

#### Overview



SITRANS FC300 is a new range of compact coriolis mass flowmeters sensors suitable for flow measurement of all kind of liquids and gases.

The sensor offers superior performance in terms of flow accuracy, turn-down range and density accuracy. The ease of installation through a plug & play interface ensures optimum performance and operation.

A new designed encapsulation in stainless steel with a surprisingly low weight of only 3.5 kg (7.7 lb), ensures a rigid and robust sensor performance for a wide range of applications.

#### Benefits

- High accuracy better than 0.1% of mass flow rate
- Large dynamic turn down range better than 100:1
- Densitometer performance available through a density accuracy better than 0.001 g/cm<sup>3</sup> (0.000036 lb/inch<sup>3</sup>) with a repeatability better than 0.0002 g/cm<sup>3</sup> (0.000072 lb/inch<sup>3</sup>)
- One tube without internal welds, reductions or flow splitters offers optimal hygiene, safety and CIP cleanability for food & beverage and pharmaceutical applications
- Markets biggest wall thickness, ensuring optimal lifetime and corrosion resistance and high pressure durability
- Balanced pipe design with little mechanical energy-loss, ensures optimal performance and stability under non ideal and unstable process conditions (pressure, temperature, density-changes etc.)
- 4-wire Pt1000 temperature measurement ensures optimum accuracy on mass flow, density and fraction flow
- Multi-plug electrical connector & SENSORPROM enable true plug & play. Installation and commissioning in less than 10 min.
- Intrinsically safe Ex-design ia IIC as standard
- Sensor pipe available in high quality AISI 316L stainless steel 1.4435 or Hastelloy C22 2.4602 offering optimum corrosion resistance
- Rugged and space saving sensor design in stainless steel matching all applications
- High pressure program as standard
- The sensor calibration factor is also valid for gas measurement

#### Application

The industry today has an increasing demand for mass flowmeters with a reduced physical size without loss of performance. The meters must be suitable for installation in traditional process industry environment as well as OEM equipment for instance within automotive or appliance industry. Independent of industry application the meter must deliver accurate and reliable measurements. The new and versatile design of the FC300 offers this flexibility and the main applications for the SITRANS FC300 DN 4 can be found in:

<b>Chemical industry</b>	Liquid and gas measurement in normal as well as corrosive environments
<b>Cosmetic industry</b>	Dosing of essence & fragrances
<b>Pharmaceutical industry</b>	High speed dosing and coating of pills, filling of ampuls/injectors
<b>Food &amp; beverage industry</b>	Filling, dosing of flavorings, colors and additives, in-line density measurement
	Measurement and dosing of liquid or gaseous CO <sub>2</sub>
<b>Automotive industry</b>	Fuel injection nozzle & pump testing, filling of AC units, engine consumption, paint robots, ABS test-beds

#### Design

The FC300 sensor consists of a single tube bended in double omega pipe geometry, welded directly to the process connectors at each end. The sensor is available in 2 material configurations, AISI 316L or Hastelloy C22 with 1/4"-NPT or G1/4"-ISO process connections.

The enclosure is made of stainless steel AISI 316L 1.4409 with a grade of encapsulation of IP66/NEMA4. The enclosure has a very robust design and with an overall size of 130 x 200 x 60 mm (5.12" x 7.87" x 2.36") the sensor is very compact and requires only little installation space.

The sensor can be delivered in a standard version with a maximum liquid temperature of 125 °C (257 °F) or a high temperature version, with raised electrical connector for 180 °C (356 °F).

The sensor can be installed in horizontal or vertical position. The sensor can be mounted directly on any given plane surface or if desired with the enclosed quick release clamp fitting which, along with its compact design and multi-plug electrical connector, will keep installation costs and time to a minimum.

#### Function

The measuring principle is based on coriolis force of movement, see "System information MASSFLO coriolis mass flowmeters".

# SITRANS F flowmeters

## SITRANS F C

### SITRANS FC300

#### Integration

The sensor can be connected to all MASS 6000 transmitters for remote installation only.

All sensors are delivered with a SENSORPROM containing all information about calibration data, identity and factory pre-programming of transmitter settings

#### Installation guidelines for SITRANS FC300 sensor

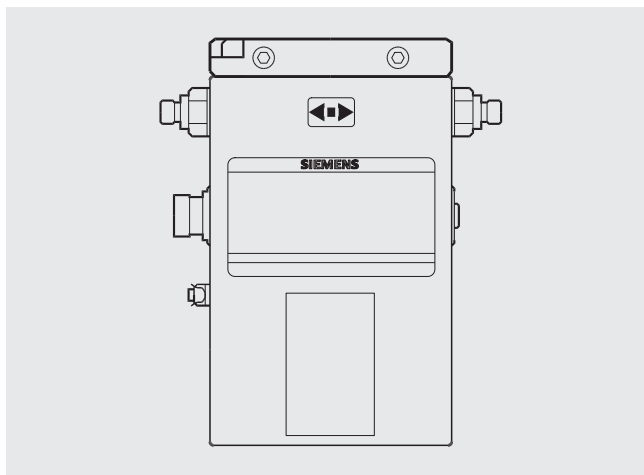
The recommended installation is horizontal. If however, the sensor is to be used in applications where the liquid contains air bubbles or the flow velocity is very low, vertical mounting is recommended, as in this position air bubbles can more easily be flushed out.

To ensure that the sensor does not become partly empty, there must be a sufficient counter-pressure on the unit min. 0.1 to 0.2 bar.

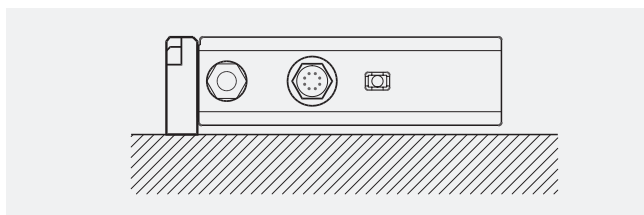
Mount the sensor on a vibration free and plane wall or steel frame

Locate the sensor low in the system in order to avoid under-pressure in the sensor separating air/gas in the liquid.

#### Horizontal mounting



#### Vertical mounting



#### Technical specifications

Sensor size	DN 4
<b>Mass flow</b>	
Measuring range	0 ... 350 kg/h (0 ... 772 lb/h)
Accuracy, mass flow	0.1% of rate
Repeatability	0.05 of rate
Max. zero point error	0.010 kg/h (0.022 lb/h)
<b>Density</b>	
Density range	0 ... 2.9 g/cm <sup>3</sup> (0 ... 0.105 lb/inch <sup>3</sup> )
Density error	0.0015 g/cm <sup>3</sup> (0.000036 lb/inch <sup>3</sup> )
Repeatability error	0.0002 g/cm <sup>3</sup> (0.0000072 lb/inch <sup>3</sup> )
<b>Temperature</b>	
Standard	-50 ... +125 °C (-58 ... +257 °F)
High temperature version	-50 ... +180 °C (-58 ... +356 °F)
Temperature error	0.5 °C
<b>Brix</b>	
Measuring range	0 ... 100 Brix
Brix error	0.3 Brix
<b>Inside pipe diameter</b>	
Stainless steel version	3.5 mm (0.14")
Hastelloy version	3.0 mm (0.12")
<b>Pipe wall thickness</b>	
Stainless steel version	0.25 mm (0.0098")
Hastelloy version	0.5 mm (0.0196")
<b>Liquid pressure measuring pipe<sup>1)</sup></b>	
Stainless steel	130 bar (1885 psi) at 20 °C (68 °F)
Hastelloy C22	410 bar (5945 psi) at 20 °C (68 °F)
<b>Materials</b>	
	1.4435 (AISI 316L) Stainless steel
	2.4602 (Hastelloy C22)
<b>Enclosure<sup>2)</sup></b>	
Material	1.4409 (AISI 316) Stainless steel
Enclosure grade	IP67/NEMA4
<b>Process connections</b>	
Thread	ISO 228/1 G 1/4"
	ANSI/ASME B1.20.1 1/4" NPT
<b>Ex approval</b>	
	EEx [ia] IIC T3-T6
	05ATEX138072X
	UL/CSA (under preparation)
<b>Weight</b>	
	3.5 kg (7.7 lb)
<b>Dimensions</b>	
	130 x 200 x 600 mm (5.12" x 7.87" x 23.6")

1) According to DIN 2413, DIN 17457

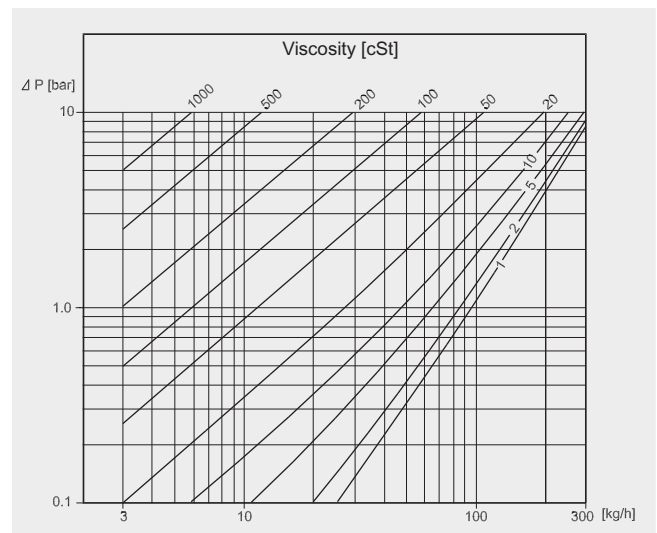
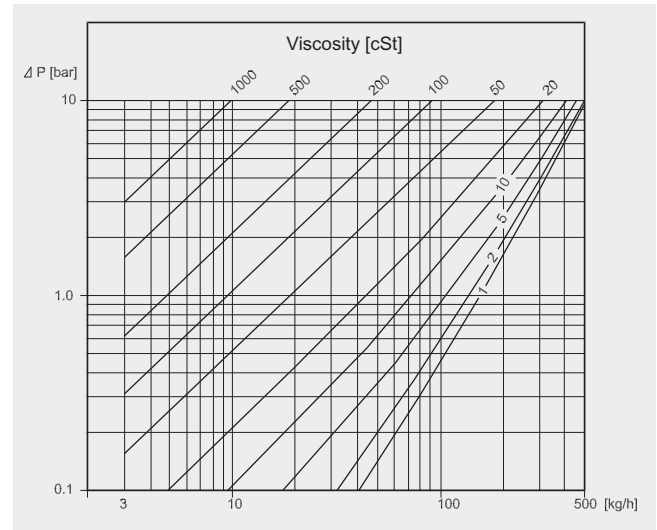
2) Housing is not rated for pressure containment.

Selection and Ordering data	Order-No.	Order code
<b>SITRANS F C Flow sensors</b>		
<b>SITRANS FC300 DN 4 sensor</b>	7ME 4 4 0 0 -	
	■ ■ ■ ■ ■ - A ■ ■ ■ ■ ■	
<b>Pipe material and temperature</b>		
<u>Stainless steel 1.4435/316L</u>		
125 °C (257 °F)	1 G	
180 °C (356 °F)	1 H	
<u>2.4602/Hastelloy C22</u>		
125 °C (257 °F)	2 G	
180 °C (356 °F)	2 H	
<b>Pressure</b>		
PN 100	D	
PN 130	G	
PN 410 (only Hastelloy C-22)	Q	
<b>Process connection</b>		
<u>Pipe thread</u>		
G 1/4"	1 0	
1/4" NPT	1 1	
<b>Configuration</b>		
Standard	1	
Density	2	
Brix/Plato	3	
Fraction (specification required)	9	N O Y
<b>Cable</b>		
No cable		A
5 m (16 ft) cable		B
10 m (32 ft) cable		C
25 m (82 ft) cable		D
50 m (164 ft) cable		E
75 m (246 ft) cable		F
150 m (492 ft) cable		G
<b>Calibration</b>		
Standard Calibration	1	
Standard Calibration matched pair	2	
Accredited Calibration (DANAK)	3	
Extended calibration customer specified select Y60, Y61, Y62 or Y63 (see Additional information)	8	

Additional information	Order code
Please add "-Z" to Order No. and specify Order code(s) and plain text.	
Pressure testing certificate	C11
Material certificate	C12
Welding certificate	C13
Factory certificate according to EN 10204 2.2	C14
Factory certificate according to EN 10204 2.1	C15
Tag name plate, stainless steel	Y17
Tag name plate, plastic	Y18
Customer specific transmitter setup	Y20
Customer specified, matched pair (5x2)	Y60
Customer specified calibration (5x2)	Y61
Customer specified, matched pair (10x1)	Y62
Customer specified calibration (10x1)	Y63
Special version	Y99

## Characteristic curves

### Pressure drop

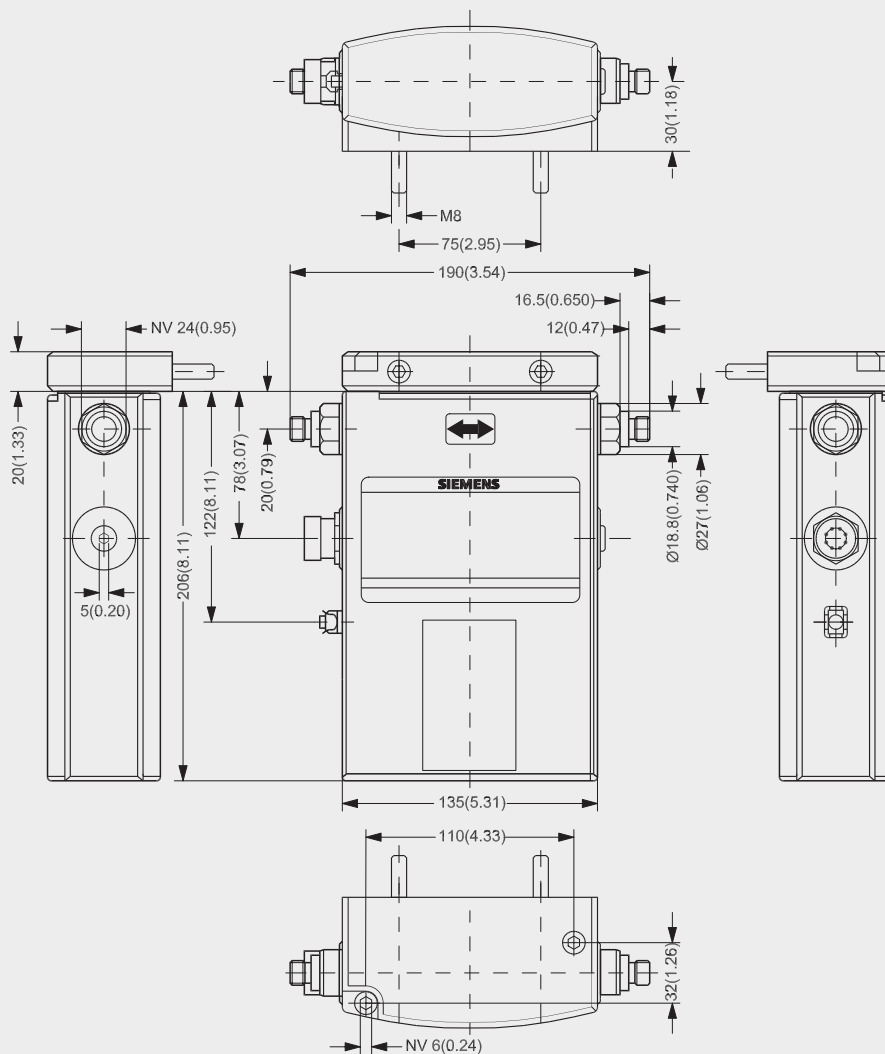


# SITRANS F flowmeters

## SITRANS F C

### SITRANS FC300

#### Dimensional drawings



SITRANS FC300, dimensions in mm (inch)