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SITRANS FC330 flowmeter system

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

With all global marine approvals the FC330 is ideal for integration in ship fuel efficiency and environmental measurement systems as well as bunkering solutions.
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

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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 % for liquids additional ±0.40 for gases
Repeatability	± 0.05 %
Flow range (liquids)	
(water @ 1 bar pressure loss) (Q_{nom})	
• 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)
Architecture	Compact or remote configuration
Display	Full graphical display, 240 × 160 pixels with selection of 6 languages
Power supply	20 ... 90 V DC ± 10 %; 100 ... 240 V AC ± 10 %, 47 ... 63 Hz ± 10 %
Material	
• Sensor	
- Wetted parts	316L stainless steel or nickel alloy C4[1]
- Enclosure	304 stainless steel
• Transmitter	Aluminum with corrosion-resistant coating class C4
Enclosure rating	IP67[2]
Pressure ratings	
• Measuring tubes	
- 316L	100 bar (1 450 psi)
- Nickel alloy C4	100 bar (1 450 psi)
• Sensor enclosure	No pressure containment
Temperature ratings	
• Process medium	-50 ... +205 °C (-58 ... +400 °F)
• Ambient	-40 ... +60 °C (-40 ... +140 °F)[1]
• Display	-20 ... +60 °C (-4 ... +140 °F)

Process connections	
• 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 (ISO) Row A
Approvals	
• Hazardous area (zone 1)	ATEX, IECEx, EAC Ex, CSA, cCSAus, NEPSI, EAC No dust approval
• Pressure equipment	PED, CRN
• Hygienic	EHEDG (DN 25 ... DN 80) (in preparation)
• Marine (in preparation for FC330 compact)	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, NE 107 and NE 132)
I/O	Up to 4 channels combining analog, relay or digital outputs and binary input
Communication	HART PROFIBUS PA PROFIBUS DP Modbus RTU (RS 485)
EMC performance	
Emission	EN 55011/CISPR-11 (Class A)
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.

[1] Flange wetted parts and raised face surface in Nickel Alloy and non wetted parts in AISI 316L.

[2] If operating outdoors, avoid direct sunlight, paritcularly in warm climatic regions.

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SITRANS FC330 flowmeter system

Selection and ordering data — Article No.

SITRANS FC330 digital coriolis flowmeter with SITRANS FCS300 standard flow sensor compact or remote mounting with FCT030 transmitter ↗	7ME4633-					-					Ord. code		
↗ 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, lass 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 hygenic clamp (ISO) Row 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								

Article No.

SITRANS FC330 digital coriolis flowmeter with SITRANS FCS300 standard flow sensor compact or remote mounting with FCT030 transmitter	7ME4633-					-					Ord. code		
Calibration/Accuracy class													
0.2 % flow, 10 kg/m³ density							0						
0.1 % flow, 2 kg/m³ density							1						
0.1 % Standard fraction (with density 2 kg/m³)							8						
0.1 % Customer selected fraction							9				N	0	Y
Mounting style, transmitter housing and material													
None (replacement sensor)								A					
Compact, IP67 fieldmount, aluminum								D					
Remote, IP67 fieldmount, aluminum, M12								G					
Remote, IP67 fieldmount, aluminum, T/Box								K					
Remote, IP67, wall mount, aluminium (in preparation)								U					
Ex approval (depending on variant)													
Non-Ex									A				
ATEX (zone 1)									C				
IECEx (zone 1)									F				
US (cCSAus), Div 1									L				
Canada (cCSAus), zone 1									M				
NEPSI									N				
INMETRO (in preparation)									P				
KCC (in preparation)									Q				
EAC									U				
Local User Interface													
None (replacement sensor, DSL only)										0			
Blind										1			
Graphical, 240 × 160 pxl										3			

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, nylon, limited to -20 °C/-4 °F	**A02**
Metric, brass/Ni plated	**A05**
Metric, stainless steel	**A06**
NPT, no glands	**A11**
NPT, nylon, limited to -20 °C/-4 °F	**A12**
NPT, brass/Ni plated	**A15**
NPT, stainless steel	**A16**
Metric thread with M12 socket fitted	**A20**
Sofware functions and CT approvals	
None (replacement sensor)	**B10**
Standard	**B11**

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Selection and ordering data

	Order code
Further designs	
Please add "**-Z**" to Article No. and specify Order code(s).	
I/O configuration Ch1	
No output channel	**E00**
4 ... 20 mA HART Active/Passive (non-Ex)	**E02**
Ca 4 ... 20 mA HART active (Ex)	**E06**
Ca 4 ... 20 mA HART passive (Ex)	**E07**
PROFIBUS PA	**E10**
PROFIBUS DP (non-Ex)	**E11**
Modbus RTU RS 485	**E14**
I/O configuration Ch2, Ch3 and Ch4	
None	**F00**
• Non Ex: Sig O, None, None	**F01**
• Non Ex: Sig O, Sig I/O, None	**F02**
• Non Ex: Sig O, Sig I/O, Sig I/O	**F03**
• Non Ex: Sig O, Sig I/O, R	**F04**
• Non Ex: Sig O, R, R	**F05**
• Non Ex: Sig O, R, None	**F06**
• Ex: pSig O, None, None	**F11**
• Ex: pSig O, pSig I/O, None	**F12**
• Ex: pSig O, pSig I/O, pSig I/O	**F13**
• Ex: pSig O, pSig I/O, R	**F14**
• Ex: pSig O, R, R	**F15**
• Ex: pSig O, R, None	**F16**
• Ex: aSig O, None, None	**F21**
• Ex: aSig O, aSig I/O, None	**F22**
• Ex: aSig O, aSig I/O, aSig I/O	**F23**
• Ex: aSig O, aSig I/O, R	**F24**
• Ex: aSig O, R, R	**F25**
• Ex: aSig O, R, None	**F26**

Notes on I/O configurations:

a or p suffix: The I/O module is selected at ordering with either active or passive function.

Signal: The output can be selected for Current (0 or 4 to 20 mA), frequency or pulse function in the menu.

I: Discrete status input to the flowmeter. Functions are selected in the menu including 'Freeze output', 'Reset totalizer' (only CH3&4).

R: Relay output for discrete status reporting. Function is selected in the menu, including 'Error', 'High flow warning'.

The MLFB structure for FC330 systems must be filled to **this level**, including "**-Z**" options A.., B.., E.. and F.

	Order code
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**
Certificate NACE MR0175-2009 + MR0103-2012	**C04**
Certificate EN 10204-2.1 Declaration of compliance with the order	**C05**
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 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	

	Order code
Add-on options and accessories	
Please add "**-Z**" to Article No. and specify Order code(s).	
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**
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**
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**
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**
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**
Sensor options	
FCS300 marine approval (in preparation)	**S22**
SD-Card accessibility via USB	
(not allowed in USA by Patent)	
Mass storage enabled	**S30**
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 • for firmware V 4.0 and onwards	**A5E44030648**
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