F1001
Coriolis Mass Flowmeter

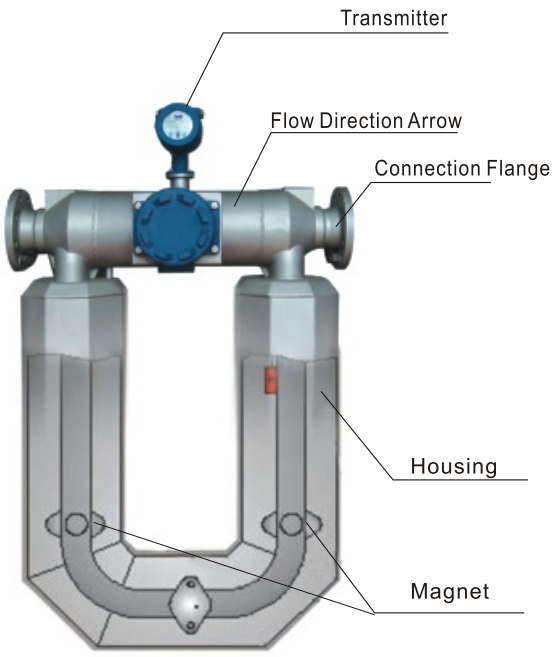
VF1001-001.00-12/04

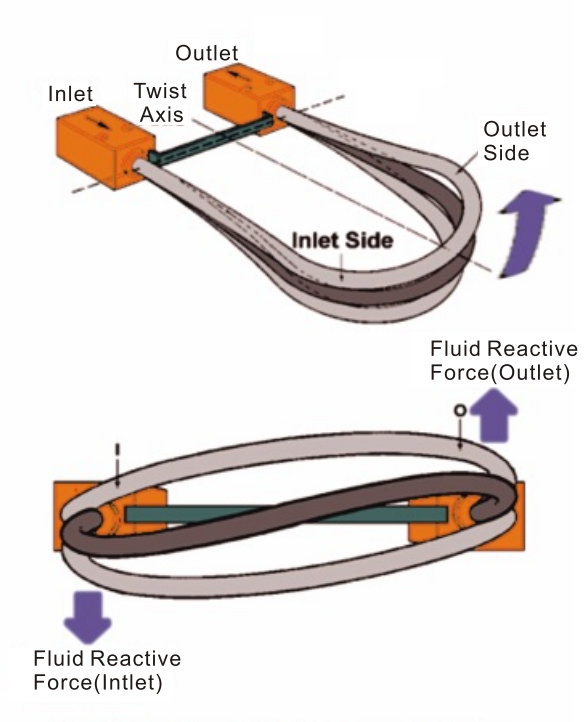
Description

Coriolis mass flowmeter is a major advance in mass flow measurement. These meters have got a precedent for accuracy and repeatability under a wide variety of flow conditions. The inherent precision has established it as a standard for numerous industrial applications. The ability of these meters to measure mass flow and density directly has led to their use in applications ranging from metering food products to corrosive chemicals. Coriolis meters have proven extremely reliable when metering noncorrosive fluids. The same reliability can be achieved in corrosive services if consideration is given to the compatibility of the process fluid with the sensor materials of construction. Coriolis technology appealed to us, after all, coriolis is the most accurate technique available for measuring process mass and volume flow.

Principle

The French mathematician Gustave Coriolis formulated the principle that underlies Coriolis flowmeters. Coriolis showed in 1835 that an inertial force needs to be taken into account when the motion of bodies in a rotating frame of reference is described. Coriolis flowmeters contain one or more vibrating tubes. The fluid to be measured passes through the vibrating tubes. It accelerates as it flows toward the maximum vibration point, and slows down as it leaves that point. This causes the tubes to twist. The amount of twisting is directly proportional to mass flow. Position sensors detect tube positions. The F1001 coriolis mass flowmeter uses two parallel arranged pipes which are rotated at their resonant frequency by coils. Any mass flow passing through the tubes will generate coriolis forces which appear whenever a mass moves radially in a rotating system. The forces have opposed effects on the inlet and outlet sides, they slightly deform the pipes. The excursion of the pipes is detected by sensors on the inlet and outlet side.The phase shift between the rotational frequencies of both pipes are proportional to the mass flow rate. The resonant frequency of both pipes changes in accordance with the density of the medium. This effect determines the density. Using one sensor density and temperature can also be measured.The extent of deformation of the pipes depends on temperature.Therefore the temperature is measured for compensation purposes. Fluid measured can be more extensive, such as the steady uniform flow of common viscosity fluid, the high viscosity fluid, non-Newtonian fluid, slurry containing some solid components and the liquid containing some trace of gas.





Oscillating Flow Tube, Response To Flow

GPE Inc.

Factory Address:
9-17 Libella Court, Essex County, Newark, NJ 07105
Tel: + 1(646)619-1289 Fax: +1(212)400-7201
www.gpeus.com sales@gpeus.com

F1001
Coriolis Mass Flowmeter

Micro-bend Version

Features

- DSP transmitter with superior accuracy ± 0.1%
- 20:1 turndown ratio
- 5 to 8 calibration points
- Mass flow, density, temperature and volume flow can be measured at the same time
- Improved startup and availability with simple commissioning and reduced risk
- No moving parts result in no maintenance
- Install anywhere with no flow conditioning or straight pipe required

Specification

- Flow Range: 16 kg/h to 2500 t/h
- Connection: Flange/Thread
- Operating Pressure:Customized
- Process Temperature: up to +350 ℃
- Body Material: 304 Stainless Steel
- Measuring Tube Material: 316L Stainless Steel
- Ambient Temperature: -40 to +55 ℃
- Working Humidity: (5% to 95%) RH@+25℃
- Accuracy: Up to ±0.1%
- Repeatability: ±0.05%
- Protection: IP 65 (IP 67 optional)
- Approvals: CE, Exd (ib)II CT4
- RS 485 Output
- Pulse Output: 0 to 10 kHz, ±0.001%F.S/℃
- Current Output: 4 to 20mA, ±0.005%F.S/℃,
- Power Supply: 85 to 265 VAC, 18 to 36 VDC
- Density Measuring:
  Range: 0.2 to 2.0 kg/l,
  Repeatability: 0.001 kg/l

Flow Range (t/h)

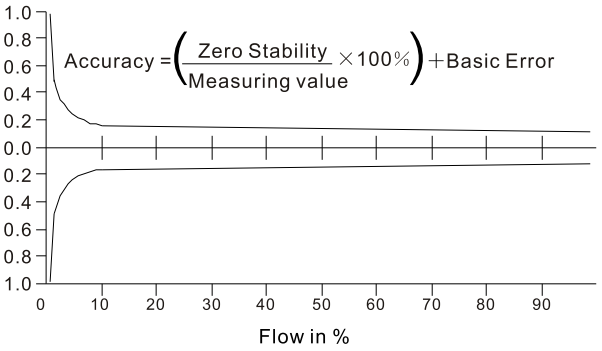
Size (mm)	Allowable Flow Range	Normal Flow Range for Accuracy ±0.1%	Normal Flow Range for Accuracy ±0.2% & ±0.5%	Stability of Zero Point (kg/h)
½"	0.04 to 2.00	0.15 to 2.00	0.10 to 2.00	0.2
1"	0.12 to 6.00	0.40 to 6.00	0.30 to 6.00	0.6
1½"	0.60 to 30.0	2.00 to 30.00	1.50 to 30.00	3
2"	1.00 to 50.00	3.50 to 50.00	2.50 to 50.00	5
3"	2.40 to 120.00	60.00 to 120.00	60.00 to 120.00	12
4"	4.00 to 200.00	15.00 to 200.00	10.00 to 200.00	20
6"	10.00 to 500.00	35.00 to 500.00	25.00 to 500.00	50
8"	20.00 to 1000.00	70.00 to 1000.00	50.00 to 1000.00	100

GPE Inc.

Factory Address:
9-17 Libella Court, Essex County, Newark, NJ 07105
Tel: + 1(646)619-1289 Fax: +1(212)400-7201
www.gpeus.com sales@gpeus.com

F1001
Coriolis Mass Flowmeter

Accuracy



The diagram shows typical values.
Individual values may be taken from the calibration records supplied with each meter.

Repeatability

Accuracy	± 0.10%	± 0.20%	± 0.50%
Repeatability	± 0.05%	± 0.1%	± 0.25%

Accuracy is calculated based on the water measurement under the condition of +20℃ to 25℃ and 0.1MPa to 0.2MPa.

Density Measuring

Density Range	(0.2 to 2.0) g/cm^3
Basic Error	± 0.002g/cm^3 (Affected by the transducer)
Repeatability	0.001g/cm^3

GPE Inc.

Factory Address:
9-17 Libella Court, Essex County, Newark, NJ 07105
Tel: + 1(646)619-1289 Fax: +1(212)400-7201
www.gpeus.com sales@gpeus.com

F1001
Coriolis Mass Flowmeter

Model Selection

F1001-Series

Example F1001-025AN2COMEX2P1

F1001	Size	Connection	PN	Struct.	Ex	Power	Output	Accuracy	Description
½"	015								Size
1"	025								
1½"	040								
2"	050								
3"	080								
4"	100								
6"	150								
8"	200								
ANSI		AN							Flange Standard
DIN		DI							
JIS		JS							
Others		OF							
1.6MPa			1						Max. Working Pressure
2.5MPa			2						
4.0MPa			3						
6.4MPa			4						
Compact Version (-50℃～+125℃)				COM					Housing
Remote Version (-50℃～+200℃)				REM					
Non-Explosion					NX				Approval
Explosion proof					EX				
DC						1			Power Supply
AC						2			
4 to 20mA/Pulse							P		Signal Output
RS485+Pulse+4 to 20mA							R		
Hart+Pulse+4 to 20mA							H		
±0.1%								1	Accuracy
±0.2%								2	
±0.5%								5	

GPE Inc.

Factory Address:
9-17 Libella Court, Essex County, Newark, NJ 07105
Tel: + 1(646)619-1289 Fax: +1(212)400-7201
www.gpeus.com sales@gpeus.com