvent, edible oil, fish oil, food canning, chemical fluid, fluid with corrosion resistance requirements

### Technical Data

**Measuring principle :** Oval Gear

**Flow Range :** See the table (page 3)

**Flow unit :** See the table (page 3)

**Accuracy :**  $\pm 0.5\%$  of reading

**Pipe Diameter :** DN2...DN32

**Process Connection :** Flange, Tri-clamp, Thread and Compress fitting

**Pressure resistance :** 16 bar (standard)

**Pressure resistance (option) :** 25, 40, ...400 bar (flange and thread)

**Max viscosity of media :** 10,000 cP (mPa.s)

**Liquid Temperature :**  $-20...+80$  °C (standard)

**Liquid Temperature (Option) :**  $-20...+180$ °C,  $-196...+80$  °C

**Ambient Temperature :**  $-10...+65$ °C

**Ambient Pressure :** 86...106 kPa

**Relative Humidity :** 5...90 %RH

**Output :** Pulse, 4-20mA (3-wire), RS485 (Modbus-RTU)

**Power Supply :** 9...26Vdc (no display), 18...36Vdc (with display)

**Cable gland :** M20 x 1.5

**Material :** SUS304 or SUS316L (option)

**Protection class :** IP65

### Medium



Honey/Syrup/Caramel



Minced  
fish/chicken/pork



Creamer/Sweetened  
condensed milk

*\*Note: Furthermore, these materials that are shown, please do not hesitate to contact us for consulting*

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Table of viscosity and principle

Liquid	Viscosity - Centipoise (cP)	Temperature	
		°C	°F
Water 	0.89	27.00	80.60
Butter fat 	42	43.00	109.40
Coconut oil 	55	24.00	75.20
Condensed milk 	80	50.00	122.00
Chocolate 	280	49.00	120.20
Custard 	1500	80.00	176.00
Salad Cream 	2600	18.00	64.40
Glucose 	8600	25.00	77.00
Honey 	10,000	25.00	77.00

*Note : This table is just an example of the viscosity of a liquid. The viscosity is dependent on a temperature. Thus, the viscosity is different vary according to a temperature.*

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### Flow rate and Pressure rating

Nominal Diameter		Standard Flow Range	Standard Pressure (all type)	**Customized Pressure (Thread)	**Customized Pressure (Flange)
mm	inch	L/h	MPa	MPa	MPa
2	-	0.6 - 50	1.6	5.0, 6.3, ..., 40	2.5, 4.0, ..., 40
4	-	5 - 250	1.6	5.0, 6.3, ..., 40	2.5, 4.0, ..., 40
6	-	10 - 500	1.6	5.0, 6.3, ..., 40	2.5, 4.0, ..., 40
10	3/8"	50 - 1,200	1.6	5.0, 6.3, ..., 40	2.5, 4.0, ..., 40
15	1/2"	200 - 3,000	1.6	5.0, 6.3, ..., 40	2.5, 4.0, ..., 40
25	1"	1,000 - 12,000	1.6	5.0, 6.3, ..., 40	2.5, 4.0, ..., 40
32	1" 1/4	2,000 - 20,000	1.6	5.0, 6.3, ..., 40	2.5, 4.0, ..., 40

\* The clamp connection can resist the maximum pressure 1.6 MPa (16 bar).

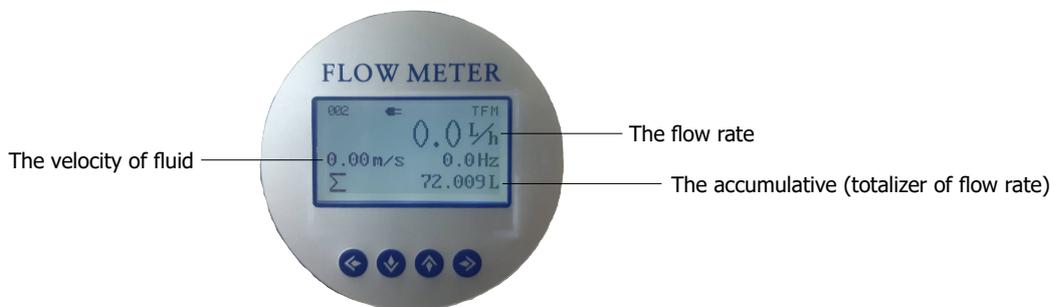
\*\*For customized pressure of thread and flange type can resist the maximum pressure 40 MPa (400 bar).. Please ask the sales department for special options.

### Volume and Mass of Flow rate unit

Type	Name of unit	Flow rate unit	Accumulative flow*
Volume	Normal cubic meters	Nm <sup>3</sup> /h, Nm <sup>3</sup> /m, Nm <sup>3</sup> /s	Nm <sup>3</sup>
	Liter	L/h, L/m, L/s	l
	Mili-Liter	mL/h, mL/m, mL/s	mL
	Cubic meters	m <sup>3</sup> /h, m <sup>3</sup> /m, m <sup>3</sup> /s	m <sup>3</sup>
	US gallon	USG/h, USG/m, USG/s	USG
Mass	Kilograms	kg/h, kg/m, kg/s	kg
	Ton	t/h, t/m, t/s	t

*\*Note: accumulative flow unit can switch to other unit follow user's request  
The alphebet is stand for : h = hour, m = minute and s = second*

#### The display indicator



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### Process connecting

- **Thread (inside) connecting :** This process connecting is inside thread. it can resist a pressure up to 5 MPa (50 bar). The thread size is depended on tube size. To see on drawing on page 6



- **Compression fitting connection :** This process connecting is compress fitting. In normally, this connection is used with silicone/PU pipe, Size 6, 8 or 10 mm. There is suitable for small tube.



- **Tri-clamp connection :** The clamp connection is usually used in food industry (*product does not include Tri-clamp*)



- **Flange connection :** The flange connection is used in general industry. there are many type of flange such as DIN, ANSI or JIS flange. They are available for DN15 - DN32



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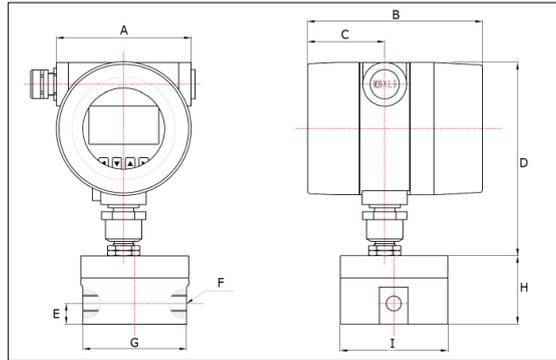
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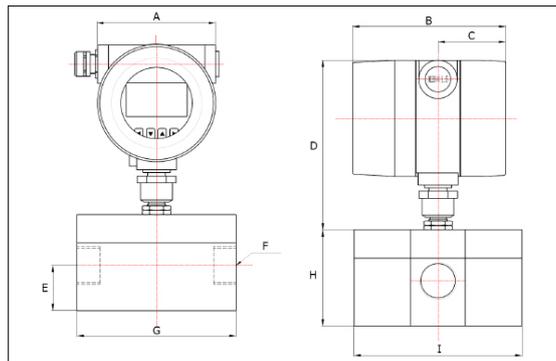
### Installation Dimension

Thread version :



Unit : mm

Norminal Diameter	A	B	C	D	E	F (Thread size)	G	H	I
2	104	135	60	151	16	G1/4"	80	53	Ø83
4	104	135	60	151	16	G3/8"	80	56	Ø83
6	104	135	60	151	14	G1/2"	80	65	Ø83
10	104	135	60	151	14	G1/2"	80	65	Ø83
15	104	135	60	151	28	G3/4"	110	63	Ø113



Unit : mm

Norminal Diameter	A	B	C	D	E	F (Thread size)	G	H	I
25	104	135	60	151	40	G1"	140	85	Ø148
32	104	135	60	151	45	G1"1/4	160	100	Ø218

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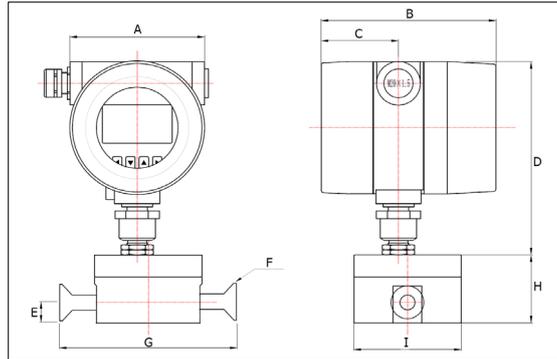
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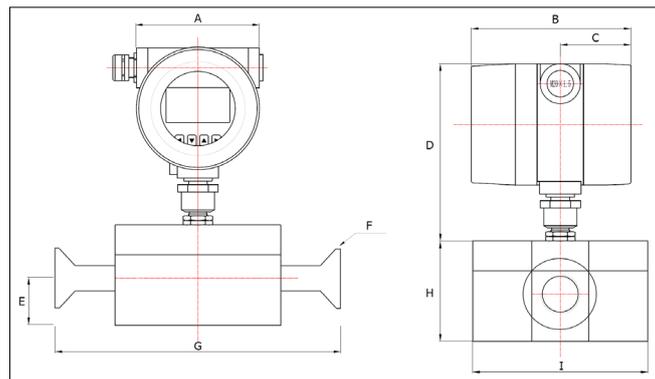
### Installation Dimension

#### Clamp version



Unit : mm

Norminal Diameter	A	B	C	D	E	F (Clamp size)	G	H	I
2	104	135	60	151	16	50.5	149	53	Ø83
4	104	135	60	151	16	50.5	149	56	Ø83
6	104	135	60	151	14	50.5	149	65	Ø83
10	104	135	60	151	14	50.5	149	65	Ø83
15	104	135	60	151	28	50.5	179	63	Ø113



Unit : mm

Norminal Diameter	A	B	C	D	E	F (Clamp size)	G	H	I
25	104	135	60	151	40	50.5	209	85	Ø148
32	104	135	60	151	45	50.5	229	100	Ø218

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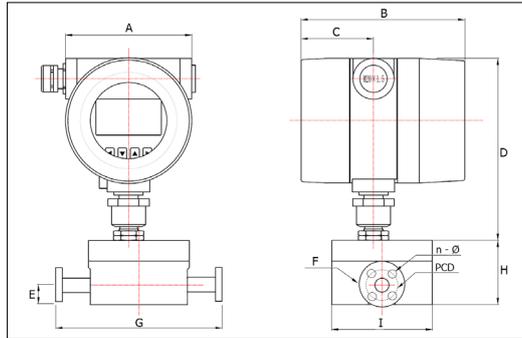
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### Installation Dimension

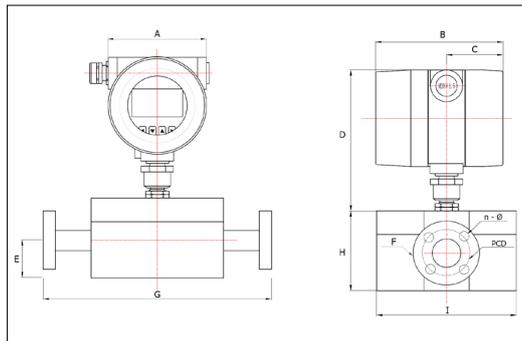
#### Flange version



Unit : mm

Norminal Diameter	A	B	C	D	E	F	PCD (Pitch circle diameter)	n-Ø	G	H	I
15	104	135	60	151	28	Ø95	Ø65	4 - Ø14	189	63	Ø113

*\*\*This table show a dimension of DIN flange specification*



Unit : mm

Norminal Diameter	A	B	C	D	E	F	PCD (Pitch circle diameter)	n-Ø	G	H	I
25	104	135	60	151	40	Ø115	Ø85	4 - Ø14	219	85	Ø148
32	104	135	60	151	45	Ø140	Ø100	4 - Ø18	239	100	Ø218

*\*\*This table show a dimension of DIN flange specification*

### High and low temperature version



Up to +180°C

**H :** This is a cooling fin for heat exchange. Every model can be high temperature version



Up to -196°C

**L :** For very low teemperature to measure cryogenic liquids such as -196 °C liquid nitrogen, liquid oxygen, liquid hydrogen or liquid carbon dioxide. The measurement are good

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## OVAL GEAR FLOW METER GC

### Ordering code

**Example order : GC-x-x-x-x-x-x**

**x : Pipe Diameter**

DN2...DN32

**x : Display and Output Feature**

**N** : No display + pulse

**D** : with digital display + 4-20 mA + pulse + RS485

**DR** : Remote Display (10 m cable) + 4-20mA + pulse + RS485

**DC** : Display + pulse (for Batching control) + 4-20mA + RS485

**x : Process Connection \*\***

**T** : Inside thread installation, pressure resistance 50 bar

**TX** : Inside thread installation, **pressure resistance 400 bar**

**F** : Flange installation (standard : DIN flange PN16) *available for DN15 - DN32*

**C** : Tri-clamp installation (for food industry)

**xx** : The special connection is below.\*\*

**x : Body material**

**S04** : Stainless steel 304

**S16** : Stainless steel 316L

**x : Fluid Temperature**

**-** : -20...+80°C (standard)

**H** : -20...+180°C

**L** : -196...+80°C

**x : Fluid viscosity**

**-** : < 50 cP

**V** : 51...10000 cP

#### \*\*Special Process Connection

**CF6** : Compression fitting 6mm tube | **CF8** : Compression fitting 8mm tube | **CF10** : Compression fitting 10mm tube

*\*Compression fitting is available for tube DN2 to DN15*

**FD25** : Flange DIN PN25 | **FD40** : Flange DIN PN40

**FA150** : Flange ANSI 150 | **FA300** : Flange ANSI 300 | **FA600** : Flange ANSI 600

**FJ10** : Flange JIS 10K | **FJ20** : Flange JIS 20K | **FJ30** : Flange JIS 30K

#### Example : GC-25-D-C-S16-H

Description : Oval gear flow meter DN25 with display, thread connection, Signal output 4-20mA and pulse, Stainless steel 316L body material, temperature resistance -20...+200°C

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## OVAL GEAR FLOW METER GC

### Accessories for GC

#### FDI-7600 : Flow totalizer display



##### Features

- Display indicator for flow meter, able to record the totalizer and flow rate together
- Built-in memory for recording data
- There is a software for management data, graphing, export data to CSV file

#### DL2 : Data logger



##### Feature

- 3 to 12 measuring inputs
- Up to 30 displayed channels
- 4" touch screen LCD
- USB port on front panel
- Ethernet port and RS-485 port
- Internal data memory 2 GB

#### DL7 : data logger



- Up to 42 input/output signals
- Up to 100 displayed channels
- 2 GB internal data memory, advanced data logging
- 7" touchscreen colour LCD
- Ethernet port, Modbus TCP Client/Server
- RS-485 port, Modbus RTU Master/Slave

#### IoT-WiFi : IoT module for wifi version



##### Feature

- Wi-Fi are available
- The IoT module can receive a signal from Instrument for monitoring in real-time , support adjustment
- The IoT module can receive 4 analog and 1 digital signal from industry instrument.
- Application can be widely used in industrial automatic control, base station/computer room monitoring, environmental monitoring, water conservancy project, power industries, agriculture, etc.

#### IoT-GPRS/4G: IoT module for 4G version



##### Feature

- 4G are available
- The IoT module can receive a signal from Instrument for monitoring in real-time , support adjustment
- The IoT module can receive 4 analog and 1 digital signal from industry instrument.
- Application can be widely used in industrial automatic control, base station/computer room monitoring, environmental monitoring, water conservancy project, power industries, agriculture, etc.

#### LINE : Line alert



##### Feature

- Automatically report status when it starts working.
- The messages are available to be created in Thai and English languages freely
- The notification can be alarmed max. 9 times continuously
- The user can be maximum 500 users in LINE group for receiving a notification
- Compact, modern and comfortable for monitoring
- The equipment can be connected with every controller or PLC which signal out a relay

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