

Overview

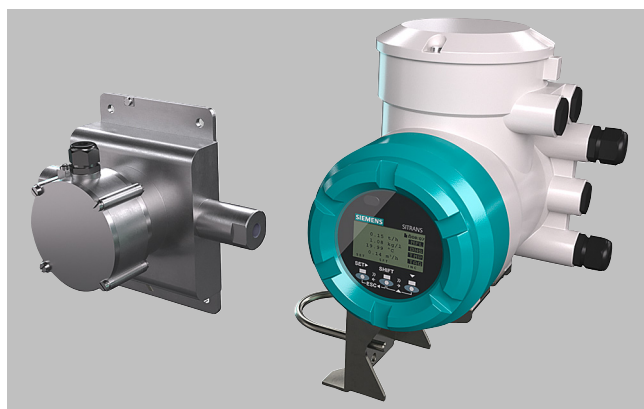
FC100 series is the precision Coriolis multi-parameter flowmeter for low flow applications

Comprising:

- Compact dual curved alloy 22 measuring tubes
- Process connection: flange, thread or hygienic clamp
- Nominal sizes: DN 1 to DN 8
- Connection sizes: DN 6 to DN 40 (¼" to 1½")
- Nominal flow rates: 21 kg/h to 950 kg/h (46 lb/h to 2 094 lb/h)

One FCS100 sensor and its partner FCT020 transmitter combine to form a complete FC120 Coriolis flowmeter.

One FCS100 sensor and its partner FCT040 transmitter combine to form a complete FC140 Coriolis flowmeter.

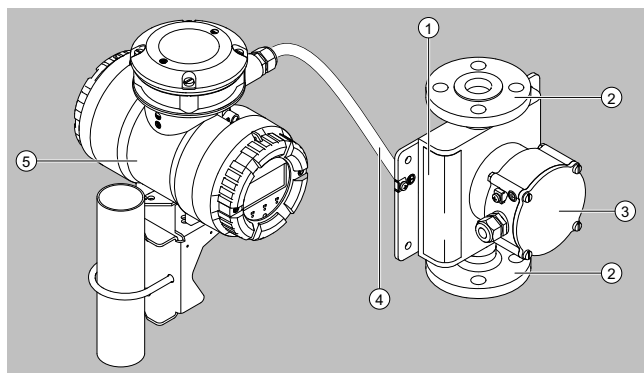


FCS100 sensor and FCT020/040 transmitter

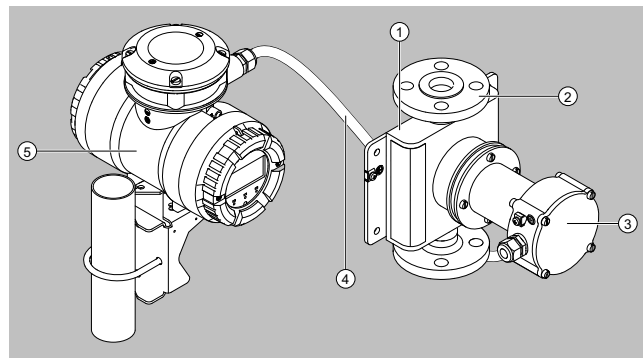
FCS100 sensors always combine with a remote transmitter via a connecting cable.

As a result, sensor and transmitter can be installed in different locations.

Design version	Process temperature range
Standard neck	Standard [-50 ... 150 °C (-58 ... 302 °F)]
Long neck	Standard [-50 ... 150 °C (-58 ... 302 °F)] Medium [-50 ... 260 °C (-58 ... 302 °F)]



FCS100 sensor (standard neck version) and remote transmitter



FCS100 sensor (long neck version) and remote transmitter

1	FCS100 sensor
2	Process connection
3	Sensor terminal box
4	Connecting cable
5	Transmitter

Compatible fluids

- Liquids
- Gases
- Mixtures, solutions, emulsions, suspensions and slurries

Primary measured variables

- Mass flow
- Density
- Temperature

Based on the primary measured quantities, the transmitter also calculates

- Volume flow
- Percent concentration (fraction) of a two-component mixture (FCT040 only)
- Partial component flow rate (net flow) of a mixture consisting of two components (FCT040 only)

The mass flow, volume flow, net flow measurements can be bi-directional.

Measurement variables for NTEP approval

- Mass flow uni-directional
- Volume flow uni-directional

Feature summary

- Possibly the most compact dual curve Coriolis flowmeter for precision measurement, starting at DN 1 nominal size
- Batching function with batch leakage detection and batch control by transmitter for precise dosing
- Accurate density measurement and up to four advanced concentration measurement data sets
- Sizes to suit pilot plants, R&D labs and high value fluid additives
- Wide choice of process connections, starting with DN 6 (¼ inch) for reduced installation efforts

SITRANS FC (Coriolis) 2023

Sensors and Flowmeter systems

SITRANS FC100 series

Overview (continued)

Specification summary of SITRANS FC transmitters

	FCT020: standard transmitter for routine applications	FCT040: advanced transmitter with extended functionality
Typical measurement performance	• Mass flow accuracy: $\pm 0.2\%$ (of rate) • Density accuracy: $\pm 4 \text{ kg/m}^3$ (0.25 lb/ft^3)	• Mass flow accuracy: $\pm 0.1\%$ (of rate) • Density accuracy: $\pm 0.5 \text{ kg/m}^3$ (0.03 lb/ft^3)
Features and functions	• Easy setup wizard • microSD card • Tube health check • Self-verification	• Easy setup wizard • microSD card • Tube health check • Self-verification • Batch control
Available measurements	• Mass flow • Density • Temperature • Volume flow	• Mass flow • Density • Temperature • Volume flow • Concentration (fraction) • Viscosity • Heat (thermal) energy
Digital communication options	• HART • MODBUS	• HART • MODBUS • PROFIBUS PA • PROFINET

Benefits

Product features aligned to user value targets

User value targets	Siemens SITRANS FC features and solutions
Engineering and project management - Reduce engineering investment - Cut specification effort - Minimize project expenditure - Decrease the spending on each measurement point - Eliminate function duplication - Reduce number of suppliers	- Siemens project teams offer complimentary evaluation of customer specifications, provided by regional and HQ experts - Simple product selection using intuitive sizing software - One SITRANS FC device can typically provide three to six individual measurements, all transmitted via digital communication, when planned during pre-project design - Added value functions: batch control, viscosity, thermal energy, concentration measurement (Fraction) of two-component solutions and pressure compensation
Installation - Reduce footprint and transport outlay of OEM machinery - Lower installation complexity - Avoid costly modifications of existing plant	- Can be installed in horizontal or vertical (self-draining) pipes - Twin tube bend design delivers strong signal to noise characteristic resistant to external influence, so install in tight spaces with no inlet and outlet restrictions - Adaptable to existing pipes: typically, three or four connection sizes for each sensor size - Flexible selection of traditional inputs, outputs and digital communications
Configuration and commissioning - Shorter commissioning schedules with lower costs - Faster start-up with reduced outgoings	- Easy setup wizard delivers working meters straight after start-up - microSD card stores sensor calibration data and default setup - Simple configuration using Process Device Manager (PDM) - Siemens device-specific faceplates simplify operation in plantwide control systems
Efficient plant operation - Improve finished product consistency to reduce waste - Keep process performance when scaling production up or down - Optimize process control - Improve finished product quality enabling higher levels of profit - Reduce downtime with fast resolution of process upsets - Improve asset performance	- SITRANS FC meters are calibrated in rigs accredited to EN/ISO 17025 to ensure consistently high performance of flow, density, and concentration measurements - First-class zero-point quality maintains high accuracy into the low flow region - High sensitivity and intelligent dynamic range keeps the measurement active in demanding high fluid damping cases - Designed-in resilience to process extremes - Self-verification alerts to potential performance issues due to unplanned process events, for example gas or vapor breakout or solid deposits building up in the tubes - Diagnostic data via local menu or PDM is backed by Siemens applications experts - Intelligent Siemens SITRANS IQ apps for continuing asset evaluation
Maintenance and asset management - Optimize technician training - Reduce cost of spare parts - Increase predictive maintenance - Reduce production downtime and associated costs - Decrease unplanned maintenance - Maximize asset value	- Simple product design with interchangeable modular parts - microSD card loads sensor-specific data to deliver fast service exchange - Self-verification: tube health check monitors key diagnostics, including tube stiffness, driver and pickups; the user defines verification frequency and alarm behavior - Verification results indicate whether preventive maintenance action is required - Siemens SIMATIC Maintenance Station uses cyclical acquisition to provide life cycle reports and intelligent preventive maintenance strategies

Benefits (continued)

User value targets	Siemens SITRANS FC features and solutions
Industry compliance - Cut effort required to comply with Industry-specific demands - Reduce resource needed to maintain regulatory compliance	- Food and beverage sector covered with EHEDG and 3-A approvals, polished tubes - Global hazardous area approvals for international plant duplications - Common and emerging digital networks covered: HART, PROFIBUS PA, PROFINET - Class-leading safety: SIL2/SIL3, secondary containment, PED, NAMUR NE95

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Sensors and Flowmeter systems

SITRANS FC100 series

Application

Application examples for SITRANS FC multi-parameter meters across diverse industry sectors

Chemical and petrochemical - Bulk chemicals - Industrial gases - Polymers - Agrochemicals - Fine chemicals - Aroma chemicals	- Transfer, loading and unloading of bulk chemicals - Concentration control of acids and alkalis (process optimization) - Accurate mass or volume flow of feed chemicals to in-line blending systems - Accurate mass flow and density (quality) of reactor fluid feeds catalyst - Chemical recovery - Mass balance optimization - Compressed and cryogenic gases - Lubricating oil blending and dosing - High accuracy measurement of critical fluid components - Low flow control in pilot plants and R&D facilities
Food and beverage - Food processing - Dairies - Breweries - Distilleries - Confectionary - Soft drinks - Animal feed plants - OEM	- Accurate bulk transfer (mass or volume) of all dairy products: milk, cream, whey and yoghurt - Fat concentration in cream - Flow, density, temperature and concentration (Plato) during all fermentation processes - Flow, density, temperature and sugar concentration (Brix) in soft drink processing - Distilled spirits – % alcohol by volume (ABV), liters of pure alcohol, volume transfer, blending, batch and column still optimization and energy management, cask filling, tanker loading - Flow and density of fruit juices and pulps - Mixing and inventory control of confectionary ingredients, e.g. chocolate, syrup, oils, flavors - Metering pump control - Oils, fats enzymes dosing in animal feed plants - CO₂ dosing - CIP liquids - Bottling of beer, spirits, wine, soft drinks, etc. - Bulk sugar processing – molasses, sugar slurries, density, Brix of finished product
Oil and gas - Offshore/onshore - Upstream/downstream - Pipelines - Distribution networks - Refineries - Skid manufacturers	- Loading/unloading of hydrocarbons (e.g. crude oil, bitumen) from/to ship, road tanker, rail car - High pressure chemical injection - High pressure low flow gas - Net oil computing - Gas void fraction - Filling of gas bottles - Furnace control - Test separators - LPG, natural gas hydration - Well-head water-cut monitoring - All hydrocarbon fluids in refineries - Metrology, custody transfer - Drilling mud - Oil well cementing and hydrofracturing

Application (continued)

Application examples for SITRANS FC multi-parameter meters across diverse industry sectors

Life sciences - Pharmaceutical - Bio	- High accuracy flow and batching of bioreactor feeds - Solvent flow rate, density and batching - Flow of demineralized and deionized water - Solvents and fish oils used in high grade omega 3 oils - Precision coatings - Vacuum thin film coating
Household and personal care - Detergents - Cosmetics	- Blending and batching of detergent ingredients - Tanker loading and unloading - Salt concentration - Reliable measurement of aerated liquids
Automotive and aeronautical - Vehicle manufacturing - Paint - Engine testing - OEM	- Fuel injection nozzle and pump testing - Filling of under bonnet fluid reservoirs, air conditioning, coolant - Fuel flow and density measurement in engine test beds - Checking for air in oil using high accuracy density measurement - Paint spray robots – requires accurate and fast measurements - Aircraft fuel loading (kerosene) - High pressure flow used in turbine blade manufacture
Power and energy - Renewable - Hydrogen	- Boiler fuel flow and burner control - Turbine fuel flow - Glycol flow and concentration - Bioethanol
Marine - OEM - Shipbuilders	- Fuel consumption management - Boiler control - Bunkering management - Density used to indicate fuel quality
Pulp, paper and textiles	Accurate dosing of dyes and chemicals
Water and environmental	- Dosing of chemicals for water treatment - Chemical concentration for water quality control

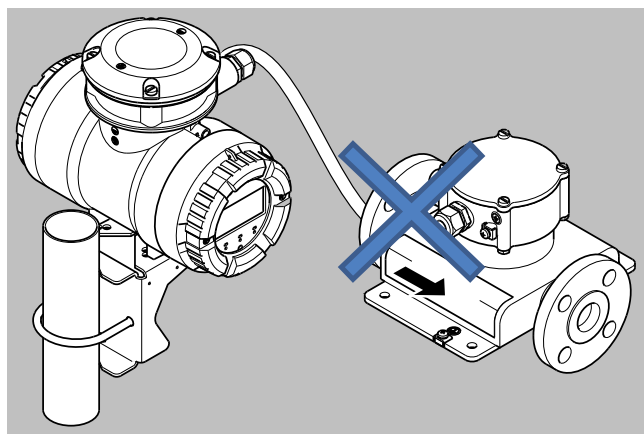
Function

Installation guidelines

FC100 series flow meters can be mounted horizontally, vertically and at an incline. The measuring tubes should be filled with the fluid during flow measurement as entrained gas may result in errors in measurement. Straight pipe runs at inlet or outlet are usually not required.

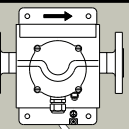
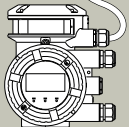
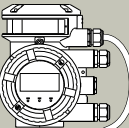
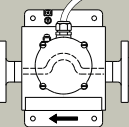
Avoid the following installation locations and positions:

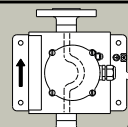
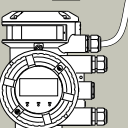
- Measuring tubes as highest point in piping when measuring liquids
- Measuring tubes as lowest point in piping when measuring gases
- Immediately in front of a free pipe outlet in a downpipe
- Lateral positions



Avoid measuring tubes in sideways position resulting in possible non-homogeneous fluid separation.

Sensor installation position related to type of fluid

Installation position	Fluid	Description
	Liquid	• Horizontal • Measuring tubes below process pipe • Avoids accumulation of entrained gas
		
	Gas	• Horizontal • Measuring tubes above process pipe • Accumulation of liquid or condensate is less likely
		

Installation position	Fluid	Description
	Gas / liquid	• Vertical • Upwards direction of flow • In liquid application accumulation of entrained gas is avoided • This position allows self-draining in liquid flow
		

Functions available at time of ordering: selectable for both FCT020 and FCT040 transmitters

Tube health check

(software functions option code: S12)

Tube health check monitors key diagnostics, including tube stiffness, driver and pickups. Self-verification alerts to potential performance issues due to unplanned process events, e.g. gas or vapor breakout or solid deposits building up in the tubes. The user defines verification frequency and alarm behavior. Verification results indicate whether preventive maintenance action is required.

Functions available at time of ordering: selectable for FCT040 transmitters only

Standard concentration measurement

(software functions option code: S16)

Used for concentration measurements of emulsions or suspensions when density of the fluid involved depends only on temperature.

The standard concentration measurement can be used for many low-concentration solutions if there is only minor interaction between the liquids or if the miscibility is negligible.

Petroleum measurement function

(software functions option code: S14)

The Net Oil Computing (NOC) function provides real-time measurements of water cut and includes American Petroleum Institute (API) correction according to API MPMS Chapter 11.1.

Oil sometimes contains entrained gas. SITRANS FC meters measure the density of the combined emulsion oil and gas, which is lower than the oil density. The NOC function includes a Gas Void Fraction (GVF) parameter to be set.

Fraction (advanced concentration) measurement

(fraction option codes: Gxx)

Up to 4 pre-configured fraction ranges can be selected using the SITRANS FC fraction option order codes from the table below.

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Sensors and Flowmeter systems

SITRANS FC100 series

Function (continued)

Order code	Fraction description	Type	Range	Units	Temperature range
G01	Sugar / water (sucrose solution)	Mass fraction	0 ... 85	°Bx	0 ... 80 °C (32 ... 176 °F)
G02	NaOH / water (sodium hydroxide solution)	Mass fraction	2 ... 50	%	0 ... 100 °C (32 ... 212 °F)
G03	KOH / water (potassium hydroxide solution)	Mass fraction	0 ... 60	%	54 ... 100 °C (129 ... 212 °F)
G04	NH ₄ NO ₃ / water (ammonium nitrate solution)	Mass fraction	1 ... 50	%	0 ... 80 °C (32 ... 176 °F)
G05	NH ₄ NO ₃ / water (ammonium nitrate solution)	Mass fraction	20 ... 70	%	20 ... 100 °C (68 ... 212 °F)
G06	HCl / water (hydrochloric acid)	Mass fraction	22 ... 34	%	20 ... 40 °C (68 ... 104 °F)
G07	HNO ₃ / water (nitric acid)	Mass fraction	50 ... 67	%	10 ... 60 °C (50 ... 140 °F)
G09	H ₂ O ₂ / water (hydrogen peroxide)	Mass fraction	30 ... 75	%	4 ... 44 °C (39 ... 111 °F)
G10	Ethylene glycol / water (homogenous mixture)	Mass fraction	10 ... 50	%	-20 ... +40 °C (-4 ... +104 °F)
G11	Amylum (starch) / water (paste-like suspension)	Mass fraction	33 ... 43	%	35 ... 45 °C (95 ... 113 °F)
G12	Methanol / water (homogenous mixture)	Mass fraction	35 ... 60	%	0 ... 40 °C (32 ... 104 °C)
G20	Alcohol / water (homogenous mixture)	Volume fraction	55 ... 100	%	10 ... 40 °C (50 ... 104 °F)
G21	Sugar / water (sucrose solution)	Mass fraction	40 ... 80	°Bx	75 ... 100 °C (167 ... 212 °F)
G30	Alcohol / water (homogenous mixture)	Mass fraction	66 ... 100	%	15 ... 40 °C (59 ... 104 °F)
G37	Alcohol / water (homogenous mixture)	Mass fraction	66 ... 100	%	10 ... 40 °C (50 ... 104 °F)

The user is responsible to ensure chemical compatibility of the material of the wetted parts with the measured chemicals. For strong acids or oxidizers, a variant with wetted parts made of alloy 22/2.4602 is advised.

Batching function

(software functions option code: S13)

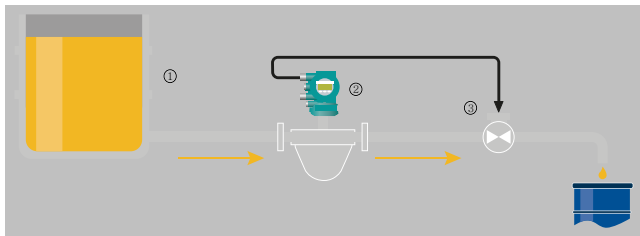
Batching and filling processes are found in many industries: food and beverage, cosmetic, pharmaceutical, chemical and oil and gas.

SITRANS FCT040 transmitters offer an integrated batching function to carry out the task. A self-learning algorithm optimizes the process to provide accurate and reliable results.

The function supports two filling modes:

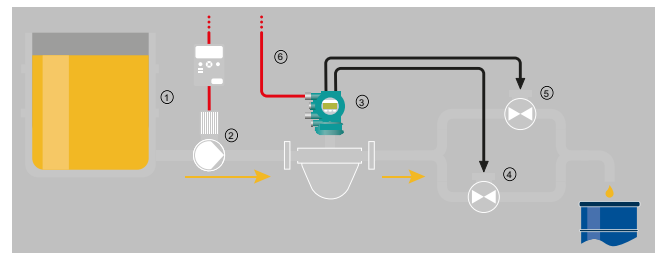
- Single-stage batch control with single valve
- Two-stage batching to control two valves for more accurate filling

The error management function allows the user to set alarms and warnings according to the application.



Example diagram for 1-stage batching

- | | |
|---|--------------|
| 1 | Storage tank |
| 2 | SITRANS FC |
| 3 | Valve |



Example diagram for 2-stage batching

- | | |
|---|--------------|
| 1 | Storage tank |
| 2 | Pump |
| 3 | SITRANS FC |
| 4 | Valve A |
| 5 | Valve B |
| 6 | HART |

Function (continued)Viscosity function

(software functions option code: S15)

Viscosity is sometimes used as reference value to activate other processes like fluid heating systems.

The viscosity estimation is calculated based on a comparison between measured pressure loss and a calculated value between two points of the pipe. A differential pressure transmitter is required to use this function. Its output is connected to the analog input of the FCT040. Based on an iteration process, a viscosity value is determined.

Measurement of heat quantity

(software functions option code: S11)

This function calculates the total calorific energy of the measured fluid.

Either a constant value of the calorific value of the fluid can be used, or an additional device like a gas chromatograph can provide the instantaneous calorific value via the analog input of the FCT040 transmitter.

Based on the fluid flow, the total calorific energy of the fluid is calculated.

For questions regarding a specific application, contact your regional Siemens Measurement Intelligence team.

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Sensors and Flowmeter systems

SITRANS FC100 series

Selection and ordering data

SITRANS FC120/140 (Low flow)	Article No. 7ME441	Order code
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Transmitter variant		
None (spare sensor)	0	
Coriolis sensor FCS100 with transmitter FCT020	2	
Coriolis sensor FCS100 with transmitter FCT040	4	
SITRANS FC spare part transmitter, no sensor included	9	G 3 Y
Sensor size / Connector size		
No sensor (SITRANS FCT transmitter as spare part)	0 A	
Sensor size DN 1 with connection size 1/4"	1 A	
Sensor size DN 1 with connection size 3/8"	1 B	
Sensor size DN 1 with connection size 1/2" DN 15	1 C	
Sensor size DN 1 with connection size 3/4"	1 D	
Sensor size DN 2 with connection size 1/4"	2 A	
Sensor size DN 2 with connection size 3/8"	2 B	
Sensor size DN 2 with connection size 1/2" DN 15	2 C	
Sensor size DN 2 with connection size 3/4"	2 D	
Sensor size DN 2 with connection size 1" DN 25	2 E	
Sensor size DN 2 with connection size 1 1/2" DN 40	2 F	
Sensor size DN 4 with connection size 1/4"	3 A	
Sensor size DN 4 with connection size 3/8"	3 B	
Sensor size DN 4 with connection size 1/2" DN 15	3 C	
Sensor size DN 4 with connection size 3/4"	3 D	
Sensor size DN 4 with connection size 1" DN 25	3 E	
Sensor size DN 4 with connection size 1 1/2" DN 40	3 F	
Sensor size DN 6 with connection size 1/4"	4 A	
Sensor size DN 6 with connection size 3/8"	4 B	
Sensor size DN 6 with connection size 1/2" DN 15	4 C	
Sensor size DN 6 with connection size 3/4"	4 D	
Sensor size DN 6 with connection size 1" DN 25	4 E	
Sensor size DN 6 with connection size 1 1/2" DN 40	4 F	
Sensor size DN 8 with connection size 1/4"	5 A	
Sensor size DN 8 with connection size 3/8"	5 B	
Sensor size DN 8 with connection size 1/2" DN 15	5 C	
Sensor size DN 8 with connection size 3/4"	5 D	
Sensor size DN 8 with connection size 1" DN 25	5 E	
Sensor size DN 8 with connection size 1 1/2" DN 40	5 F	
Process connection		
No connection (SITRANS FCT transmitter as spare part)	A 0	
EN flange PN 40, suitable for EN 1092-1 type B1, raised face (RF)	A 1	
EN flange PN 100, suitable for EN 1092-1 type B1, raised face (RF)	A 3	
EN flange PN 40, suitable for EN 1092-1 type D, groove	A 5	
EN flange PN 100, suitable for EN 1092-1 type D, groove	A 7	
EN flange PN 40, suitable for EN 1092-1 type E, spigot	B 1	
EN flange PN 100, suitable for EN 1092-1 type E, spigot	B 3	
EN flange PN 40, suitable for EN 1092-1 type F, recess	B 5	
EN flange PN 100, suitable for EN 1092-1 type F, recess	B 7	
ASME flange class 600, suitable for ASME B16.5, ring joint (RJ)	C 3	
ASME flange class 900, suitable for ASME B16.5, ring joint (RJ)	C 4	
ASME flange class 1500, suitable for ASME B16.5, ring joint (RJ)	C 5	
ASME flange class 150, suitable for ASME B16.5, raised face (RF)	D 1	
ASME flange class 300, suitable for ASME B16.5, raised face (RF)	D 2	
ASME flange class 600, suitable for ASME B16.5, raised face (RF)	D 3	
ASME flange class 900, suitable for ASME B16.5, raised face (RF)	D 4	
ASME flange class 1500, suitable for ASME B16.5, raised face (RF)	D 5	
Process connection with internal thread G	E 1	
Process connection with internal thread NPT	E 3	
Clamp process connection according to DIN 32676 series A	G 2	

Selection and ordering data (continued)

SITRANS FC120/140 (Low flow)	Article No. 7ME441	Order code
Clamp process connection according to DIN 32676 series C (Tri-Clamp)	G 6	
JIS flange 10K, JIS B 2220	L 2	
JIS flange 20K, JIS B 2220	L 4	
Special design request	Z 1	K 1 Y
Tube material (wetted)		
Process connection material and max operational temperature		
None (SITRANS FCT transmitter as spare part)	0	
Tube material C22, process connection material 316L, standard: -50 ... 150 °C (-58 ... 302 °F)	1	
Tube material C22, process connection material 316L, mid-range: -50 ... 260 °C (-58 ... 500 °F)	2	
Calibration		
No calibration	0	
Massflow 0.1%, density 0.5 g/l	1	
Massflow 0.1%, density 1 g/l	2	
Massflow 0.1%, density 4 g/l	3	
Massflow 0.1%, density 8 g/l	4	
Massflow 0.15% density 20 g/l	5	
Massflow 0.2%, density 4 g/l	6	
Massflow 0.2%, density 8 g/l	7	
Massflow 0.2%, density 20 g/l	8	
Accuracy for gas please select below	9	
Massflow gas 0.75%		N 1 A
Massflow gas 0.5%		N 2 A
Mounting style, transmitter housing and material		
Remote type with "urethane-cured polyester powder coating" coated aluminum transmitter housing and standard neck sensor	C	
Remote type with "urethane-cured polyester powder coating" coated aluminum transmitter housing and long neck sensor	D	
Remote type with "corrosion protection coating" coated aluminum transmitter housing and standard neck sensor	E	
Remote type with "corrosion protection coating" coated aluminum transmitter housing and long neck sensor	F	
Remote type stainless steel transmitter and standard neck sensor	G	
Remote type stainless steel transmitter and long neck sensor	H	
Ex approvals		
None		A
ATEX, explosion group IIC and IIIC		B
ATEX, explosion group IIB and IIIC		C
IECEX, explosion group IIC and IIIC		D
IECEX, explosion group IIB and IIIC		E
FM, groups A B C D E F G		H
FM, groups C D E F G		J
NEPSI, explosion group IIC and IIIC		M
NEPSI, explosion group IIB and IIIC		N
Local user interface		
Spare sensor without transmitter, no display applied		0
No display		1
With display		3

	Order code
Further designs	
Please add "-Z" to Article No. and specify order code(s).	
Cable entries (for customer cable gland holes - no cable glands supplied)	
Metric, no glands (M20)	A10
NPT, no glands (1/2")	A11
Metric, no glands (M20) steel armored cable	A20
NPT, no glands (1/2") steel armored cable	A21

	Order code
Sensor housing material	
None (SITRANS FCT transmitter as spare part)	B00
Stainless steel 1.4301/304, 1.4404/316L	B01
Stainless steel 1.4404/316L	B02
I/O Configuration Ch1	
None (SITRANS FCT transmitter as spare part)	E00
4-20 mA HART active	E06
4-20 mA HART passive	E07
PROFIBUS PA	E10

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Sensors and Flowmeter systems

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Selection and ordering data (continued)

Order code		Order code	
I/O Configuration Ch2, Ch3 and Ch4		WPS according to DIN EN ISO 15809-1; WPQR according to DIN EN ISO 15814-1; WQC according to DIN EN 287-1 or DIN EN ISO 8908-4	
Spare sensor without transmitter, all communication types and I/Os apply	F00		C36
1 passive current output, 1 passive pulse or status output	F01	Welding procedures and certificate according to ASME IX	C37
1 passive current output, 2 passive pulse or status outputs	F02	X-ray inspection of flange weld seam according to DIN EN ISO 17636-1/B, evaluation according to AD 2000 HP 5/3 and DIN EN ISO 5817/C, including certificate	C33
1 passive current output, 1 passive pulse or status outputs, 1 passive NAMUR pulse or status output	F03	X-ray test according to ASME V	C34
1 passive current output, 2 passive NAMUR pulse or status outputs	F04	Dye penetrant test of process connection weld seams according to DIN EN ISO 3452-1, including certificate	C38
1 passive pulse or status output	F11	Dye penetrant test of flange welding according to ASME V, including certificate	C39
2 passive pulse or status outputs, 1 passive status output	F12	Positive Material Identification of wetted parts, including certificate (Inspection Certificate 3.1 according to EN 10204)	C15
2 passive pulse or status outputs, 1 voltage-free status input	F13	Connecting cable type and length	
2 passive pulse or status outputs, 1 active current input	F14	without standard connecting cable	L50
2 passive pulse or status outputs, 1 passive current input	F15	5 meter (16.4 ft) remote connecting cable terminated standard gray / Ex blue	L51
1 passive pulse or status output, 1 passive current output, 1 active current input	F16	10 meter (32.8 ft) remote connecting cable terminated standard gray / Ex blue	L54
1 passive pulse or status output, 1 passive current output, 1 passive current input	F17	15 meter (49.2 ft) remote connecting cable terminated standard gray / Ex blue	L57
1 passive pulse or status output, 1 voltage-free status input, 1 active current input	F18	20 meter (65.6 ft) remote connecting cable terminated standard gray / Ex blue	L60
1 passive pulse or status output, 1 voltage-free status input, 1 passive current input	F19	30 meter (98.4 ft) remote connecting cable terminated standard gray / Ex blue	L63
1 passive pulse or status output, 1 active pulse or status output, 1 voltage-free status input	F20	without fire retardant connecting cable	L70
1 passive pulse or status output, 1 active pulse or status output with pull-up resistor, 1 voltage-free status input	F21	5 meter (16.4 ft) remote fire retardant connecting cable not terminated	L71
1 active current output, 2 passive pulse or status outputs	F22	10 meter (32.8 ft) remote fire retardant connecting cable not terminated	L74
1 active current output, 1 passive pulse or status output, 1 voltage-free status input	F23	15 meter (49.2 ft) remote fire retardant connecting cable not terminated	L77
1 passive pulse or status output	F31	20 meter (65.6 ft) remote fire retardant connecting cable not terminated	L80
2 passive pulse or status outputs	F32	30 meter (98.4 ft) remote fire retardant connecting cable not terminated	L83
1 passive pulse or status output, 1 active current input	F33	SW functions	
1 passive pulse or status output, 1 passive current input	F34	Heat measurement	S11
1 passive pulse or status output, 1 active pulse or status output	F35	Tube health check	S12
1 passive pulse or status output, 1 active pulse or status output with pull-up resistor	F36	Batching and filling function	S13
1 passive pulse or status output, 1 active current output	F37	Netoil computing	S14
1 passive pulse output	F41	Viscosity computing function for liquids	S15
Output CH1 intrinsically safe, 1 passive pulse output	F42	Standard concentration measurement	S16
Certificates		Marine approval	
Declaration of compliance with the order 2.1 according to EN 10204	C11	Marine approved DNV, ABS, KR piping class 2	S22
Quality Inspection Certificate (Inspection Certificate 3.1 according to EN 10204)	C40	Marine approved DNV, ABS, KR piping class 3	S23
Certificate of Marking Transfer and Raw Material Certificates (Inspection Certificate 3.1 according to EN 10204), including IGC and conform to NACE MR0175 and MR0103	C13	Marine approved LR, MR, TAC piping class 2	S24
Hydrostatic Pressure Test Certificate (Inspection Certificate 3.1 according to EN 10204)	C18	Marine approved LR, MR, TAC piping class 3	S25
Degreasing of wetted surfaces according to ASTM G93-03 (Level C), including test report	C54	Marine approved BV piping class 2	S26
		Marine approved BV piping class 3	S27
		Mounting	
		2" pipe mounting bracket for sensor	S30
		Namur built-in length according to NE132	S31

Selection and ordering data (continued)

	Order code
Insulation	
Insulation	J10
Insulation and heat tracing, ½" ASME class 150, raised face (RF)	J12
Insulation and heat tracing, ½" ASME class 300, raised face (RF)	J13
Insulation and heat tracing, EN DN 15, PN 40	J14
Insulation, heat tracing with ventilation, ½" ASME class 150, raised face (RF)	J16
Insulation heat tracing with ventilation, ½" ASME class 300, raised face (RF)	J17
Insulation heat tracing with ventilation, EN DN 15, PN 40	J18
Country specific delivery	
Delivery to China including China RoHS mark	W21
Delivery to Korea including KC mark	W22
Delivery to UK	W27
Customer selected fraction	
PIA: Please select four options	
Sugar / Water 0 ... 85 °Bx, 0 ... 80 °C (32 ... 176 °F)	G01
NaOH / Water 2 ... 50 WT%, 0 ... 100 °C (32 ... 212 °F)	G02
KOH / Water 0 ... 60 WT%, 54 ... 100 °C (129 ... 212 °F)	G03
NH ₄ NO ₃ / Water 1 ... 50 WT%, 0 ... 80 °C (32 ... 176 °F)	G04
NH ₄ NO ₃ / Water 20 ... 70 WT%, 20 ... 100 °C (68 ... 212 °F)	G05
HCl / Water 22 ... 34 WT%, 20 ... 40 °C (68 ... 104 °F)	G06
HNO ₃ / Water 50 ... 67 WT%, 10 ... 60 °C (50 ... 140 °F)	G07
H ₂ O ₂ / Water 30 ... 75 WT%, 4 ... 44 °C (39 ... 111 °F)	G09

	Order code
Ethylene Glycol / Water 10 ... 50 WT%, -20 ... +40 °C (-4 ... 104 °F)	G10
Amylum = Starch / Water 33 ... 43 WT%, 35 ... 45 °C (95 ... 113 °F)	G11
Methanol / Water 35 ... 60 WT%, 0 ... 40 °C (32 ... 104 °F)	G12
Alcohol / Water 55 ... 100 VOL%, 10 ... 40 °C (50 ... 104 °F)	G20
Sugar / Water 40 ... 80 °Bx, 75 ... 100 °C (167 ... 212 °F)	G21
Alcohol / Water 66 ... 100 WT%, 15 ... 40 °C (59 ... 104 °F)	G30
Alcohol / Water 66 ... 100 WT%, 10 ... 40 °C (50 ... 104 °F)	G37
Tag name	
Tag name plate, SS (max. 16 characters)	Y11
HART Tag No. (max. 8 characters)	Y25
HART Tag No. (max. 32 characters)	Y26
PROFIBUS PA NODE ADDRESS (4 characters HEX)	Y28
PROFIBUS PA SOFTWARE TAG (max. 32 characters)	Y29
Customer installation length	
Customer installation length (mm)	Y30
Special versions	
ID-number of special design	Y99

SITRANS FC (Coriolis) 2023

Sensors and Flowmeter systems

SITRANS FC100 series

Technical specifications

Mass flow rate of liquids

The mass flow rate characteristics of SITRANS FC meters are defined by the values of zero stability, Q_{flat} , Q_{nom} and Q_{max} .

Zero stability is the maximum allowable flow rate value that can be displayed at zero flow under reference conditions. It is a good indicator of the meter performance as flow rates reduce and approach zero.

- Q_{flat} is the mass flow rate above which the base accuracy is maintained (0.1% when using FCT040 transmitters).

- Q_{nom} is the nominal mass flow rate of water at reference conditions that would result in a pressure drop of 1 bar (15 psi).

- Q_{max} is the recommended maximum mass flow rate for each sensor size.

For questions regarding expected performance in specific applications, please contact your regional Siemens Measurement Intelligence team.

Flow rate summary by FCS100 sensor size

Nominal size	Zero stability		Q_{flat}		Q_{nom}		Q_{max}	
	kg/h	lb/h	kg/h	lb/min	kg/h	lb/min	kg/h	lb/min
DN 1	0.003	0.007	2.52	0.092	21.0	0.0771	40.0	1.47
DN 2	0.005	0.011	4.50	0.165	45.0	1.65	94.0	3.45
DN 4	0.009	0.020	14.0	0.514	170	6.24	300	11.0
DN 6	0.019	0.042	30.0	1.10	370	13.6	600	22.0
DN 8	0.048	0.106	79.0	2.90	950	34.9	1 500	55.1

Performance summary by FCS100 sensor size and transmitter type

Sensor size			DN 1	DN 2	DN 4	DN 6	DN 8
Mass flow (liquids)							
Accuracy	% (of rate)	FCT020	± 0.2	± 0.2	± 0.2	± 0.2	± 0.2
	% (of rate)	FCT040	± 0.2	± 0.2	± 0.1	± 0.1	± 0.1
Zero stability	kg/h (lb/h)		± 0.003 (0.007)	± 0.005 (0.011)	± 0.009 (0.02)	± 0.019 (0.042)	± 0.048 (0.106)
Density (liquids)							
Accuracy	kg/m ³ (lb/ft ³)	FCT020	± 20 (1.25)	± 8 (0.5)	± 4 (0.25)	± 4 (0.25)	± 4 (0.25)
	kg/m ³ (lb/ft ³)	FCT040	± 20 (1.25)	± 8 (0.5)	± 1 (0.06)	± 0.5 (0.03)	± 0.5 (0.03)
Mass flow (gases)							
Accuracy	% (of rate)	FCT020	± 0.75	± 0.75	± 0.75	± 0.75	± 0.75
	% (of rate)	FCT040	± 0.5	± 0.5	± 0.5	± 0.5	± 0.5
Temperature							
Accuracy	°C (°F)		± 0.5 (0.9)	± 0.5 (0.9)	± 0.5 (0.9)	± 0.5 (0.9)	± 0.5 (0.9)

The accuracy values in the table above are based on reference conditions at the time of calibration and represent the combined measurement uncertainties including sensor, electronic and pulse output interface.

Liquid density calibration is performed when density accuracy of 0.5 kg/m³ (0.03 lb/ft³) is selected in the model code.

Mass flow calibration and density adjustment for liquids

Siemens SITRANS FC Coriolis meters are calibrated in rigs accredited according to the international standard DIN EN ISO/IEC 17025:2018. Each flowmeter comes with a standard calibration certificate.

Mass flow calibration takes place at reference conditions. Specific values are listed in the standard calibration certificate.

Mass flow calibration reference conditions	
Fluid	Water
Density	900 ... 1 100 kg/m ³ (56 ... 69 lb/ft ³)
Fluid temperature	10 ... 35 °C (50 ... 95 °F), average temperature: 22.5 °C (72.5 °F)
Ambient temperature	10 ... 35 °C (50 ... 95 °F)
Process pressure	1 ... 5 bar (15 ... 73 psi)

Density calibration reference conditions	
Flow condition	Fully developed flow profile
Fluid densities used to obtain density calibration constants	700 kg/m ³ (44 lb/ft ³) 1 000 kg/m ³ (62 lb/ft ³) 1 650 kg/m ³ (103 lb/ft ³)
Fluid temperature	20 °C (68 °F)
Determination of temperature compensation coefficients	20 ... 80 °C (68 ... 176 °F)

Analog output performance specification

Typical additional uncertainty when using the analog current output:

± 0.04% at a nominal mid-range current output of 12 mA, which includes the effects of:

Output adjustment, linearity, power supply variation, load resistance variation, short-term and long-term drift for one year and ambient temperature effect on the transmitter in the range 20 °C ± 30 °C (14 ... 122 °F).

Process pressure effect on flow measurement performance

Changes in operating pressure have a small effect on the mass flow measurement performance. When the pressure changes are very large this effect can be corrected by a dynamic pressure input or a fixed process pressure.

Technical specifications (continued)

Sensor size	Additional flow measurement errors due to change in operating pressure from reference pressure	
	in % of rate per 1 bar variation	in % of rate per 1 psi variation
DN 1	none	none
DN 2	none	none
DN 4	none	none
DN 6	-0.0011	-0.00008
DN 8	-0.0010	-0.00007

Process temperature effect

For mass flow measurement, process fluid temperature effect is defined as the change in sensor flow accuracy due to process fluid temperature change, away from the 20 °C (68 °F) reference condition. Variation in process temperature influences the measuring tube characteristics and this is compensated for using the built-in PT 1000 temperature sensor.

A small flow uncertainty remains in the compensation circuit defined below.

Uncertainty due to process temperature change: $\pm 0.001\%$ of mass flow rate per °C ($\pm 0.00056\%$ of mass flow rate per °F)

Temperature effect on zero

Temperature effect on the mass flow zero-point quality can be corrected by zeroing at the process fluid temperature.

Process conditions**Process fluid temperature range**

Process fluid temperature range	Nominal temperature	Design considerations
-50 ... +150 °C (-58 ... +302 °F)	Standard	All process connections except DIN 32676 Class A and C hygienic clamps
-10 ... +140 °C (14 ... 284 °F)	Standard	For process connections DIN 32676 Class A and C hygienic clamps
-50 ... +260 °C (-58 ... +302 °F)	Medium	Only selectable for remote transmitters with long neck: selections D, F, and H in position 14 of the order code

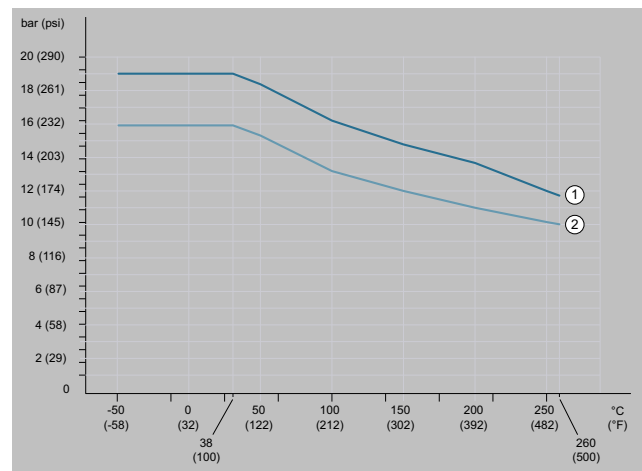
Operating pressure

The maximum allowed process pressure depends on the selected process connection and process temperature.

The given process temperature and process pressure ranges are calculated and approved without corrosion or erosion effects.

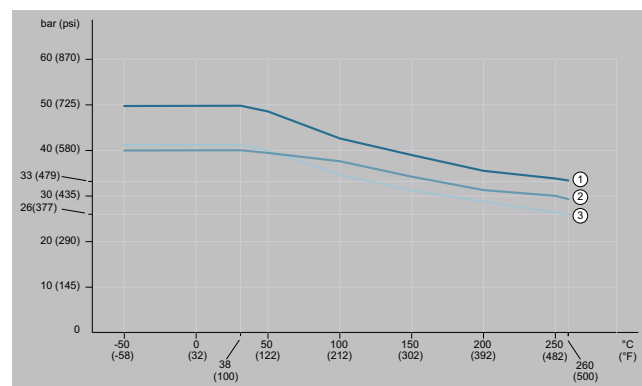
The following diagrams show the process pressure as a function of process temperature as well as the process connection used (type and size of process connection).

Calculations for ASME flanges are based on ASME B16.5 Material group 2.2 (316/316L dual certified).

ASME class 150

Allowed process pressure as a function of process connection temperature

- 1 Process connection compatible to ASME B16.5 class 150
- 2 Process connection compatible to heat tracing connection suitable for ASME B16.5 class 150

ASME class 300, EN PN 40

Allowed process pressure as a function of process fluid temperature

- 1 Process connection compatible to ASME B16.5 class 300
- 2 Process and heat tracing connection compatible to EN 1092-1 PN 40
- 3 Process connection compatible to heat tracing connection for ASME B16.5 class 300

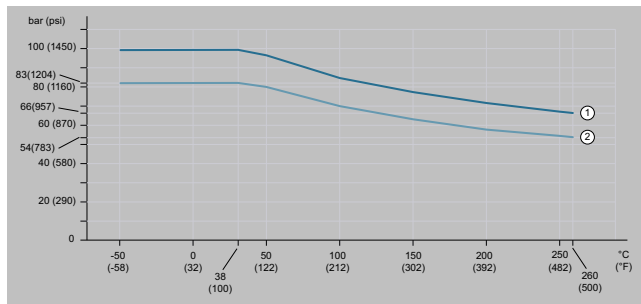
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Sensors and Flowmeter systems

SITRANS FC100 series

Technical specifications (continued)

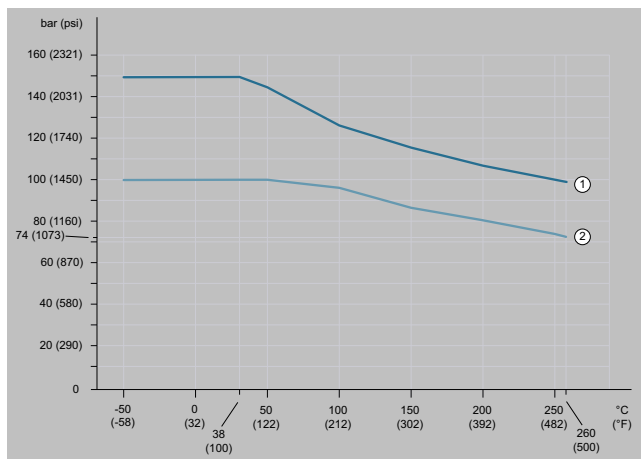
ASME class 600



Allowed process pressure as a function of process connection temperature

- 1 Process connection compatible to ASME B16.5 class 600
- 2 Not used for this product

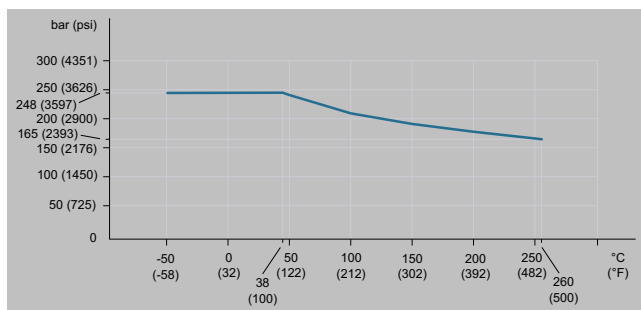
ASME class 900, EN PN100



Allowed process pressure as a function of process connection temperature

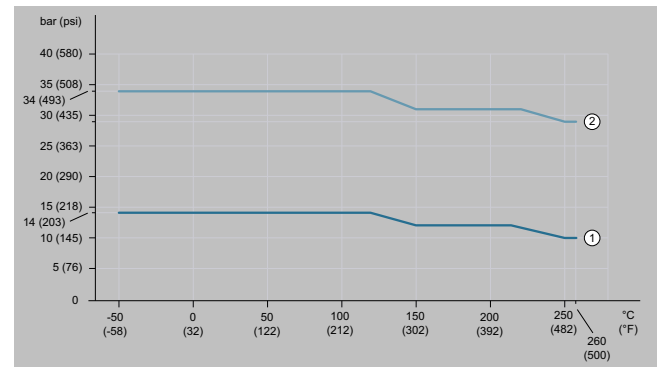
- 1 Process connection compatible to ASME B16.5 class 900
- 2 Process connection compatible to EN 1092-1 PN100

ASME class 1500 compatible to flange ASME B16.5



Allowed process pressure as a function of process connection temperature

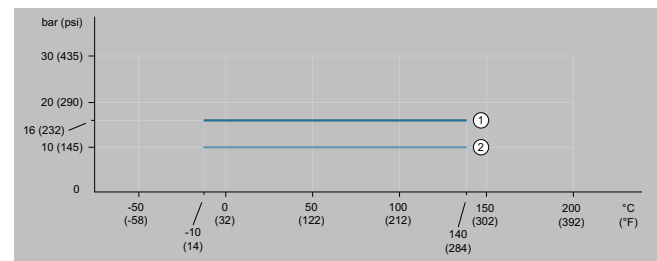
JIS 10K, JIS 20K



Allowed process pressure as a function of process connection temperature

- 1 Process connection compatible to JIS B 2220 10K
- 2 Process connection compatible to JIS B 2220 20K

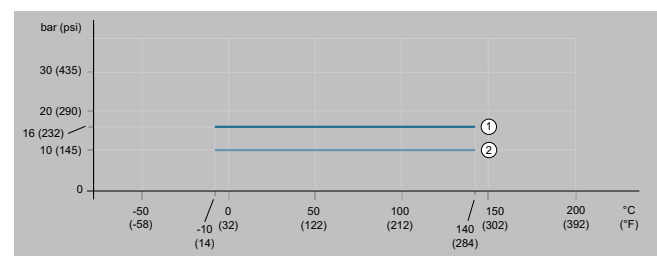
Clamp process connection according to DIN 32676 series A



Allowed process pressure as a function of process fluid temperature

- 1 Clamp connection compatible to DIN 32676 series A up to DN 50
- 2 Clamp connection compatible to DIN 32676 series A above DN 50

Clamp process connection according to DIN 32676 series C (Tri-Clamp)

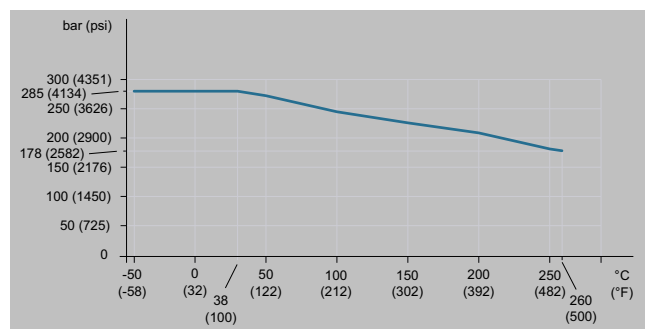


Allowed process pressure as a function of process fluid temperature

- 1 Clamp connection compatible to DIN 32676 series C up to 2"
- 2 Clamp connection compatible to DIN 32676 series C above 2"

Technical specifications (continued)

Process connection with internal thread G and NPT



Allowed process pressure as a function of process fluid temperature

Ambient conditions

Allowed ambient and storage temperature of SITRANS FCS100 series is influenced by the temperature specification of FCS100 sensor, FCTOX0 transmitter and the interconnecting cable.

Ambient temperature

Device-surrounding air temperature is considered as ambient temperature. If the device is operating outdoors make sure that the solar irradiation does not increase the surface temperature of the device higher than the allowed maximum ambient temperature. Transmitter display has limited legibility below -20 °C (-4 °F).

The sensor ambient temperature limits may also be influenced by the process fluid temperature, details shown below under the heading "Allowed ambient temperature for FCS100 sensors".

Maximum ambient temperature ranges for FC100 series

Cable type	Device	Ambient temperature range
Standard cable	Sensor	-50 ... +80 °C (-58 ... +176 °F)
	Transmitter	-40 ... +60 °C (-40 ... +140 °F)
Fire retardant cable	Sensor	-35 ... +80 °C (-31 ... +176 °F)
	Transmitter	-35 ... +60 °C (-31 ... +140 °F)

Ambient temperature range for NTEP custody transfer approval

Cable type	Device	Ambient temperature range
Standard cable	Sensor	-50 ... +80 °C (-58 ... +176 °F)
	Transmitter	-40 ... +50 °C (-40 ... +122 °F)
Fire retardant cable	Sensor	-35 ... +80 °C (-31 ... +176 °F)
	Transmitter	-35 ... +50 °C (-31 ... +122 °F)

Maximum storage temperature ranges for FC100 series

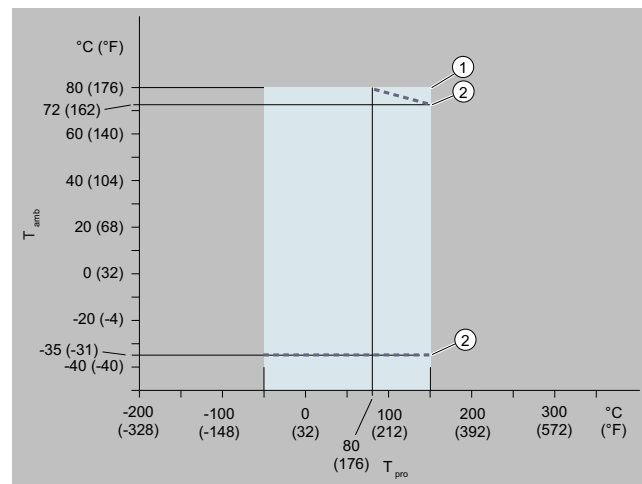
Cable type	Device	Ambient temperature range
Standard cable	Sensor	-50 ... +80 °C (-58 ... +176 °F)
	Transmitter	-40 ... +60 °C (-40 ... +140 °F)
Fire retardant cable	Sensor	-35 ... +80 °C (-31 ... +176 °F)
	Transmitter	-35 ... +60 °C (-31 ... +140 °F)

Allowed ambient temperature for FCS100 sensors

The allowed combinations of process fluid and ambient temperature for the sensor are illustrated as grey areas in the diagrams below.

Standard temperature specification, remote type

(except versions with hygienic clamp process connections)

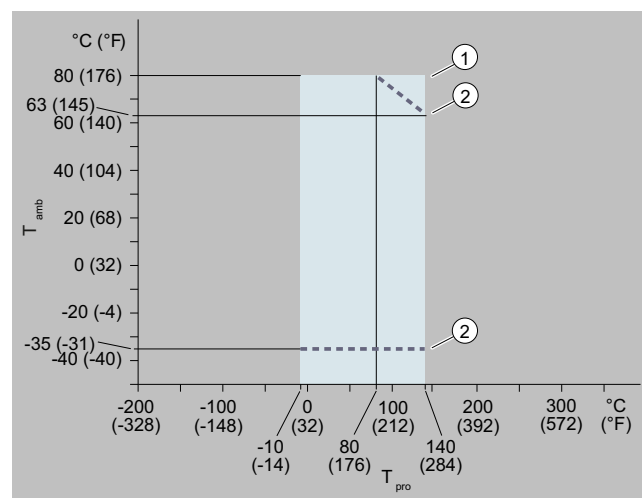


Allowed process fluid and ambient temperatures, remote type (except hygienic clamp process connections)

1	Standard cable option
2	Limitation for fire retardant cable option
T_{amb}	Ambient temperature
T_{pro}	Process fluid temperature

Standard temperature specification, remote type

(versions with hygienic clamp process connection versions only)



Allowed process fluid and ambient temperatures, remote type (hygienic clamp process connections only)

1	Standard cable option
2	Limitation for fire retardant cable option
T_{amb}	Ambient temperature
T_{pro}	Process fluid temperature

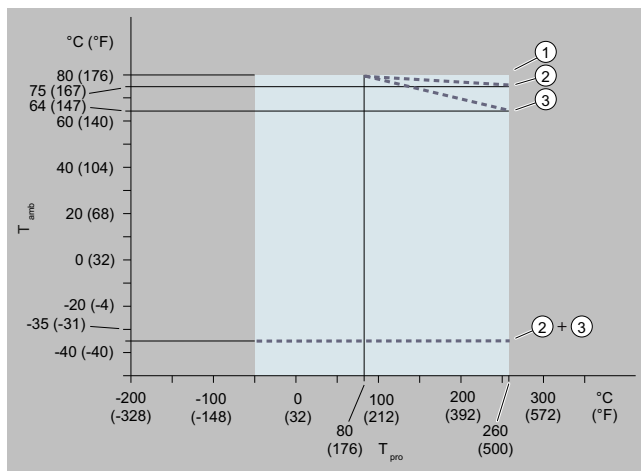
SITRANS FC (Coriolis) 2023

Sensors and Flowmeter systems

SITRANS FC100 series

Technical specifications (continued)

Medium temperature specification, remote type



Allowed process fluid and ambient temperatures

- 1 Standard cable option
- 2 Fire retardant cable without insulation options
- 3 Fire retardant cable with insulation options JXX
- T_{amb} Ambient temperature
- T_{pro} Process fluid temperature

Temperature specification of FCS100 series Ex versions located in hazardous areas

Please select appropriate equipment in accordance with the laws and regulations of the relevant country/region, when it is used in a location where explosive atmospheres may be present.

The maximum ambient and process fluid temperatures depending on explosion groups and temperature classes can be determined via the SITRANS FC order code together with the Ex code (see the corresponding explosion proof type manual).

Note: The maximum process fluid temperature could be further restricted due to process connection type, refer to curves above under the heading "Allowed ambient temperature for FCS100 sensors".

FCS100 with standard process temperatureEx approvals:

ATEX, IEC Ex, EAC Ex, NEPSI, Korea Ex, UK Ex

Temperature class	Maximum process temperature	Maximum ambient temperature Standard cable	Fire retardant cable
T6	65 °C (149 °F)	65 °C (149 °F)	65 °C (149 °F)
T5	90 °C (194 °F)	75 °C (167 °F)	75 °C (167 °F)
T4	130 °C (266 °F)	80 °C (176 °F)	74 °C (165 °F)
T3	150 °C (302 °F)	80 °C (176 °F)	72 °C (161 °F)
T2	150 °C (302 °F)	80 °C (176 °F)	72 °C (161 °F)
T1	150 °C (302 °F)	80 °C (176 °F)	72 °C (161 °F)

Ex approvals:

FM

Temperature class	Maximum process temperature	Maximum ambient temperature Standard cable	Fire retardant cable
T6	65 °C (149 °F)	65 °C (149 °F)	65 °C (149 °F)
T5	90 °C (194 °F)	75 °C (167 °F)	70 °C (158 °F)
T4	130 °C (266 °F)	80 °C (176 °F)	70 °C (158 °F)
T3	150 °C (302 °F)	80 °C (176 °F)	70 °C (158 °F)
T2	150 °C (302 °F)	80 °C (176 °F)	70 °C (158 °F)
T1	150 °C (302 °F)	80 °C (176 °F)	70 °C (158 °F)

FCS100 with medium process temperature, long neckEx approvals:

ATEX, IEC Ex, EAC Ex, NEPSI, Korea Ex, UK Ex

Temperature class	Maximum process temperature	Maximum ambient temperature Standard cable	Fire retardant cable without sensor insulation	Fire retardant cable with all sensor insulation and heating options
T6	65 °C (149 °F)	65 °C (149 °F)	65 °C (149 °F)	65 °C (149 °F)
T5	90 °C (194 °F)	75 °C (167 °F)	75 °C (167 °F)	75 °C (167 °F)
T4	130 °C (266 °F)	80 °C (176 °F)	76 °C (168 °F)	75 °C (167 °F)
T3	180 °C (356 °F)	80 °C (176 °F)	75 °C (167 °F)	71 °C (159 °F)
T2	260 °C (500 °F)	80 °C (176 °F)	73 °C (163 °F)	64 °C (147 °F)
T1	260 °C (500 °F)	80 °C (176 °F)	73 °C (163 °F)	64 °C (147 °F)

Technical specifications (continued)

Ex approvals:

FM

Temperature class	Maximum process temperature	Maximum ambient temperature Standard cable	Fire retardant cable without sensor insulation	Fire retardant cable with all sensor insulation and heating options
T6	65 °C (149 °F)	65 °C (149 °F)	65 °C (149 °F)	65 °C (149 °F)
T5	90 °C (194 °F)	75 °C (167 °F)	70 °C (158 °F)	70 °C (158 °F)
T4	130 °C (266 °F)	80 °C (176 °F)	70 °C (158 °F)	70 °C (158 °F)
T3	180 °C (356 °F)	80 °C (176 °F)	70 °C (158 °F)	70 °C (158 °F)
T2	260 °C (500 °F)	80 °C (176 °F)	70 °C (158 °F)	64 °C (147 °F)
T1	260 °C (500 °F)	80 °C (176 °F)	70 °C (158 °F)	64 °C (147 °F)

Additional ambient and environmental specifications

Specification	Rating/level of compliance
Relative humidity	0 ... 95%
Ingress protection	IP66 or IP67 with suitable cable glands
Environmental pollution	Pollution degree 4 in accordance with EN 61010-1 whilst in operation
Maximum altitude	2 000 m (6 600 ft) above mean sea level (MSL)
Mechanical load	Transmitter: 10 ... 500 Hz, 1g acc. to IEC 60068-2-6
Electromagnetic (EMC) Immunity	• EN IEC 61326-1, Table 2 • EN IEC 61326-2-3 • EN IEC 61326-2-5 • NAMUR NE 21 recommendation • DNV-CG-0339 section 3, chapter 14
Surge Immunity Emission	• EN 61000-4-5 for lightning protection • EN IEC 61000-3-2, Class A (harmonic current emissions) • EN IEC 61000-3-3, Class A (voltage fluctuations) Immunity assessment criterion: output signal fluctuation is within $\pm 1\%$ of the output span
Overvoltage	Category II according to EN IEC 61010-1

Mechanical specifications

The FCS100 sensor is available in standard neck and long neck designs. The neck can also be described as the pedestal connecting the sensor body to the terminal housing.

When configuring FCS100 sensors with medium range temperature specification (up to 260 °C (500 °F)), it is compulsory to select long neck options. Order code position 14 (Mounting style, Transmitter housing and material) includes the neck options.

Transmitter housing material options (both FCT020 and FCT040 transmitters)

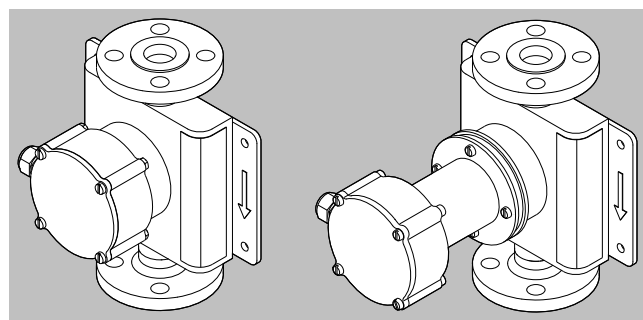
Material	Coating	Design	Order code position 14
Cast aluminum alloy Al-Si10Mg(Fe)	Standard coating	Remote transmitter	C or D
Cast aluminum alloy Al-Si10Mg(Fe)	Corrosion resistant coating	Remote transmitter	E or F
ASTM CF8M stainless steel	None	Remote transmitter	G or H

Standard coating is urethane cured polyester powder coating.

Corrosion protection coating is a three-layer coating with high chemical resistance (polyurethane coating on two layers of epoxy).

Transmitter display window

All transmitters with a display have a glass window in the lid.



FCS100 sensor with standard neck and long neck designs

FCS100 sensor wetted parts materials

- Measuring tubes: alloy 22/2.4602
- Process connections: AISI 316L stainless steel, W Nr. 1.4404

The user is responsible to ensure chemical compatibility of the material of the wetted parts with the measured process fluid.

FCS100 sensor housing materials

- Junction box: AISI 316L stainless steel, W Nr. 1.4404
- Neck: W Nr. 1.4308, similar to ASTM CF-8 cast stainless steel
- Body: AISI 304 stainless steel, W Nr. 1.4301 (order code option B01)
 - Or AISI 316L stainless steel, W Nr. 1.4404 (order code option B02)

Transmitter mounting bracket

Remote transmitters are supplied with a mounting bracket, material: AISI 316L stainless steel, W Nr. 1.4404.

Material of nameplates

Nameplate material depends on the materials selected for SITRANS FC sensors and transmitters

SITRANS FC (Coriolis) 2023

Sensors and Flowmeter systems

SITRANS FC100 series

Technical specifications (continued)

Device	Process temperature range	Nameplate material
Sensor with AISI 304 stainless steel housing	Standard, up to 150 °C (302 °F)	Polyester film
Sensor with AISI 304 stainless steel housing	Medium, up to 260 °C (500 °F)	AISI 316L ss
Sensor with AISI 316L stainless steel housing	All	AISI 316L ss
Transmitter with cast aluminum housing	Not applicable	Foil
Transmitter with ASTM CF8M stainless steel housing	Not applicable	AISI 316L ss

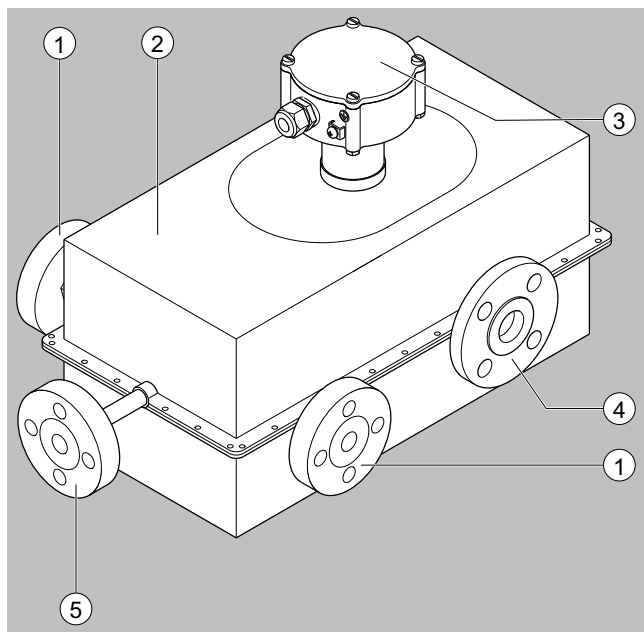
Secondary containment

Some applications or environment conditions require secondary containment retaining the process pressure for increased safety. SITRANS FCS100 sensors have a secondary containment filled with inert gas.

Typical burst pressure at room temperature for all sizes of FCS100: 65 bar (942 psi).

Insulation and heat tracing

In cases where fluid temperature deviates more than 80 °C from ambient temperature, sensor insulation is recommended to avoid negative effects from temperature fluctuations.



Configuration of FCS100 sensor with insulation and heat tracing

1	Heating tracing connection
2	Insulation
3	Sensor terminal box
4	Process connection
5	Purging connection

Maximum temperature of heat carrier

Order code position 12	Process temperature range	Temperature range of heat carrier
1	Standard, up to 150 °C (302 °F)	0 ... 150 °C (32 ... 302 °F)
2	Medium, up to 260 °C (500 °F)	0 ... 200 °C (32 ... 392 °F)

Insulation and heat tracing may be installed by the user but not in hazardous areas and the following must be noted:

- Do not insulate sensor terminal box.
- Do not expose transmitters to ambient temperatures exceeding 60 °C (140 °F)
- The preferred insulation is 60 mm (2.36 inch) thick with a heat transfer coefficient of 0.4 W/m² K (0.07 Btu/ft² °F)

Electrical specifications for FCS100 series

Power supply	
Alternating current voltage (rms)	nominal 24 V AC (-15 ... +10%), or 100 ... 240 VAC (-20 ... +10%)
Frequency	47 ... 63 Hz
Direct current voltage	nominal 24 V DC (-15 ... +20%) or 100 ... 120 V DC (-10 ... +8.3%)

Note: For DNV approval option supply voltage is limited to 24 V, and NAMUR NE21 testing specifies the range 24 V DC $\pm 20\%$ under NE21 test conditions.

Power consumption

$P \leq 10$ W (including sensor)

Power supply failure

In the event of a power failure, the flowmeter data are backed up on a non-volatile internal memory. In case of devices with display, the characteristic sensor values, such as nominal diameter, serial number, calibration constants, zero point and the error history are also stored on a microSD card.

Galvanic isolation

All circuits for inputs, outputs and power supply are galvanically isolated from each other.

Inputs and outputs

Analog current outputs (4 ... 20 mA)

Up to two analog outputs can be selected at time of ordering (order code details are included below).

The analog outputs can be configured to represent the following measured values:

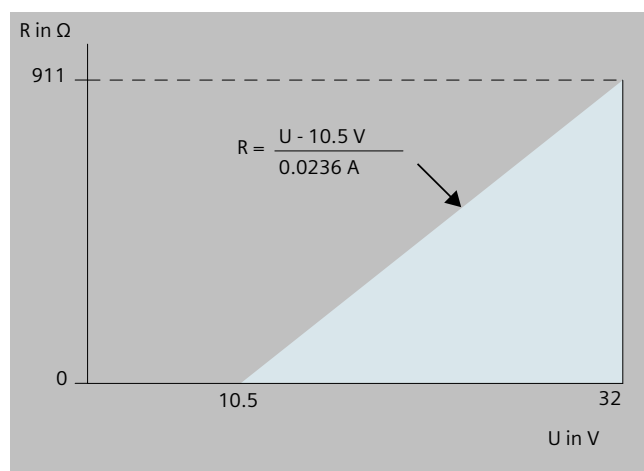
- Flow rate (mass, volume, net partial component flow of a mixture)
- Density
- Temperature
- Pressure
- Concentration

HART communication, when selected, is supplied on channel 1 (I/O 1).

The current output may be operated in compliance with the NAMUR NE43 standard.

Technical specifications (continued)

Analog current outputs	
Active current output	
Nominal output current range	4 ... 20 mA
Maximum output current range	2.4 ... 21.6 mA
Load resistance	≤ 750 Ω
Load resistance for secure HART communication	230 ... 600 Ω
Passive current output	
Nominal output current range	4 ... 20 mA
Maximum output current range	2.4 ... 21.6 mA
External power supply	10.5 ... 32 VDC
Load resistance for secure HART communication	230 ... 600 Ω
Load resistance at current output	≤ 911 Ω



Maximum load resistance as a function of an external power supply voltage

Analog current inputs (4 ... 20 mA)

Note: Available for FCT040 transmitters only. FCT020 transmitters cannot be specified with analog input.

One analog current input is available for external analog devices.

Analog current inputs	
Active current input¹⁾	
Nominal input current range	4 ... 20 mA
Maximum input current range	2.4 ... 21.6 mA
Internal power supply	24 V DC ±20%
Internal load resistance	≤ 160 Ω
Passive current input²⁾	
Nominal input current range	4 ... 20 mA
Maximum input current range	2.4 ... 21.6 mA
Internal power supply	10.5 ... 32 V DC
Internal load resistance	≤ 160 Ω

¹⁾ The active current input is provided for connecting a two-wire transmitter with an output signal of 4 ... 20 mA.

²⁾ The passive current input is provided for connecting a four-wire transmitter with an active current output signal.

Digital outputs

Digital outputs	
Active pulse output (P/Sout), connection of an electronic counter¹⁾	
Load resistance	> 1 kΩ
Internal power supply	24 V DC ±20%
Maximum pulse rate	10 000 pulses/s
Frequency range	0 ... 12.5 kHz
Active pulse output (P/Sout), connection of an electronic counter¹⁾	
Maximum current	150 mA
Average current	≤ 30 mA
Internal power supply	24 V DC ±20%
Maximum pulse rate	2 pulses/s
Pulse width	20, 33, 50, or 100 ms
Active pulse output (P/Sout), with internal pull-up resistor	
Internal power supply	24 V DC ±20%
Internal pull-up resistor	2.2 kΩ
Maximum pulse rate	10 000 pulses/s
Frequency range	0 ... 12.5 kHz
Passive pulse output (P/Sout)¹⁾	
Maximum load current	≤ 200 mA
External power supply	≤ 30 V DC
Maximum pulse rate	10 000 pulses/s
Frequency range	0 to 12.5 kHz
Active status output (P/Sout)²⁾	
Load resistance	> 1 kΩ
Internal power supply	24 V DC ±20%
Active status output (P/Sout), with internal pull-up resistor³⁾	
Internal pull-up resistor	2.2 kΩ
Internal power supply	24 V DC ±20%
Passive status output (P/Sout) or (Sout)	
Output current	≤ 200 mA
External power supply	≤ 30 V DC
Passive pulse or status output (P/Sout) (NAMUR)	
Output signals according to EN 60947-5-6 (previously NAMUR, worksheet NA001)	

- ¹⁾ Maximum voltage and correct polarity must be observed for wiring.
²⁾ Since this is a transistor contact, maximum allowed current as well as polarity and level of output voltage must be observed during wiring.
³⁾ A relay must be connected in series to switch alternating voltage.

Digital inputs

Status input (Sin)

Do not connect a signal source with electric voltage.

The status input is provided for use of voltage-free contacts with the following specification:

- Resistance when closed: < 200 Ω
- Resistance when open: > 100 kΩ

Digital communications

Each transmitter is configured with one default digital communication interface, selectable in the SITRANS FC order code.

HART

When selected, HART communication is supplied on the output terminal pair I/O 1.

Up to three further Input/Output options can be configured for output terminal pairs I/O 2, I/O 3, and I/O 4.

HART is available with either non-intrinsically safe or intrinsically safe outputs.

SITRANS FC (Coriolis) 2023

Sensors and Flowmeter systems

SITRANS FC100 series

Technical specifications (continued)

PROFIBUS PA

When selected, PROFIBUS PA communication is supplied on the output terminal pair I/O 1.

PROFIBUS PA interface is available with and without intrinsic safety.

PROFIBUS PA Digital communication signal is in accordance with IEC 61158/61784.

Maximum voltage and correct polarity must be observed for wiring.

Power supply: 9 ... 32 V DC

Current draw: 15 mA (maximum)

Compliance with PA profile revision 3.02 supporting: Condensed Status (NE107)

Device identification number (IDENT_NUMBER) adaption

Summary of available function blocks – PROFIBUS PA

Function block	Code	Description
Transducer block	FTB	Flow
	CTB	Concentration
	LTB	LCD Indicator
	MTB	Maintenance
	SDBT	Advanced diagnostics
Analog input block ¹⁾	AI1	Mass flow
	AI2	Density
	AI3	Temperature
	AI4	Volume flow
	AI5	Reference density
	AI6	Corrected (normal/standard) volume flow
Totalizer block ¹⁾	TOT1	Mass
	TOT2	Volume
	TOT3	Corrected (normal/standard) volume
Analog output block ¹⁾	AO	Pressure

¹⁾ Factory default setting. Assignment can be changed by parameter "channel".

Available function blocks are also influenced by the type of device description file (GSD) being used. For further details, please contact your regional Siemens Measurement Intelligence team.

MODBUS (in preparation for later release)

The MODBUS interface is available with up to two additional Input/Output options.

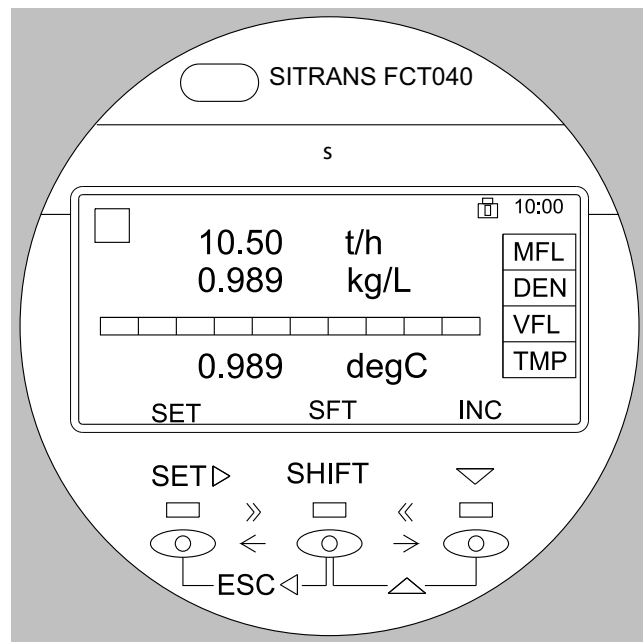
When selected, MODBUS communication is supplied on the current output terminal pairs I/O 3 and I/O 4.

The digital HART communication signal is in accordance with EIA485 standard (RS485).

PROFINET over Ethernet-APL (in preparation for later release)

Display attributes	
Type	4-line dot-matrix display
Resolution	128 (W) x 64 (H) dots
Size	64.6 mm x 31.2 mm (2.54" x 1.23")
Control	via IR switches

Numerical values entered via the display are limited to 6 digits for process variables and 8 digits for totalizer.



Display layout

1	Measured quantities and units
2	Status icon and time
3	Measured quantity abbreviation
4	IR switches
5	Alarm symbol

The controls on the display are IR switches. They respond as soon as an object, such as a finger, is in close proximity. It is not necessary to apply pressure to the display surface.

The display unit includes a slot for the microSD card.

microSD card specifications	
Type	Industrial Grade microSD card, compliant with SD specification version 2.0
Physical dimension	15 mm x 11 mm x 1.0 mm (± 0.1 mm) (0.6" x 0.4" x 0.04" (± 0.004"))
Capacity	1 GB
Sequential throughput (read)	24.01 MB/s
Sequential throughput (write)	17.96 MB/s

It is recommended to use the microSD card included with the SITRANS FCT transmitter. Functionality of the device cannot be guaranteed if other cards are used.

Cable specifications

For remote type devices, an interconnecting cable must be used to connect the sensor to the transmitter. The device specifications stated in this document are valid only if one of the original SITRANS FC interconnecting cables is used.

Standard cable length options up to 30 m (98 ft) are specified in the order code to maintain the stated specifications.

Cables longer than 30 m (98 ft) are available but must be ordered as separate items. For further details, please contact your regional Siemens Measurement Intelligence team.

Technical specifications (continued)

Approvals and certificates – summary

Position in code, type	Order code	Description
15, Ex approval	B	ATEX, explosion group IIC and IIIC
15, Ex approval	C	ATEX, explosion group IIB and IIIC
15, Ex approval	D	IECEX, explosion group IIC and IIIC
15, Ex approval	E	IECEX, explosion group IIB and IIIC
15, Ex approval	H	FM, groups A, B, C, D, E, F, G
15, Ex approval	J	FM, groups C, D, E, F, G
15, Ex approval	M	NEPSI, explosion group IIC and dust proof
15, Ex approval	N	NEPSI, explosion group IIB and dust proof
15, Ex approval	F	EAC Ex, explosion group IIC and IIIC
15, Ex approval	G	EAC Ex, explosion group IIB and IIIC
15, Ex approval	P	Korea Ex, explosion group IIC and IIIC
15, Ex approval	Q	Korea Ex, explosion group IIB and IIIC
15, Ex approval	U	UKEx, explosion group IIC and IIIC
15, Ex approval	V	UKEx, explosion group IIB and IIIC
ZS2, Marine approval	S22	Marine approval according DNV, ABS and KR piping class 2

Position in code, type	Order code	Description
ZS2, Marine approval	S23	Marine approval according DNV, ABS and KR piping class 3
ZS2, Marine approval	S24	Marine approval according LR MR TAC piping class 2
ZS2, Marine approval	S25	Marine approval according LR MR TAC piping class 3
ZS2, Marine approval	S26	Marine approved BV piping class 2
ZS2, Marine approval	S27	Marine approved BV piping class 3
ZC1, Certificate	C16	NTEP approval, accuracy class 0.3 acc. NIST Handbook 44
ZC1, Certificate	C11	Compliance with the order 2.1 EN 10204
ZC1, Certificate	C40	Quality Inspection Certificate 3.1 EN 10204
ZC1, Certificate	C13	3.1 EN 10204 + IGC + NACE MR0175, MR0103
ZC1, Certificate	C18	Pressure Test Certificate 3.1 EN 10204
ZC1, Certificate	C54	Degreasing ASTM G93-03, including report
ZC1, Certificate	C36	WPS; WPQR; WQC
ZC1, Certificate	C37	Welding procedures and Certificate ASME IX
ZC1, Certificate	C33	X-ray DIN EN ISO 17636-1/B
ZC1, Certificate	C34	X-ray test according to ASME V
ZC1, Certificate	C38	Dye penetration DIN EN ISO 3452-1
ZC1, Certificate	C39	Dye penetration ASME V
ZC1, Certificate	C20	Functional Safety (IEC 61508) - SIL2/3
ZC1, Certificate	C15	PMI 3.1 according to EN 10204

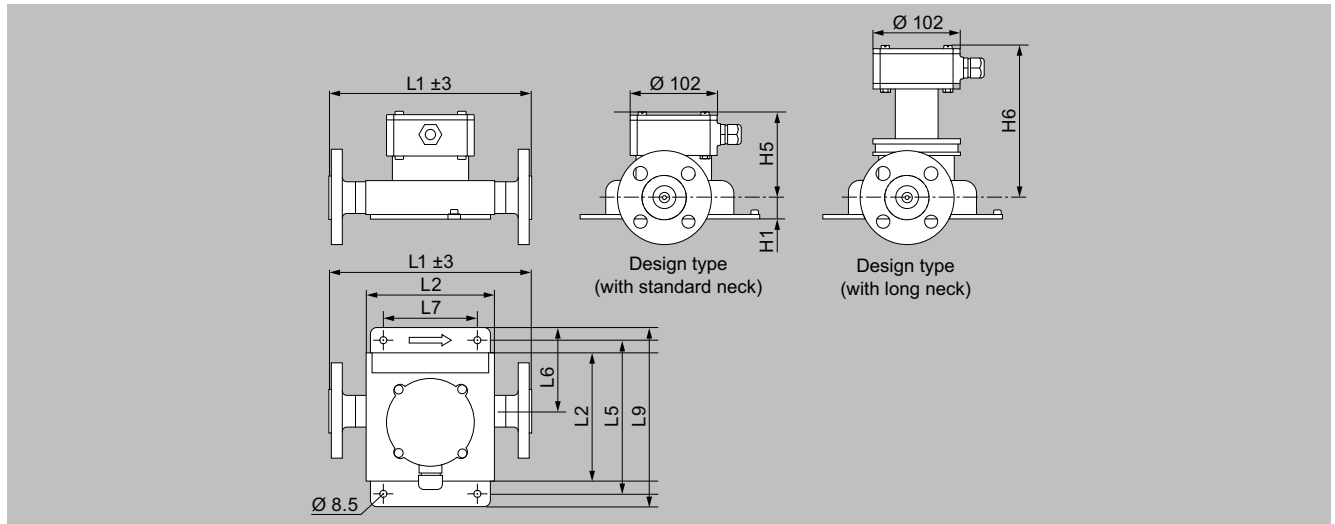
SITRANS FC (Coriolis) 2023

Sensors and Flowmeter systems

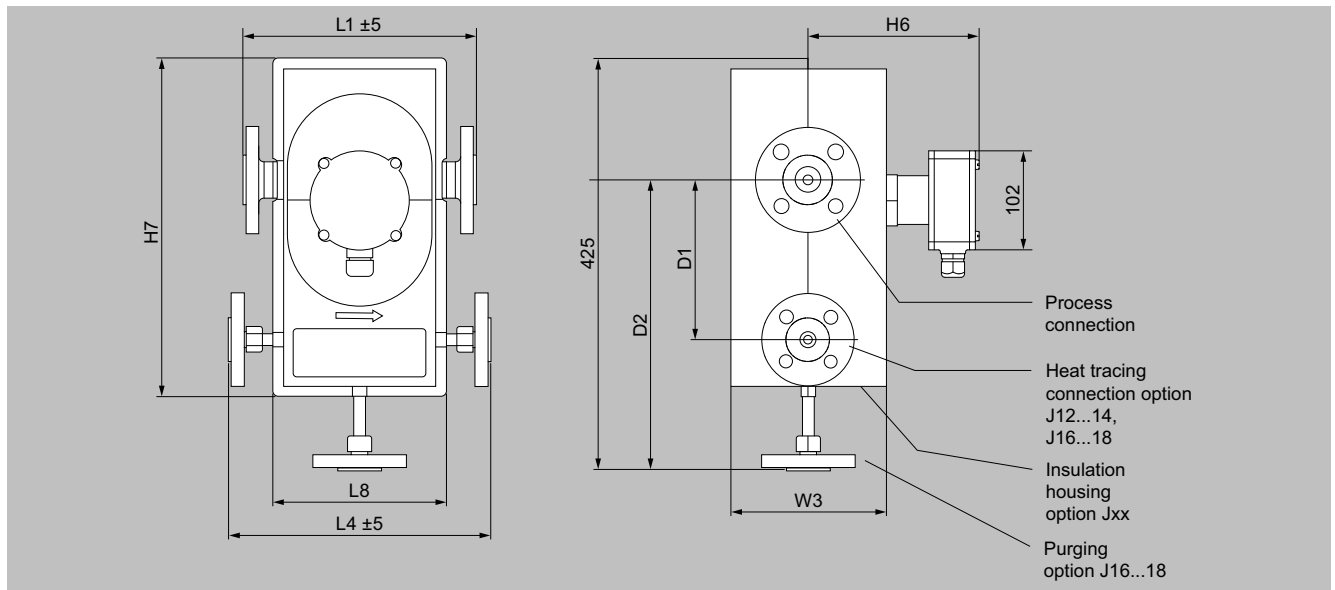
SITRANS FC100 series

Dimensional drawings

Drawings, dimensions and weight for FCS100 sensors

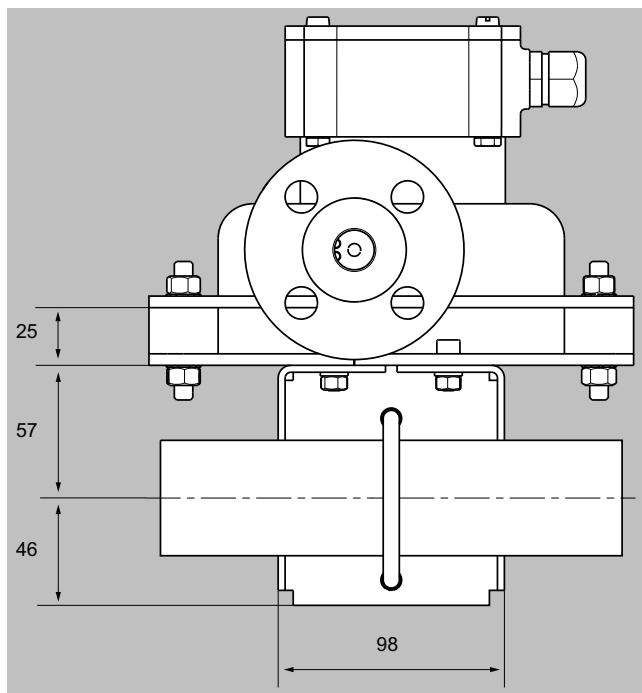


FCS100 sensor, dimensions in mm



FCS100 with insulation housing, dimensions in mm

Dimensional drawings (continued)



FCS100 with optional pipe mounting bracket, dimensions in mm

FCS100 sensor dimensions

Nominal size	L2	L4	L5	L6	L7	L8	L9
	Dimensions in mm (inch)						
DN 1	150 (5.9)	270 (10.6)	180 (7.1)	111 (4.4)	110 (4.3)	180 (7.1)	210 (8.3)
DN 2	150 (5.9)	270 (10.6)	180 (7.1)	111 (4.4)	110 (4.3)	180 (7.1)	210 (8.3)
DN 4	150 (5.9)	270 (10.6)	180 (7.1)	99 (3.9)	110 (4.3)	180 (7.1)	210 (8.3)
DN 6	150 (5.9)	270 (10.6)	180 (7.1)	89 (3.5)	110 (4.3)	180 (7.1)	210 (8.3)
DN 8	150 (5.9)	270 (10.6)	180 (7.1)	55 (2.2)	110 (4.3)	180 (7.1)	210 (8.3)

Nominal size	H1	H3	H5	H6	L7	W3	D1	D2
	Dimensions in mm (inch)							
DN 1	25 (1)	81 (3.2)	101 (4)	176 (6.9)	350 (13.8)	160 (6.3)	165 (6.5)	299 (11.8)
DN 2	25 (1)	81 (3.2)	101 (4)	176 (6.9)	350 (13.8)	160 (6.3)	165 (6.5)	299 (11.8)
DN 4	25 (1)	81 (3.2)	101 (4)	176 (6.9)	350 (13.8)	160 (6.3)	165 (6.5)	299 (11.8)
DN 6	25 (1)	81 (3.2)	101 (4)	176 (6.9)	350 (13.8)	160 (6.3)	165 (6.5)	299 (11.8)
DN 8	25 (1)	81 (3.2)	101 (4)	176 (6.9)	350 (13.8)	160 (6.3)	165 (6.5)	299 (11.8)

L1 dimension and weight with process connections according to ASME B16.5 (ISI 216 / AISI 316L)

Process connection size and type	FCS100 sensor nominal size									
	DN 1		DN 2		DN 4		DN 6		DN 8	
	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)
ASME ½" class 150, raised face (RF)	240 (9.4)	6.2 (14)	240 (9.4)	6.2 (14)	240 (9.4)	6.2 (14)	240 (9.4)	6.2 (14)	240 (9.4)	6.2 (14)
ASME ½" class 300, raised face (RF)	240 (9.4)	6.6 (15)	240 (9.4)	6.6 (15)	240 (9.4)	6.6 (15)	240 (9.4)	6.6 (15)	240 (9.4)	6.6 (15)
ASME ½" class 600, raised face (RF)	250 (9.8)	6.9 (15)	250 (9.8)	6.9 (15)	250 (9.8)	6.9 (15)	250 (9.8)	6.9 (15)	250 (9.8)	6.9 (15)

SITRANS FC (Coriolis) 2023

Sensors and Flowmeter systems

SITRANS FC100 series

Dimensional drawings (continued)

Process connection size and type	FCS100 sensor nominal size DN 1		DN 2		DN 4		DN 6		DN 8	
	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)
ASME ½" class 600, ring joint (RJ)	250 (9.8)	6.8 (15)	250 (9.8)	6.8 (15)	250 (9.8)	6.8 (15)	250 (9.8)	6.8 (15)	250 (9.8)	6.8 (15)
ASME ½" class 900, raised face (RF)	270 (10.6)	8.8 (19)	270 (10.6)	8.8 (19)	270 (10.6)	8.8 (19)	270 (10.6)	8.8 (19)	270 (10.6)	8.8 (19)
ASME ½" class 900, ring joint (RJ)	270 (10.6)	11.3 (25)	270 (10.6)	11.3 (25)	270 (10.6)	11.3 (25)	270 (10.6)	11.3 (25)	270 (10.6)	11.3 (25)
ASME ½" class 1500, raised face (RF)	270 (10.6)	8.8 (19)	270 (10.6)	8.8 (19)	270 (10.6)	8.8 (19)	270 (10.6)	8.8 (19)	270 (10.6)	8.8 (19)
ASME ½" class 1500, ring joint (RJ)	270 (10.6)	11.3 (25)	270 (10.6)	11.3 (25)	270 (10.6)	11.3 (25)	270 (10.6)	11.3 (25)	270 (10.6)	11.3 (25)
ASME 1" class 150, raised face (RF)	n/a	n/a	240 (9.4)	7.1 (16)	240 (9.4)	7.1 (16)	240 (9.4)	7.1 (16)	240 (9.4)	7.1 (16)
ASME 1" class 300, raised face (RF)	n/a	n/a	240 (9.4)	8.1 (18)	240 (9.4)	8.1 (18)	240 (9.4)	8.1 (18)	240 (9.4)	8.1 (18)
ASME 1" class 600, raised face (RF)	n/a	n/a	260 (10.2)	8.5 (19)	260 (10.2)	8.5 (19)	260 (10.2)	8.5 (19)	260 (10.2)	8.5 (19)
ASME 1" class 600, ring joint (RJ)	n/a	n/a	260 (10.2)	8.6 (19)	260 (10.2)	8.6 (19)	260 (10.2)	8.6 (19)	260 (10.2)	8.6 (19)
ASME 1" class 900, raised face (RF)	n/a	n/a	320 (12.6)	12.7 (28)	320 (12.6)	12.7 (28)	320 (12.6)	12.7 (28)	320 (12.6)	12.7 (28)
ASME 1" class 900, ring joint (RJ)	n/a	n/a	320 (12.6)	12.8 (28)	320 (12.6)	12.8 (28)	320 (12.6)	12.8 (28)	320 (12.6)	12.8 (28)
ASME 1" class 1500, raised face (RF)	n/a	n/a	320 (12.6)	12.7 (28)	320 (12.6)	12.7 (28)	320 (12.6)	12.7 (28)	320 (12.6)	12.7 (28)
ASME 1" class 1500, ring joint (RJ)	n/a	n/a	320 (12.6)	12.8 (28)	320 (12.6)	12.8 (28)	320 (12.6)	12.8 (28)	320 (12.6)	12.8 (28)
ASME 1½" class 150, raised face (RF)	n/a	n/a	250 (9.8)	8 (18)	250 (9.8)	8 (18)	250 (9.8)	8 (18)	250 (9.8)	8 (18)
ASME 1½" class 300, raised face (RF)	n/a	n/a	250 (9.8)	10.3 (23)	250 (9.8)	10.3 (23)	250 (9.8)	10.3 (23)	250 (9.8)	10.3 (23)
ASME 1½" class 600, raised face (RF)	n/a	n/a	270 (10.6)	11.7 (26)	270 (10.6)	11.7 (26)	270 (10.6)	11.7 (26)	270 (10.6)	11.7 (26)
ASME 1½" class 600, ring joint (RJ)	n/a	n/a	270 (10.6)	11.6 (26)	270 (10.6)	11.6 (26)	270 (10.6)	11.6 (26)	270 (10.6)	11.6 (26)
ASME 1½" class 900, raised face (RF)	n/a	n/a	340 (13.4)	17.5 (39)	340 (13.4)	17.5 (39)	340 (13.4)	17.5 (39)	340 (13.4)	17.5 (39)
ASME 1½" class 900, ring joint (RJ)	n/a	n/a	340 (13.4)	17.7 (39)	340 (13.4)	17.7 (39)	340 (13.4)	17.7 (39)	340 (13.4)	17.7 (39)
ASME 1½" class 1500, raised face (RF)	n/a	n/a	340 (13.4)	17.5 (39)	340 (13.4)	17.5 (39)	340 (13.4)	17.5 (39)	340 (13.4)	17.5 (39)
ASME 1½" class 1500, ring joint (RJ)	n/a	n/a	340 (13.4)	17.7 (39)	340 (13.4)	17.7 (39)	340 (13.4)	17.7 (39)	340 (13.4)	17.7 (39)

L1 dimension and weight with process connections according to EN 1092-1 (AISI 316L)

Process connection size and type	FCS100 sensor nominal size DN 1		DN 2		DN 4		DN 6		DN 8	
	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)
EN DN 15 PN 40 type B1, raised face (RF)	240 (9.4)	6.8 (15)	240 (9.4)	6.8 (15)	240 (9.4)	6.8 (15)	240 (9.4)	6.8 (15)	240 (9.4)	6.8 (15)
EN DN 15 PN 40 type D, with groove	240 (9.4)	6.6 (15)	240 (9.4)	6.6 (15)	240 (9.4)	6.6 (15)	240 (9.4)	6.6 (15)	240 (9.4)	6.6 (15)
EN DN 15 PN 40 type E, with spigot	240 (9.4)	6.5 (14)	240 (9.4)	6.5 (14)	240 (9.4)	6.5 (14)	240 (9.4)	6.5 (14)	240 (9.4)	6.5 (14)
EN DN 15 PN 40 type F, with recess	240 (9.4)	6.7 (15)	240 (9.4)	6.7 (15)	240 (9.4)	6.7 (15)	240 (9.4)	6.7 (15)	240 (9.4)	6.7 (15)
EN DN 15 PN 100 type B1, raised face (RF)	250 (9.8)	7.6 (17)	250 (9.8)	7.6 (17)	250 (9.8)	7.6 (17)	250 (9.8)	7.6 (17)	250 (9.8)	7.6 (17)
EN DN 15 PN 100 type D, with groove	250 (9.8)	13.6 (30)	250 (9.8)	13.6 (30)	250 (9.8)	13.6 (30)	250 (9.8)	13.6 (30)	250 (9.8)	13.6 (30)
EN DN 15 PN 100 type E, with spigot	250 (9.8)	7.3 (16)	250 (9.8)	7.3 (16)	250 (9.8)	7.3 (16)	250 (9.8)	7.3 (16)	250 (9.8)	7.3 (16)
EN DN 15 PN 100 type F, with recess	250 (9.8)	7.5 (17)	250 (9.8)	7.5 (17)	250 (9.8)	7.5 (17)	250 (9.8)	7.5 (17)	250 (9.8)	7.5 (17)
EN DN 25 PN 40 type B1, raised face (RF)	n/a	n/a	240 (9.4)	7.7 (17)	240 (9.4)	7.7 (17)	240 (9.4)	7.7 (17)	240 (9.4)	7.7 (17)

Dimensional drawings (continued)

Process connection size and type	FCS100 sensor nominal size DN 1		DN 2		DN 4		DN 6		DN 8	
	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)
EN DN 25 PN 40 type D, with groove	n/a	n/a	240 (9.4)	7.7 (17)	240 (9.4)	7.7 (17)	240 (9.4)	7.7 (17)	240 (9.4)	7.7 (17)
EN DN 25 PN 40 type E, with spigot	n/a	n/a	240 (9.4)	7.4 (16)	240 (9.4)	7.4 (16)	240 (9.4)	7.4 (16)	240 (9.4)	7.4 (16)
EN DN 25 PN 40 type F, with recess	n/a	n/a	240 (9.4)	7.6 (17)	240 (9.4)	7.6 (17)	240 (9.4)	7.6 (17)	240 (9.4)	7.6 (17)
EN DN 25 PN 40 type B1, raised face (RF)	n/a	n/a	240 (9.4)	7.7 (17)	240 (9.4)	7.7 (17)	240 (9.4)	7.7 (17)	240 (9.4)	7.7 (17)
EN DN 25 PN 40 type D, with groove	n/a	n/a	240 (9.4)	7.7 (17)	240 (9.4)	7.7 (17)	240 (9.4)	7.7 (17)	240 (9.4)	7.7 (17)
EN DN 25 PN 40 type E, with spigot	n/a	n/a	240 (9.4)	7.4 (16)	240 (9.4)	7.4 (16)	240 (9.4)	7.4 (16)	240 (9.4)	7.4 (16)
EN DN 25 PN 40 type F, with recess	n/a	n/a	240 (9.4)	7.6 (17)	240 (9.4)	7.6 (17)	240 (9.4)	7.6 (17)	240 (9.4)	7.6 (17)
EN DN 25 PN 100 type B1, raised face (RF)	n/a	n/a	260 (10.2)	10.3 (23)	260 (10.2)	10.3 (23)	260 (10.2)	10.3 (23)	260 (10.2)	10.3 (23)
EN DN 25 PN 100 type D, with groove	n/a	n/a	260 (10.2)	10.2 (22)	260 (10.2)	10.2 (22)	260 (10.2)	10.2 (22)	260 (10.2)	10.2 (22)
EN DN 25 PN 100 type E, with spigot	n/a	n/a	260 (10.2)	9.7 (21)	260 (10.2)	9.7 (21)	260 (10.2)	9.7 (21)	260 (10.2)	9.7 (21)
EN DN 25 PN 100 type F, with recess	n/a	n/a	260 (10.2)	10.1 (22)	260 (10.2)	10.1 (22)	260 (10.2)	10.1 (22)	260 (10.2)	10.1 (22)
EN DN 40 PN 40 type B1, raised face (RF)	n/a	n/a	240 (9.4)	9.2 (20)	240 (9.4)	9.2 (20)	240 (9.4)	9.2 (20)	240 (9.4)	9.2 (20)
EN DN 40 PN 40 type D, with groove	n/a	n/a	240 (9.4)	9.1 (20)	240 (9.4)	9.1 (20)	240 (9.4)	9.1 (20)	240 (9.4)	9.1 (20)
EN DN 40 PN 40 type E, with spigot	n/a	n/a	240 (9.4)	8.8 (19)	240 (9.4)	8.8 (19)	240 (9.4)	8.8 (19)	240 (9.4)	8.8 (19)
EN DN 40 PN 40 type F, with recess	n/a	n/a	240 (9.4)	9.0 (20)	240 (9.4)	9.0 (20)	240 (9.4)	9.0 (20)	240 (9.4)	9.0 (20)
EN DN 40 PN 100 type B1, raised face (RF)	n/a	n/a	320 (12.6)	13.7 (30)	320 (12.6)	13.7 (30)	320 (12.6)	13.7 (30)	320 (12.6)	13.7 (30)
EN DN 40 PN 100 type D, with groove	n/a	n/a	320 (12.6)	13.6 (30)	320 (12.6)	13.6 (30)	320 (12.6)	13.6 (30)	320 (12.6)	13.6 (30)
EN DN 40 PN 100 type E, with spigot	n/a	n/a	320 (12.6)	13.2 (29)	320 (12.6)	13.2 (29)	320 (12.6)	13.2 (29)	320 (12.6)	13.2 (29)
EN DN 40 PN 100 type F, with recess	n/a	n/a	320 (12.6)	13.5 (30)	320 (12.6)	13.5 (30)	320 (12.6)	13.5 (30)	320 (12.6)	13.5 (30)

L1 dimension and weight with process connections according to JIS B 2220 (AISI 316 / AISI 316L)

Process connection size and type	FCS100 sensor nominal size DN 1		DN 2		DN 4		DN 6		DN 8	
	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)
JIS DN 15 10K	240 (9.4)	6.5 (14)	240 (9.4)	6.5 (14)	240 (9.4)	6.5 (14)	240 (9.4)	6.5 (14)	240 (9.4)	6.5 (14)
JIS DN 15 20K	240 (9.4)	6.7 (15)	240 (9.4)	6.7 (15)	240 (9.4)	6.7 (15)	240 (9.4)	6.7 (15)	240 (9.4)	6.7 (15)
JIS DN 25 10K	n/a	n/a	240 (9.4)	7.6 (17)	240 (9.4)	7.6 (17)	240 (9.4)	7.6 (17)	240 (9.4)	7.6 (17)
JIS DN 25 20K	n/a	n/a	240 (9.4)	8 (18)	240 (9.4)	8 (18)	240 (9.4)	8 (18)	240 (9.4)	8 (18)
JIS DN 40 10K	n/a	n/a	240 (9.4)	8.4 (19)	240 (9.4)	8.4 (19)	240 (9.4)	8.4 (19)	240 (9.4)	8.4 (19)
JIS DN 40 20K	n/a	n/a	240 (9.4)	8.8 (19)	240 (9.4)	8.8 (19)	240 (9.4)	8.8 (19)	240 (9.4)	8.8 (19)

L1 dimension and weight with process connections according to NPT internal thread

Process connection size and type	FCS100 sensor nominal size DN 1		DN 2		DN 4		DN 6		DN 8	
	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)
1/4" NPT	260 (10.2)	5.6 (12)	260 (10.2)	5.6 (12)	260 (10.2)	5.6 (12)	260 (10.2)	5.6 (12)	260 (10.2)	5.6 (12)
3/8" NPT	260 (10.2)	5.6 (12)	260 (10.2)	5.6 (12)	260 (10.2)	5.6 (12)	260 (10.2)	5.6 (12)	260 (10.2)	5.6 (12)
1/2" NPT	260 (10.2)	5.6 (12)	260 (10.2)	5.6 (12)	260 (10.2)	5.6 (12)	260 (10.2)	5.6 (12)	260 (10.2)	5.6 (12)
3/4" NPT	260 (10.2)	5.5 (12)	260 (10.2)	5.5 (12)	260 (10.2)	5.5 (12)	260 (10.2)	5.5 (12)	260 (10.2)	5.5 (12)

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Dimensional drawings (continued)

L1 dimension and weight with process connections according to G internal thread

Process connection size and type	FCS100 sensor nominal size DN 1		DN 2		DN 4		DN 6		DN 8	
	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)
G ¼ inch	260 (10.2)	5.6 (12)	260 (10.2)	5.6 (12)	260 (10.2)	5.6 (12)	260 (10.2)	5.6 (12)	260 (10.2)	5.6 (12)
G ½ inch	260 (10.2)	5.6 (12)	260 (10.2)	5.6 (12)	260 (10.2)	5.6 (12)	260 (10.2)	5.6 (12)	260 (10.2)	5.6 (12)
G ¾ inch	260 (10.2)	5.6 (12)	260 (10.2)	5.6 (12)	260 (10.2)	5.6 (12)	260 (10.2)	5.6 (12)	260 (10.2)	5.6 (12)
G 1 inch	260 (10.2)	5.5 (12)	260 (10.2)	5.5 (12)	260 (10.2)	5.5 (12)	260 (10.2)	5.5 (12)	260 (10.2)	5.5 (12)

L1 dimension and weight with hygienic clamp process connections according to DIN 32676 series A

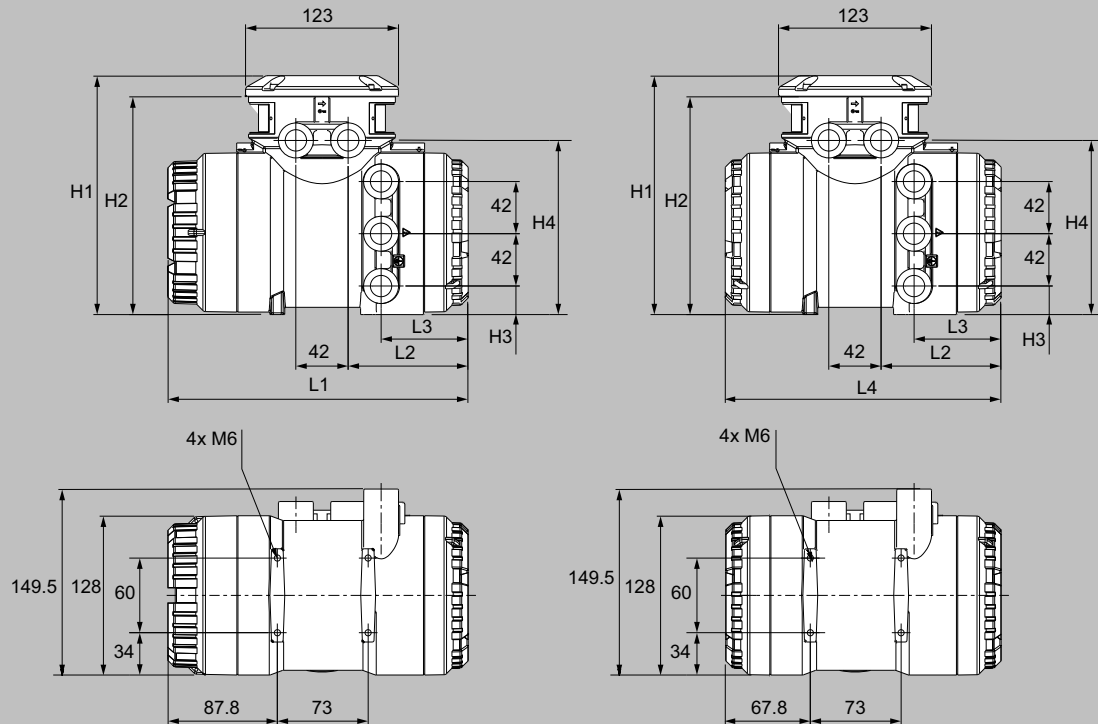
Process connection size and type	FCS100 sensor nominal size DN 1		DN 2		DN 4		DN 6		DN 8	
	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)
DIN 32676 series A DN 15	240 (9.4)	5.3 (12)	240 (9.4)	5.3 (12)	240 (9.4)	5.3 (12)	240 (9.4)	5.3 (12)	240 (9.4)	5.3 (12)
DIN 32676 series A DN 25	n/a	n/a	240 (9.4)	5.4 (12)	240 (9.4)	5.4 (12)	240 (9.4)	5.4 (12)	240 (9.4)	5.4 (12)
DIN 32676 series A DN 40	n/a	n/a	240 (9.4)	5.4 (12)	240 (9.4)	5.4 (12)	240 (9.4)	5.4 (12)	240 (9.4)	5.4 (12)

L1 dimension and weight with hygienic clamp process connections according to DIN 32676 series C (Tri-clamp)

Process connection size and type	FCS100 sensor nominal size DN 1		DN 2		DN 4		DN 6		DN 8	
	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)	L1 in mm (inch)	Weight in kg (lb)
DIN 32676 series C ½ inch	240 (9.4)	5.3 (12)	240 (9.4)	5.3 (12)	240 (9.4)	5.3 (12)	240 (9.4)	5.3 (12)	240 (9.4)	5.3 (12)
DIN 32676 series C 1 inch	n/a	n/a	240 (9.4)	5.4 (12)	240 (9.4)	5.4 (12)	240 (9.4)	5.4 (12)	240 (9.4)	5.4 (12)
DIN 32676 series C 1½ inch	n/a	n/a	240 (9.4)	5.4 (12)	240 (9.4)	5.4 (12)	240 (9.4)	5.4 (12)	240 (9.4)	5.4 (12)

Dimensional drawings (continued)

Drawings, dimensions and weight for FCT020 and FCT040 transmitters



Dimensions of FCT020 or FCT040 transmitter in mm. Transmitter with display shown on the left. Transmitter without display shown on the right.

Dimensions L1 to L4 and H1 to H4 (material options: stainless steel, aluminum)

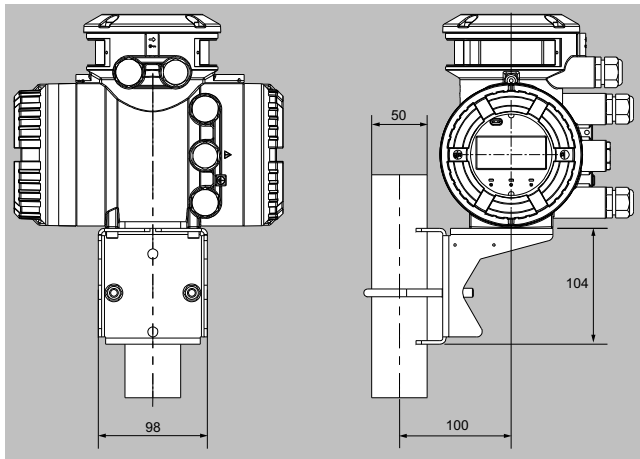
Material	L1 in mm (inch)	L2 in mm (inch)	L3 in mm (inch)	L4 in mm (inch)	H1 in mm (inch)	H2 in mm (inch)	H3 in mm (inch)	H4 in mm (inch)
Stainless steel	255.5 (10.06)	110.5 (4.35)	69 (2.72)	235 (9.25)	201 (7.91)	184 (7.24)	24 (0.94)	150.5 (5.93)
Aluminum	241.5 (9.51)	96.5 (3.8)	70 (2.76)	221 (8.7)	192 (7.56)	175 (6.89)	23 (0.91)	140 (5.51)

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Dimensional drawings (continued)



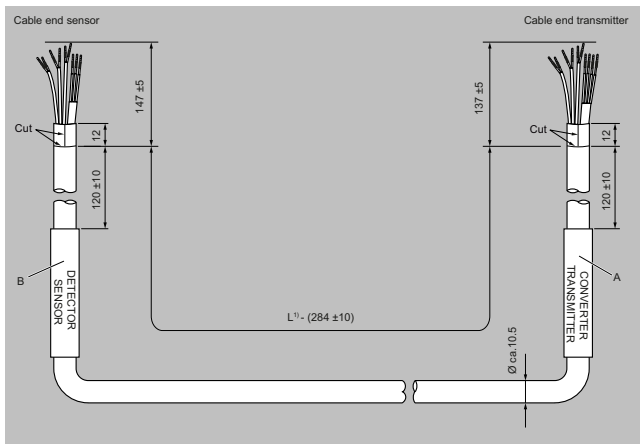
Dimensions of transmitter in mm, attached to mounting bracket.

Transmitter weights

Design type	Transmitter enclosure material	Weight in kg (lb)
Remote	Cast aluminum	4.2 (9.3)
	CF-8M stainless steel	12.5 (27.6)

Connecting cable dimensions and weights

Standard cable

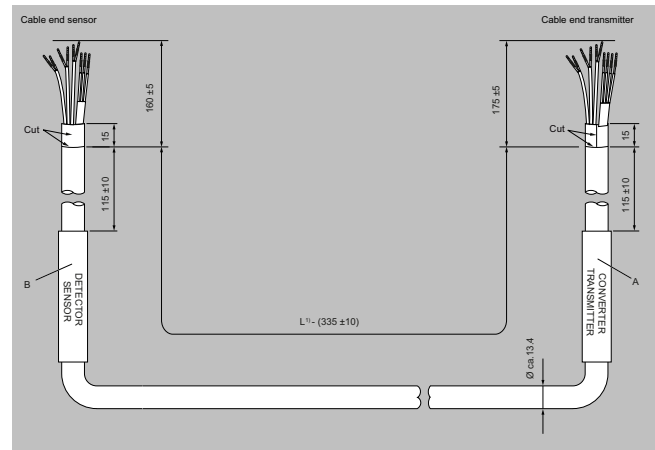


Dimensions in mm. Standard terminated cable. A and B are factory fitted labels.

Option code	Cable length, L	Cable color
L51	5 m (16.4 ft)	Non-Ex: gray / Ex: blue
L54	10 m (32.8 ft)	
L57	15 m (49.2 ft)	
L60	20 m (65.6 ft)	
L63	30 m (98.4 ft)	

Weight of cable ≤ 0.200 kg/m (0.134 lb/ft)

Standard cable with steel armored option

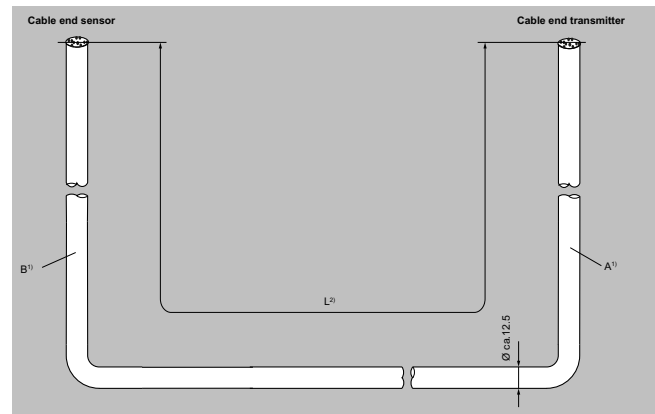


Dimensions in mm. Steel armored terminated cable. A and B are factory fitted labels.

Option code	Cable length, L	Cable color
L51 + A20/A21	5 m (16.4 ft)	Blue
L54 + A20/A21	10 m (32.8 ft)	
L57 + A20/A21	15 m (49.2 ft)	
L60 + A20/A21	20 m (65.6 ft)	
L63 + A20/A21	30 m (98.4 ft)	

Weight of cable ≤ 0.300 kg/m (0.202 lb/ft)

Fire retardant cable



Dimensions in mm. Fire retardant unterminated cable. Labels A and B are supplied loose with termination kit.

Option code	Cable length, L	Cable color
L71	5 m (16.4 ft)	Gray
L74	10 m (32.8 ft)	
L77	15 m (49.2 ft)	
L80	20 m (65.6 ft)	
L83	30 m (98.4 ft)	

Weight of cable ≤ 0.270 kg/m (0.181 lb/ft)