

## Coriolis Mass Flow Meter



FCM06

## | 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

## | Introduction |

The **FCM06** Coriolis mass flow meter is a major advance in massflow measurement. The ability to measure mass flow and density directly has led to their use in applications ranging from metering food products to corrosive chemicals, CNG and LNG.



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**Applications :**

Batch Control / Blending /  
 Process Control / Filling & Dosing /  
 Loading and Unloading /  
 Custody transfer /  
 Process gas measurement

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## Coriolis Mass Flow Meter

### | Principle |

Coriolis Mass Flow Meter 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.

### | Liquid Flow Range ( kg/h ) |

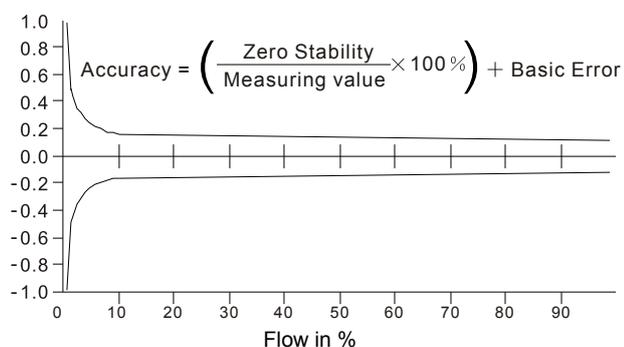
Size	Allowable flow range	Normal flow range for accuracy 0.1% & 0.15%	Normal flow range for accuracy 0.2% & 0.5%	Stability of zero point (kg/h)
0.1"	1.2 ... 120	10 ... 120	5 ... 120	0.004
1/2"	20 ... 3,000	200 ... 3,000	150 ... 3,000	0.3
1"	80 ... 8,000	600 ... 8,000	400 ... 8,000	0.8
1 1/2"	240 ... 24,000	2,400 ... 24,000	1,200 ... 32,000	3
2"	500 ... 36,000	5,000 ... 36,000	2,500 ... 36,000	5
3"	800 ... 120,000	8,000 ... 120,000	6,000 ... 140,000	12
4"	1,500 ... 200,000	15,000 ... 200,000	10,000 ... 200,000	20

## Coriolis Mass Flow Meter

## | Specification |

Communication interface	RS-485
Pulse output	0 ... 10 kHz, $\pm 0.001\%$ F.S/ $^{\circ}$ C
Current output	4 ... 20mA, $\pm 0.005\%$ F.S/ $^{\circ}$ C; 2 x 4 to 20mA for options
Flow range	5 ... 200,000 kg/h
Accuracy	Up to $\pm 0.1\%$
Operating pressure	Customized
Process temperature	Up to $+25^{\circ}$ C
Environment temperature	40 ... $+55^{\circ}$ C
Working humidity	5 ... 95%RH (at $+25^{\circ}$ C)
Power supply	85 ... 265 VAC 50 / 60Hz, 18 ... 36 VDC
Connection	Flange / Thread
Repeatability	$\pm 0.05\%$
Protection rating	IP 65 (IP 67 optional)
Density measuring	Range: 0.2 ... 2.0 g/cm <sup>3</sup> ; Repeatability: 0.001 g/cm <sup>3</sup>
Body material	304 Stainless steel
Measuring tube material	316L Stainless steel

## | Accuracy |



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

## | Repeatability |

Accuracy	$\pm 0.10\%$	$\pm 0.20\%$	$\pm 0.50\%$
Repeatability	$\pm 0.05\%$	$\pm 0.1\%$	$\pm 0.25\%$

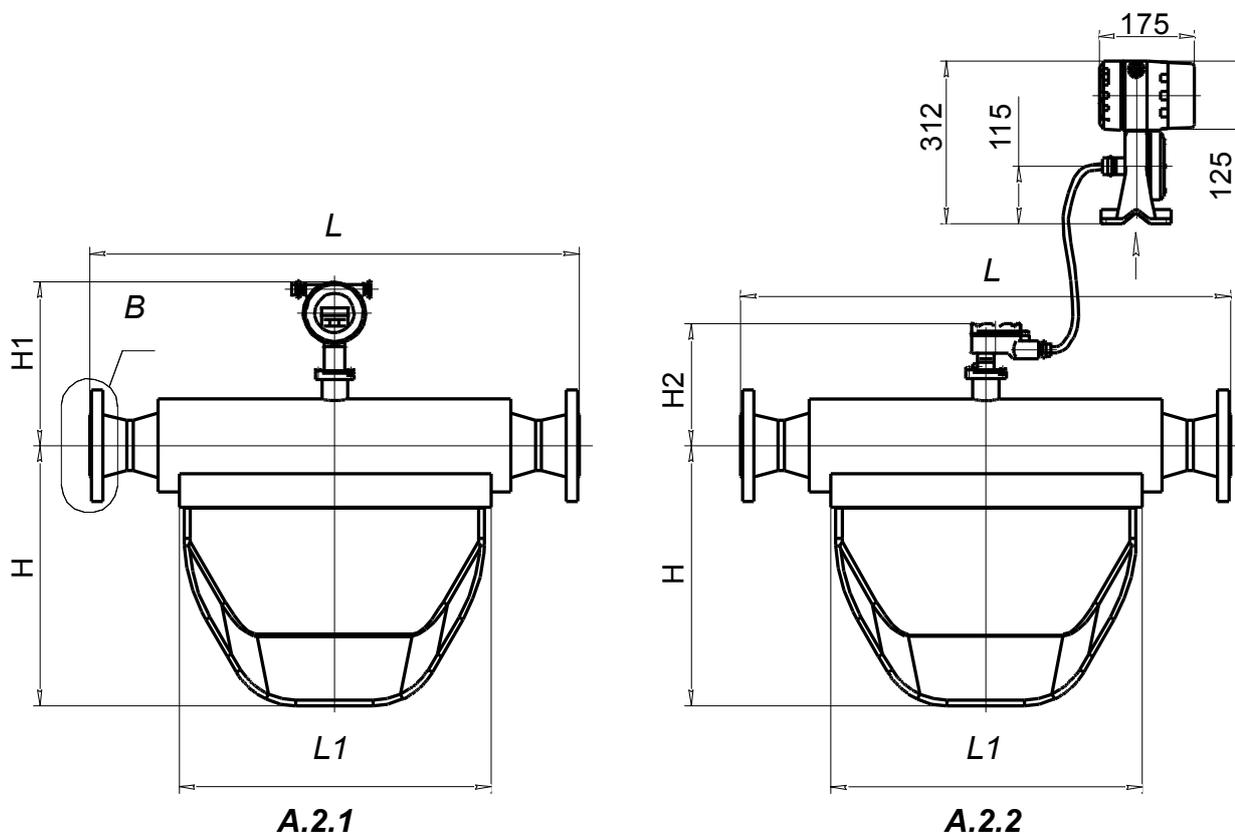
Accuracy is calculated based on the water measurement under the condition of  $+20^{\circ}$ C ...  $+25^{\circ}$ C and 0.1Mpa ... 0.2MPa.

## | Density Measuring |

Density range	0.2 ... 2.0 g/cm <sup>3</sup>
Basic error	$\pm 0.002$ g/cm <sup>3</sup> (Affected by the transducer)
Repeatability	0.001 g/cm <sup>3</sup>

# Coriolis Mass Flow Meter

## | Dimension |



Integral type – Figure A.2.1 Separate type – Figure A.2.2

### Outline dimensions and weight

Process connection size	Figure	L ( mm )		L1 (mm)	H (mm)	H1 (mm)	H2 (mm)	Cmax (mm)*	Weight ( kg )	
		1.6 ... 4.0 MPa	6.3 MPa						A.2.1	A.2.2
DN10, 3/8 inch	A.2	360	374	240	180	290	220	95	10	13
DN15, 1/2 inch	A.2	400	414	280	184	290	220	115	11	14
DN25, 1 inch	A.2	500	536	360	250	300	230	150	15	18
DN40, 1 1/2 inch	A.2	600	634	460	300	310	240	165	30	33
DN50, 2 inch	A.2	800	828	640	410	320	250	205	35	38
DN80, 3 inch	A.2	900	928	700	490	350	280	416	75	78
DN100, 4 inch	A.2	1130	1156	860	660	370	290	440	132	135

\*Overall width of the body, excluding transmitter

# Coriolis Mass Flow Meter

## | Ordering Guide |

