

Flow Measurement

SITRANS F C

Flowmeter SITRANS FC330

Overview



The complete flowmeter system SITRANS FC330 can be ordered for standard, hygienic or NAMUR service.

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
- High immunity against process noise
- High turndown ratio of flowrates
- Suitable for liquid and gas service
- Easy to install, commission and maintain

FC330 is available with current output HART 7.5, Modbus RS-485 RTU, PROFIBUS DP or PROFIBUS PA as standard on Channel 1. Additional functions can be freely configured for analog, pulse, frequency, relay or status output or binary input.

The transmitter comes with a user-configurable graphical display and SensorFlash, a micro SD card for configuration backup, firmware update and data storage.

The SITRANS FC330 flowmeter system consists of a SITRANS FCS300 sensor and a SITRANS FCT030 transmitter.

Benefits

- It is compact and light, fitting neatly into dense piping arrangements
- Easy maintenance because modules can be exchanged rapidly
- Effective separation of measurement from plant vibration
- Highly secure operation in safety critical applications
- Non-volatile memory of all setup and operation data
- Reliable measurements due to high signal to noise ratio
- Secure, digital transfer of measurement data from the sensor
- Short overall length; easy drop-in replacement into most existing installations

Technical specifications

Sizes	DN 15 (1/2") DN 25 (1") DN 50 (2") DN 80 (3") DN 100 (4") DN 150 (6")	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, ISO228-1 G female pipe thread (BSPP) • Hygienic threads DIN 11851, SMS 1145 • Hygienic clamps DIN 32676 serie A
Accuracy	± 0.10 % or 0.20 % for liquids additional ±0.40 for gases	Approvals	<ul style="list-style-type: none"> • Hazardous area (zone 1) ATEX, IECEx, EAC Ex, CSA, cCSAus, NEPSI, EAC • Pressure equipment PED, CRN (in preparation) • Hygienic EHEDG (DN 25 ... DN 80) (in preparation) • Custody transfer OIML R 117, NTEP (in preparation) • Operational safety (compact system only NAMUR 7ME471) SIL 2 Single (in preparation) SIL 3 Redundant system (in preparation)
Repeatability	± 0.05 %	NAMUR	NAMUR-compliant (e.g. NE 21, NE 41, NE 107 and NE 132)
Flow range (liquids) (water @ 1 bar pressure loss) (Q_{nom})		I/O	Up to 4 channels combining analog, relay or digital outputs and binary input
<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 (10 031 lb/min) • DN 150 459 200 kg/h (16 873 lb/min) 		Communication	HART PROFIBUS PA PROFIBUS DP Modbus RTU (RS-485)
Architecture	Compact or remote configuration	EMC performance	Emission EN 55011/CISPR-11 (Class A) Immunity EN/IEC 61326-1 (Industry)
Display	Full graphical display, 240 x 160 pixels with selection of 6 languages	Mechanical load	18 to 400 Hz random The flow meter will mechanically tolerate 3.17 g RMS in all directions. Flow accuracy cannot be guaranteed under all conditions.
Power supply	20 ... 27 V DC ± 10%; 100 ... 240 V AC ± 10 %, 47 ... 63 Hz ± 10%		
Weight	4.6 ... 212 kg		
Material			
<ul style="list-style-type: none"> • Sensor - Wetted parts - Enclosure • Transmitter 	316L stainless steel or Nickel Alloy C4 304 stainless steel Aluminum with corrosion-resistant coating		
Enclosure rating	IP67		
Pressure ratings			
<ul style="list-style-type: none"> • Measuring tubes - 316L - Nickel Alloy C4 • Sensor enclosure 	100 bar (1450 psi) 100 bar (1450 psi) No pressure containment		
Temperature ratings			
<ul style="list-style-type: none"> • Process medium -40 ... +60 °C (-40 ... +140 °F)¹⁾ • Ambient -20 ... +60 °C (-4 ... +140 °F) • Display 			

¹⁾ If operating outdoors, avoid direct sunlight, particularly in warm climatic regions.

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Selection and Ordering data	Article No.	Order code
SITRANS FC330 Digital Coriolis flowmeter with SITRANS FCS300 standard flow sensor compact or remote mounting with FCT030 transmitter	7 ME 4 6 3 3 -	
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
ASME B16.5 RF, 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) clamp serie A		G 2
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
Standard fraction (with density 2 kg/m³)		8
Customer selected fraction		9
		N O Y

Selection and Ordering data	Article No.	Order code
SITRANS FC330 Digital Coriolis flowmeter with SITRANS FCS300 standard flow sensor compact or remote mounting with FCT030 transmitter	7 ME 4 6 3 3 -	
Mounting style, transmitter housing and material		A D G K U
None (replacement sensor)		
Compact, IP67 fieldmount, aluminum		
Remote, IP67 fieldmount, aluminum, M12		
Remote, IP67 fieldmount, aluminum, T/Box		
Remote, IP67, wall mount, aluminium (in preparation)		
Ex approval (depending on variant)		A C F L M N P Q U
Non-Ex		
ATEX (zone 1)		
IECEX (zone 1)		
US (cCSAus), Div 1		
Canada (cCSAus), zone 1		
NEPSI		
INMETRO (in preparation)		
KCC (in preparation)		
EAC		
Local User Interface		0 1 3
None (replacement sensor, DSL only)		
Blind		
Graphical, 240 x 160 pxl		

Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs		I/O configuration Ch2, Ch3 and Ch4	
Please add "-Z" to Article No. and specify Order code(s).		None	F00
Cable glands		Non Ex: Sig O, None, None	F01
None (replacement sensor)	A00	Non Ex: Sig O, Sig I/O, None	F02
Metric, no glands	A01	Non Ex: Sig O, Sig I/O, Sig I/O	F03
Metric, Nylon, limited to -20 °C/-4 °F	A02	Non Ex: Sig O, Sig I/O, R	F04
Metric, brass/Ni plated	A05	Non Ex: Sig O, R, R	F05
Metric, stainless steel	A06	Non Ex: Sig O, R, None	F06
NPT, no glands	A11	Ex: pSig O, None, None	F11
NPT, Nylon, limited to -20 °C/-4 °F	A12	Ex: pSig O, pSig I/O, None	F12
NPT, brass/Ni plated	A15	Ex: pSig O, pSig I/O, pSig I/O	F13
NPT, stainless steel	A16	Ex: pSig O, pSig I/O, R	F14
Metric thread with M12 socket fitted	A20	Ex: pSig O, R, R	F15
Software functions and CT approvals		Ex: pSig O, R, None	F16
None (replacement sensor)	B10	Ex: aSig O, None, None	F21
Standard	B11	Ex: aSig O, aSig I/O, None	F22
CT OIML R 117 (in preparation)	B31	Ex: aSig O, aSig I/O, aSig I/O	F23
CT NTEP (in preparation)	B52	Ex: aSig O, aSig I/O, R	F24
I/O configuration Ch1		Ex: aSig O, R, R	F25
No output channel	E00	Ex: aSig O, R, None	F26
4 ... 20 mA HART Active/Passive (non-Ex)	E02		
Ca 4 ... 20 mA HART active (Ex)	E06	Notes on I/O configurations:	
Ca 4 ... 20 mA HART passive (Ex)	E07	a or p suffix: The I/O module is selected at ordering with either active or passive function.	
PROFIBUS PA	E10	Signal: The output can be selected for Current (0 or 4 to 20 mA), frequency or pulse function in the menu.	
PROFIBUS DP (non-Ex)	E11	I: Discrete status input to the flowmeter. Functions are selected in the menu including 'Freeze output', 'Reset totalizer' (only CH3&4).	
Modbus RTU RS-485	E14	R: Relay output for discrete status reporting. Function is selected in the menu, including 'Error', 'High flow warning'.	
		The MLFB structure for FC430 systems must be filled to this level , including "-Z" options A., B., E. and F.	

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Selection and Ordering data	Order code
Add-on options and accessories	
Please add "-Z" to Article No. and specify Order code(s).	
Certificates	
Certificate EN10204-2.2 confirmation of pressure containing material	C01
Certificate EN10204-3.1 material (wetted parts)	C02
Material certificate EN 10204-3.2 with inspection	C03
Certificate NACE MR0175-2009 + MR0103-2012	C04
Certificate EN10204-2.1 Declaration of compliance with the order	C05
Insp. Certificate EN10204-3.1 for visual, dimensional and functional test	C06
Certificate EN10204-3.1 PMI Positive material ident. of pressure-cont./wetted parts (confirmation only)	C07
Certificate EN10204-3.1 P-test Pressure-test acc. AD2000	C08
Test pack (pressure test, non-destructive welding test, welder & welding procedure certificate)	C09
Certificate EN10204-3.1welding X-ray / Dye-penetration test of weldings (pressure cont.)	C10
Certificate EN10204-2.1 Declaration of accuracy	C11
Certificate EN10204-3.1 PMI Positive material ident. of pressure-cont./wetted parts (including heat analysis)	C12
Customer selected calibration	
DN 15 ... 50: Multi-point (5 flows x 1 pass)	D60
DN 15 ... 50: Multi-point (10 flows x 1 pass)	D61
DN 80: Multi-point (5 flows x 1 pass)	D62
DN 80: Multi-point (10 flows x 1 pass)	D63
DN 100: Multi-point (5 flows x 1 pass)	D64
DN 100: Multi-point (10 flows x 1 pass)	D65
DN 150: Multi-point (5 flows x 1 pass)	D66
DN 150: Multi-point (8 flows x 1 pass)	D67
Cable	
None	L50
5 m (16.4 ft), standard with M12 connectors fitted	L51
5 m (16.4 ft), standard	L52
10 m (32.8 ft) standard with M12 connectors fitted	L55
10 m (32.8 ft), standard, without plugs	L56
25 m (82 ft), standard with M12 connectors fitted	L59
25 m (82 ft), standard, without plugs	L60
50 m (164 ft), standard with M12 connectors fitted	L63
50 m (164 ft), standard, without plugs	L64
75 m (246 ft), standard with M12 connectors fitted	L67
75 m (246 ft), standard, without plugs	L68
Sensor options	
FCS300 Marine approval (in preparation)	S22
SD-Card accessibility via USB (not allowed in USA by Patent)	
Mass storage enabled	S30
Region-specific approvals and certificates	
South Korea (KCC) (in preparation)	W28
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 FC330

Description	Article No.
English	A5E44030648
• for firmware V 4.0 and onwards	
German	TBD
• for firmware V 4.0 and onwards	

All literature is available to download for free, in a range of languages, at www.siemens.com/processinstrumentation/documentation