

## Flow Measurement

### SITRANS FC (Coriolis)

#### Sensors and Flowmeter systems / SITRANS FC410 flowmeter for OEM customers

##### Overview



The compact flowmeter SITRANS FC410 is available in sizes DN 15, DN 25 and DN 50 for standard and hygienic applications.

Intended for integration into OEM skids, machines or pre-assembled plant systems. The sensor design is the marked leader in compact design which makes it easy to integrate in the compact skids. 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
- Markeds most compact sensor design
- 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 FC410 is ideal for integration in ship fuel efficiency and environmental measurement systems. 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 FC410 flowmeter system consists of a SITRANS FCS400 sensor and a SITRANS FCT010 transmitter always compact mounted.

##### Benefits

- It is truly compact and light, fitting neatly into dense piping arrangements
- Easy maintenance because modules can be exchanged rapidly
- Effective separation of measurement from plant vibration
- Reliable measurements due to high signal to noise ratio
- Shortest 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

## Selection and ordering data

SITRANS FC410 digital coriolis flowmeter with SITRANS FCS400 standard flow sensor compact or remote mounting with FCT010 transmitter		Article No. 7ME4611- ● ● ● ● ● - ● ● ● ●									
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.											
<b>Sensor size, connector size</b>											
DN 15, DN 6 (½", ¼")		3	E								
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 15, DN 25 (½", 1")		3	J								
DN 25, DN 25 (1", 1")		3	L								
DN 25, DN 32 (1", 1¼")		3	M								
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								
<b>Process connection</b>											
EN 1092-1 B1, PN 40			A	1							
EN 1092-1 B1, PN 63			A	2							
EN 1092-1 B1, PN 100			A	3							
EN 1092-1 D, PN 40			A	5							
EN 1092-1 D, PN 63			A	6							
EN 1092-1 D, PN 100			A	7							
EN 1092-1 D, PN 160 (max operation pressure 100 bar)			A	8							
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							
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, ASME, Form C (inch) (tri-clamp)			G	1							
DIN 11864-1 GS Form A Row A, Form A = O-ring type hygienic, aseptic thread connector, hygienic class H3			H	1							
DIN 11864-2 BF Form A Row A, Form A = O-ring type hygienic, aseptic flange connector, hygienic class H3			H	2							
DIN 11864-3 BKS Form A Row A, Form A = O-ring type hygienic, aseptic clamp connector, hygienic class H3			H	3							
ISO 2852 hygienic clamp			J	1							
ISO 2853 hygienic thread			J	2							
SMS 1145 hygienic screwed			K	1							
Quick connect			K	5							
JIS B2220/10K			L	2							
JIS B2220/20K			L	4							
JIS B2220/40K			L	6							
JIS B2220/63K			L	7							
<b>Wetted parts material</b>											
AISI 316L/1.4435/1.4404								1			
<b>Calibration/Accuracy class</b>											
0.1 % flow, 5 kg/m³ density									1		
0.1 % flow, 0.5 kg/m³ density									4		
<b>Mounting style, transmitter housing and material</b>											
None (replacement sensor)										A	
Compact, IP67 fieldmount, aluminum										D	
<b>Ex approval (depending on variant)</b>											
Non-Ex											A
ATEX (zone 1 / zone 21)											C
IECEx (zone 1 / zone 21)											F
US (cCSAus), Div 1											L
Canada (cCSAus), zone 1											M
NEPSI											N
INMETRO (in preparation)											P
KCs											Q
EAC Ex											U

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#### Selection and ordering data (continued)

SITRANS FC410 digital coriolis flowmeter with SITRANS FCS400 standard flow sensor compact or remote mounting with FCT010 transmitter	Article No. 7ME4611-	● ● ● ● ● - ● ● ● ●
Local User Interface		
Blind		1

	Order code
<b>Further designs</b>	
Please add "-Z" to Article No. and specify Order code(s).	
<b>Cable glands</b>	
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
<b>Software functions and CT approvals</b>	
Standard	B11
<b>I/O configuration Ch1</b>	
Modbus RTU RS 485	E14
<b>I/O configuration Ch2, Ch3 and Ch4</b>	
None	F00
<b>Add-on options and accessories</b>	
Please add "-Z" to Article No. and specify Order code(s).	
<b>Certificates</b>	
Pressure testing certificate CRN	C01
Pressure testing certificate PED	C02
Material certificate EN 10204-3.1 (wetted parts)	C05
Welding inspection certificate	C07
Factory certificate EN 10204 2.1	C10
Factory certificate EN 10204 2.2	C11
Cleaned for oil and grease	C50
<b>Customer selected calibration</b>	
Multi-point (5 flows × 2 pass) Flow 10 ... 100 % of $Q_{norm}$	Y60
Multi-point (10 flows × 1 pass) Flow 10 ... 100 % of $Q_{norm}$	Y61
Multi-point calibration (5 flows × 2 pass) Flow 2 ... 20 % of $Q_{norm}$	Y69
Multi-point calibration (5 flows × 2 pass) Flow 5 ... 50 % of $Q_{norm}$	Y71
Multi-point calibration (10 flows × 1 pass) Flow 2 ... 20 % of $Q_{norm}$	Y72
Multi-point calibration (10 flows × 1 pass) Flow 5 ... 50 % of $Q_{norm}$	Y73
<b>Cable</b>	
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 plugs mounted	L53
10 m (32.8 ft), sensor cable, 4 wire, with 2 pcs M12 plugs mounted	L55

## Selection and ordering data (continued)

	Order code
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 plugs 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
25 m (82 ft), sensor cable, 4 wire, with 1 pc M12 plugs 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 plugs 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 plugs mounted	L69
<b>Sensor options</b>	
FCS400 marine approval	S22
<b>Region-specific approvals and certificates</b>	
South Korea (KCC)	W28
<b>Additional data</b> Please add "-Z" to Article No. and specify Order code(s) and plain text.	
<b>Tag name</b>	
Tag name plate, stainless steel	Y17

## Operating instructions for SITRANS FC410

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](http://www.siemens.com/processinstrumentation/documentation)

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#### Technical specifications

SITRANS FC410	
<b>Sizes</b>	DN 15 (½") DN 25 (1") DN 50 (2")
<b>Accuracy</b>	± 0.10 %
<b>Repeatability</b>	± 0.05 %
<b>Flow range (liquids)</b> Q <sub>nom</sub> (water @ 1 bar pressure loss)	
• DN 15 (½")	3 700 kg/h (8 157 lb/h)
• DN 25 (1")	11 500 kg/h (25 353 lb/h)
• DN 50 (2")	52 000 kg/h (114 640 lb/h)
<b>Architecture</b>	Compact configuration
<b>Display</b>	Full graphical display, 240 × 160 pixels with selection of 6 languages
<b>Power supply</b>	12 ... 27 V DC; 1.1 W
<b>Materials</b>	
• Sensor	
- Wetted parts	316L stainless steel
- Enclosure	304 stainless steel
• Transmitter	Aluminum with corrosion-resistant coating class C4
<b>Enclosure rating</b>	IP67
<b>Pressure ratings</b>	
• Measuring tubes	
- 316L	100 bar (1 450 psi)
- Sensore enclosure	20 bar (DN 15, DN 25) 17 bar (DN 50)
• Sensor enclosure burst pressure	>160 bar (depending on size)
<b>Temperature ratings</b>	
• Process medium	
- DN 15 ... DN 50	-50 ... +200 °C (-58 ... +392 °F)
• Ambient	-40 ... +60 °C (-40 ... +140 °F) <sup>1)</sup>
<b>Process connections</b>	
• Flanges	EN 1092-1 B1, EN 1092-1 D, ANSI/ASME B16.5, JIS B 2220, DIN 11864-2
• Pipe threads	ASME B1.20 (NPT), ISO 228-1 G (BSPP), VCO Quick-connect
• Hygienic threads	DIN 11851, DIN 11864-1A, ISO 2853, SMS 1145
• Hygienic clamps	DIN 11864-3A, DIN 32676-C Tri-clamp, ISO 2852
<b>Approvals</b>	
• Hazardous area	ATEX, IECEx, EAC Ex, NEPSI, CSA, cCSA us, KCs
• Pressure equipment	PED, CRN
<b>NAMUR</b>	NAMUR-compliant (e.g. NE 21, NE 41, NE 107 and NE 132)
<b>I/O</b>	Up to 4 channels combining ana- log, relay or digital outputs and binary input
<b>Communication</b>	Modbus RTU (RS 485)
<b>EMC performance</b>	
• Emission	EN 55011/CISPR-11 (Class A)
• Immunity	EN/IEC 61326-1 (Industry)
<b>Mechanical load</b>	18 ... 400 Hz random The flowmeter will mechanically tolerate 3.17 g RMS in all directions. Flow accuracy cannot be guaranteed under all conditions.

<sup>1)</sup> If operating outdoors, avoid direct sunlight, particularly in warm climatic regions.