

Flow Measurement

SITRANS FC (Coriolis)

Sensors and Flowmeter systems

SITRANS FC310 flowmeter system

Overview



The compact flowmeter SITRANS FC310 can be ordered for industrial, hygienic or NAMUR service.

Intended for integration into OEM skids, machines or pre-assembled plant systems, the flowmeter is based on the latest developments within digital signal processing technology - engineered for high measuring performance:

- Fast response to rapid changes in flow
- Fast dosing applications with control in host system
- High immunity against process noise
- High turndown ratio of flowrates
- Suitable for liquid and gas service
- Easy to install, commission and maintain

With all global marine approvals the FC310 is ideal for integration in ship fuel efficiency and environmental measurement systems as well as bunkering solutions.

The FCT010 transmitter delivers true multi-parameter measurements i.e. massflow, density, temperature.

FC310 is available with Modbus RTU (RS 485) multi-drop serial communication.

The flowmeter is supplied with SensorFlash, a micro SD card containing all relevant certificates. The SITRANS FC310 flowmeter system consists of a SITRANS FCS300 sensor and a SITRANS FCT010 transmitter always compact mounted.

Benefits

- It is compact and light, fitting neatly into dense piping arrangements
- Effective separation of measurement from plant vibration
- Reliable measurements due to high signal to noise ratio
- Short overall length; easy drop-in replacement into most existing installations
- Direct connection to host with high-speed Modbus simplifies machine or skid construction and set-up
- Modbus RS 485 RTU allows simple and easy integration with all Modbus masters with fast update rate of process values.

Technical specifications

Sizes	DN 15 (½") DN 25 (1") DN 50 (2") DN 80 (3") DN 100 (4") DN 150 (6")
Accuracy	± 0.10 % or ± 0.20 % Additional ± 0.40 % for gases
Repeatability	± 0.05 %
Flow range (water @ 1 bar pressure loss)	<ul style="list-style-type: none"> • DN 15 4 500 kg/h (163.3 lb/min) • DN 25 20 500 kg/h (753.2 lb/min) • DN 50 49 000 kg/h (1 800 lb/min) • DN 80 122 000 kg/h (4 483 lb/min) • DN 100 273 000 kg/h (10 031 lb/min) • DN 150 459 200 kg/h (16 873 lb/min)
Power supply	12-27 V DC; 1.1 W
Weight	4.6 ... 207 kg
Material	<ul style="list-style-type: none"> • Sensor <ul style="list-style-type: none"> - Measuring tubes 316L stainless steel or nickel alloy C4 - Enclosure 304 stainless steel • Transmitter Aluminum with corrosion-resistant coating class C4
Enclosure rating	IP67
Pressure ratings	<ul style="list-style-type: none"> • Measuring tubes <ul style="list-style-type: none"> - 316L 100 bar (1 450 psi) - Nickel alloy C4 100 bar (1 450 psi) • Sensor enclosure No pressure containment
Temperature ratings	<ul style="list-style-type: none"> • Process medium -50 ... +205 °C (-58 ... +400 °F) • Ambient -40 ... +60 °C (-40 ... +140 °F)
Process connections	<ul style="list-style-type: none"> • Flanges EN 1092-1 B1, EN 1092-1 B2, EN 1092-1 D, ANSI/ASME B16.5, JIS B 2220 • Pipe threads ASME B1.20 (NPT) female pipe thread, ISO 228-1 G female pipe thread (BSPP) • Hygienic threads DIN 11851, SMS 1145 • Hygienic clamps DIN 32676 Hygienic Clamp Row A
Approvals	<ul style="list-style-type: none"> • Hazardous area (zone 1) ATEX, IECEx, EAC Ex, cCSAus, NEPSI, EAC • Pressure equipment No dust approval PED, CRN (in preparation) • Hygienic EHEDG (DN 25 ... 80) (in preparation) • Marine Germanischer Lloyd/det Norske Veritas, Bureau Veritas, Lloyds of London, American Bureau of Shipping, RINA (Italy)
NAMUR	NAMUR-compliant (e.g. NE 21, NE 41 and NE 132)
Communication	Modbus RS 485 RTU
EMC performance	<ul style="list-style-type: none"> Emission EN 55011/CISPR-11 (Class B) Immunity EN/IEC 61326-1 (Industry)
Mechanical load	18 ... 400 Hz random The flow meter will mechanically tolerate 3.17 g RMS in all directions. Flow accuracy cannot be guaranteed under all conditions.

Selection and ordering data

Article No.

Article No.

SITRANS FC310 digital coriolis flowmeter with SITRANS FCS300 standard flow sensor with hygienic and flange/pipe thread connections and compact mounting with FCT010 transmitter

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Sensor size, connector size

DN 15, DN 10 (½", 3/8")
 DN 15, DN 15 (½", ½")
 DN 15, DN 20 (½", ¾")
 DN 25, DN 20 (1", ¾")
 DN 25, DN 25 (1", 1")
 DN 25, DN 40 (1", 1½")
 DN 50, DN 40 (2", 1½")
 DN 50, DN 50 (2", 2")
 DN 50, DN 65 (2", 2½")
 DN 80, DN 65 (3", 2½")
 DN 80, DN 80 (3", 3")
 DN 80, DN 100 (3", 4")
 DN 100, DN 80 (4", 3")
 DN 100, DN 100 (4", 4")
 DN 100, DN 150 (4", 6")
 DN 150, DN 100 (6", 4")
 DN 150, DN 150 (6", 6")
 DN 150, DN 200 (6", 8")

7ME4631-
 Ord. code

3 F
 3 G
 3 H
 3 K
 3 L
 3 N
 4 B
 4 C
 4 D
 4 J
 4 K
 4 L
 5 M
 5 N
 5 Q
 6 D
 6 F
 6 H

Process connection

EN 1092-1 B1, PN 16
 EN 1092-1 B1, PN 40
 EN 1092-1 B2, PN 63
 EN 1092-1 B2, PN 100
 EN 1092-1 D, PN 40
 ASME B16.5 RF, class 150
 ASME B16.5 RF, class 300
 ASME B16.5 RF, class 600
 ASME B16.5 RF, class 900 (p- and t-rating as class 600)
 ANSI B16.5-2009, class 1500 (p- and t-rating as class 600)
 ISO 228-1G female pipe thread
 ASME B1.20.1 NPT female pipe thread
 DIN 11851 hygienic screwed
 DIN 32676 hygienic clamp Row A
 SMS 1145 hygienic screwed
 JIS B2220/10K
 JIS B2220/20K
 EN 1092-1, PN 16, NAMUR length
 EN 1092-1, PN 40, NAMUR length

A 0
 A 1
 A 2
 A 3
 A 5
 D 1
 D 2
 D 3
 D 4
 D 5
 E 1
 E 3
 F 1
 G 1
 K 1
 L 2
 L 4
 N 1
 N 2

Wetted parts material

AISI 316L/1.4435/1.4404
 AISI 316L/1.4435/1.4404 (polished)
 Nickel alloy C4

1
 2
 3

SITRANS FC310 digital coriolis flowmeter with SITRANS FCS300 standard flow sensor with hygienic and flange/pipe thread connections and compact mounting with FCT010 transmitter

Calibration/Accuracy class

0.2 % flow, 10 kg/m³ density
 0.1 % flow, 2 kg/m³ density

Mounting style, transmitter housing and material

Compact, IP67, aluminum

Ex approval

Non-Ex
 ATEX II 2G zone 1
 IECEx Gb (zone 1)
 US (cCSAus), Div 1
 Canada (cCSAus), class I, zone 1
 NEPSI
 INMETRO (in preparation)
 KCC (in preparation)
 EAC

Local User Interface

Blind

7ME4631-
 Ord. code

0
 1
 D
 A
 C
 F
 L
 M
 N
 P
 Q
 U
 1

Selection and ordering data

Order code

Further designs

Please add "-Z" to Article No. and specify Order code(s).

Cable glands

None (replacement sensor) **A00**
 Metric, no glands **A01**
 Metric, plastic **A02**
 Metric, brass/Ni plated **A05**
 Metric, stainless steel **A06**
 NPT, no glands **A11**
 NPT, plastic **A12**
 NPT, brass/Ni plated **A15**
 NPT, stainless steel **A16**
 Metric thread with M12 socket fitted **A20**

Software functions and CT approvals

Standard **B11**

I/O configuration Ch1

Modbus RTU RS 485 **E14**

I/O configuration Ch2, Ch3 and Ch4

None **F00**

Add-on options and accessories

Please add "-Z" to Article No. and specify Order code(s).

Certificates

Certificate EN 10204-2.2 confirmation of pressure containing material **C01**
 Certificate EN 10204-3.1 material (wetted parts) **C02**
 Material certificate EN 10204-3.2 with inspection **C03**
 Certificate NACE MR0175-2009 + MR0103-2012 **C04**
 Certificate EN 10204-2.1 Declaration of compliance with the order **C05**

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Insp. Certificate EN 10204-3.1 for visual, dimensional and functional test

C06

Certificate EN 10204-3.1 PMI Positive material ident. of pressure-cont./wetted parts (confirmation only)

C07

Certificate EN 10204-3.1 P-test Pressure-test acc. AD2000

C08

Test pack (pressure test, non-destructive welding test, welder & welding procedure certificate)

C09

Certificate EN 10204-3.1 welding X-ray / Dye-penetration test of weldings (pressure cont.)

C10

Certificate EN 10204-2.1 Declaration of accuracy

C11

Certificate EN 10204-3.1 PMI Positive material ident. of pressure-cont./wetted parts (including heat analysis)

C12

Customer selected calibration

DN 15 ... 50, multi-point, 5 flows × 1 pass Flow 10 ... 100 % of Q_{norm}

D60

DN 15 ... 50, multi-point, 10 flows × 1 pass Flow 10 ... 100 % of Q_{norm}

D61

DN 80, multi-point, 5 flows × 1 pass Flow 10 ... 100 % of Q_{norm}

D62

DN 80, multi-point, 10 flows × 1 pass Flow 10 ... 100 % of Q_{norm}

D63

DN 100, multi-point, 5 flows × 1 pass Flow 10 ... 100 % of Q_{norm}

D64

DN 100, multi-point, 10 flows × 1 pass Flow 10 ... 100 % of Q_{norm}

D65

DN 150, multi-point, 5 flows × 1 pass Flow 10 ... 100 % of Q_{norm}

D66

DN 150, multi-point, 8 flows × 1 pass Flow 10 ... 100 % of Q_{norm}

D67

Cable

None

L50

5 m (16.4 ft), sensor cable, 4 wire, with 2 pcs M12 plugs mounted

L51

5 m (16.4 ft), sensor cable, 4 wire, without plugs for terminal connection

L52

5 m (16.4 ft), sensor cable, 4 wire, with 1 pc M12 plug mounted

L53

10 m (32.8 ft) sensor cable, 4 wire, with 2 pcs M12 plugs mounted

L55

10 m (32.8 ft), sensor cable, 4 wire, without plugs for terminal connection

L56

10 m (32.8 ft), sensor cable, 4 wire, with 1 pc M12 plug mounted

L57

25 m (82 ft), sensor cable, 4 wire, with 2 pcs M12 plugs mounted

L59

25 m (82 ft), sensor cable, 4 wire, without plugs for terminal connection

L60

Order code

Add-on options and accessories

Please add **"-Z"** to Article No. and specify Order code(s).

25 m (82 ft), sensor cable, 4 wire, with 1 pc M12 plug mounted

L61

50 m (164 ft), sensor cable, 4 wire, with 2 pcs M12 plugs mounted

L63

50 m (164 ft), sensor cable, 4 wire, without plugs for terminal connection

L64

50 m (164 ft), sensor cable, 4 wire, with 1 pc M12 plug mounted

L65

75 m (246 ft), sensor cable, 4 wire, with 2 pcs M12 plugs mounted

L67

75 m (246 ft), sensor cable, 4 wire, without plugs for terminal connection

L68

75 m (246 ft), sensor cable, 4 wire, with 1 pc M12 plug mounted

L69

Sensor options

FCS300 marine approval

S22

Additional data

Please add **"-Z"** to Article No. and specify Order code(s) and plain text.

Tag name

Tag name plate, stainless steel

Y17

Operating instructions for SITRANS FC310

Description

Article No.

English

• for firmware V 4.0 and onwards

A5E44036384

German

• for firmware V 4.0 and onwards

TBD

All literature is available to download for free, in a range of languages, at

www.siemens.com/processinstrumentation/documentation

Accessories

Description

Article No.

**SITRANS I300
Isolating power supply – Ex barrier**

A5E39832532

