

Flow Measurement

SITRANS F C

Flowmeter SITRANS FC310

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.

FC410 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 RS485 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")	Process connections	
Accuracy	± 0.10 % or ± 0.20 % Additional ± 0.40 % for gases	• Flanges	EN 1092-1 B1, EN 1092-1 B2, EN 1092-1 D, ANSI/ASME B16.5, JIS B 2220
Repeatability	± 0.05 %	• Pipe threads	ASME B1.20 (NPT) female pipe thread, ISO228-1 G female pipe thread (BSPP)
Flow range (water @ 1 bar pressure loss)		• Hygienic threads	DIN 11851, SMS 1145
• DN 15	4 500 kg/h (163.3 lb/min)	• Hygienic clamps	DIN 32676 serie A
• DN 25	20 500 kg/h (753.2 lb/min)	Approvals	
• DN 50	49 000 kg/h (1 800 lb/min)	• Hazardous area (zone 1)	ATEX, IECEx, EAC Ex, cCSAus (NEPSI, INMETRO, EAC in prepara- tion)
• DN 80	122 000 kg/h (4 483 lb/min)	• Pressure equipment	PED, CRN (in preparation)
• DN 100	273 000 kg (10 031 lb/min)	• Hygienic	EHEDG (DN 25 ... 80) (in preparation)
• DN 150	459 200 kg/h (16 873 lb/min)	• Marine (in preparation)	Germanischer Lloyd/det Norske Veritas, Bureau Veritas, Lloyds of London, American Bureau of Shipping, RINA (Italy)
Power supply	24 V DC ± 20 %; 110 mA	NAMUR	NAMUR-compliant (e.g. NE 21, NE 41 and NE 132)
Weight	4.6 ... 207 kg	Communication	Modbus RS 485 RTU
Material		EMC performance	
• Sensor		Emission	EN 55011/CISPR-11 (Class B)
- Measuring tubes	316L stainless steel or Nickel Alloy C4	Immunity	EN/IEC 61326-1 (Industry)
- Enclosure	304 stainless steel	Mechanical load	18 to 400 Hz random The flow meter will mechanically tolerate 3.17 g RMS in all direc- tions. Flow accuracy cannot be guaranteed under all conditions.
• Transmitter	Aluminum with corrosion-resis- tant coating		
Enclosure rating	IP67		
Pressure ratings			
• Measuring tubes			
- 316L	100 bar (1450 psi)		
- Nickel-Alloy C4	100 bar (1450 psi)		
• Sensor enclosure	No pressure containment		
Temperature ratings			
• Process medium	-50 ... +205 °C (-58 ... +400 °F)		
• Ambient	-40 ... +60 °C (-40 ... +140 °F)		

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Selection and Ordering data	Article No.	Order code
SITRANS FC310 Digital Coriolis flowmeter with SITRANS FCS300 standard flow sensor with hygienic and flange/pipe thread connections and compact mounting with FCT010 transmitter	7 ME 4 6 3 1 -	
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")		3 F
DN 15, DN 15 (½", ½")		3 G
DN 15, DN 20 (½", ¾")		3 H
DN 25, DN 20 (1", ¾")		3 K
DN 25, DN 25 (1", 1")		3 L
DN 25, DN 40 (1", 1½")		3 N
DN 50, DN 40 (2", 1½")		4 B
DN 50, DN 50 (2", 2")		4 C
DN 50, DN 65 (2", 2½")		4 D
DN 80, DN 65 (3", 2½")		4 J
DN 80, DN 80 (3", 3")		4 K
DN 80, DN 100 (3", 4")		4 L
DN 100, DN 80 (4", 3")		5 M
DN 100, DN 100 (4", 4")		5 N
DN 100, DN 150 (4", 6")		5 Q
DN 150, DN 100 (6", 4")		6 D
DN 150, DN 150 (6", 6")		6 F
DN 150, DN 200 (6", 8")		6 H
Process connection		
EN 1092-1 B1, PN 16		A 0
EN 1092-1 B1, PN 40		A 1
EN 1092-1 B2, PN 63		A 2
EN 1092-1 B2, PN 100		A 3
EN 1092-1 D, PN 40		A 5
ASME B16.5 RF, class 150		D 1
ASME B16.5 RF, class 300		D 2
ASME B16.5 RF, class 600		D 3
ASME B16.5 RF, class 900 (p- and t-rating as class 600)		D 4
ANSI B16.5-2009, class 1500 (p- and t-rating as class 600)		D 5
ISO 228-1G female pipe thread		E 1
ASME B1.20.1 NPT female pipe thread		E 3
DIN 11851 hygienic screwed		F 1
DIN 32676 (ISO) hygienic clamp serie A		G 1
SMS 1145 hygienic screwed		K 1
JIS B2220/10K		L 2
JIS B2220/20K		L 4
EN 1092-1, PN 16, NAMUR length		N 1
EN 1092-1, PN 40, NAMUR length		N 2
Wetted parts material		
AISI 316L/1.4435/1.4404		1
AISI 316L/1.4435/1.4404 (polished)		2
Nickel-Alloy C4		3
Calibration/Accuracy class		
0.2 % flow, 10 kg/m³ density		0
0.1 % flow, 2 kg/m³ density		1
Mounting style, transmitter housing and material		
Compact, IP67, aluminum		D
Ex approval		
Non-Ex		A
ATEX II 2G zone 1		C
IECEx Gb (zone 1)		F
US (cCSAus), Div 1		L
Canada (cCSAus), class I, zone 1		M
NEPSI (in preparation)		N
INMETRO (in preparation)		P
KCs (in preparation)		Q
EAC (in preparation)		U
Local User Interface		
Blind		1

Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs Please add "-Z" to Article No. and specify Order code(s).		Add-on options and accessories Please add "-Z" to Article No. and specify Order code(s).	
Cable glands None (replacement sensor) Metric, no glands Metric, plastic Metric, brass/Ni plated Metric, stainless steel NPT, no glands NPT, plastic NPT, brass/Ni plated NPT, stainless steel Metric thread with M12 socket fitted	A00 A01 A02 A05 A06 A11 A12 A15 A16 A20	Certificates Factory certificate to EN 10204 -2.2 Material certificate EN 10204-3.1 with inspection Material certificate EN 10204-3.2 with inspection NACE MR0175/EN 10204-3.1 Declaration of conformity certificate EN 10204-2.1 Inspection certificate EN 10204-3.1 incl. dimension and function test Inspection certificate EN 10204-3.1 with PMI Pressure test acc. AD2000 Test package (Pressure, NDT, WPS, WPQS) Inspection certificate to EN 10204 3.1/NDE-weld Certificate of accuracy acc. EN 10204 2.1 Inspection certificate to EN 10204 3.1 with PMI (including heat analysis)	C01 C02 C03 C04 C05 C06 C07 C08 C09 C10 C11 C12
Software functions and CT approvals Standard	B11	Customer selected calibration DN 15 ... 50, multi-point, 5 flows x 1 pass DN 15 ... 50, multi-point, 10 flows x 1 pass DN 80, multi-point, 5 flows x 1 pass DN 80, multi-point, 10 flows x 1 pass DN 100, multi-point, 5 flows x 1 pass DN 100, multi-point, 10 flows x 1 pass DN 150, multi-point, 5 flows x 1 pass DN 150, multi-point, 8 flows x 1 pass	D60 D61 D62 D63 D64 D65 D66 D67
I/O configuration Ch1 Modbus RTU RS 485	E14	Cable (M12 versions of cable have a connector on both ends) None 5 m (16.4 ft), standard with M12 connectors fitted 5 m (16.4 ft), standard, without plugs 10 m (32.8 ft) standard with M12 connectors fitted 10 m (32.8 ft), standard, without plugs 25 m (82 ft), standard with M12 connectors fitted 25 m (82 ft), standard, without plugs 50 m (164 ft), standard with M12 connectors fitted 50 m (164 ft), standard, without plugs 75 m (246 ft), standard with M12 connectors fitted 75 m (246 ft), standard, without plugs	L50 L51 L52 L55 L56 L59 L60 L63 L64 L67 L68
I/O configuration Ch2, Ch3 and Ch4 None	F00	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	A5E39789214
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