



PROCESS INSTRUMENTATION

Leading accuracy **Fastest update rate**

SITRANS F C digital Coriolis solutions.
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SIEMENS

The future is digital – making better decisions faster.

Today's digital revolution is opening exciting new doors for the process industries. By enhancing the flexibility and efficiency of manufacturing without any loss of quality, digitalization empowers companies to reduce time-to-market and gain a competitive edge.

Intelligent devices and systems generate valuable data with the potential to improve process transparency and enable smarter choices. Leveraged properly, this wealth of information makes it possible to maximize your plant's efficiency, respond more quickly to customer needs and boost your bottom line.

Having pioneered the concept of Totally Integrated Automation, Siemens is a driving force behind the movement toward digitalization in manufacturing. Our experience, know-how and portfolio of integrated solutions help to generate performance improvements across the entire value chain – starting at the field level with digitally based process instrumentation.



Digitalization is one of the most effective ways for the process industries to improve competitiveness. It allows decisions of never-before-seen quality to be made: fast, well-founded and based on facts. This creates new possibilities for systematic plant optimization throughout the entire life cycle. And it is precisely in this area that Siemens supports you – as an experienced partner and pioneer in the area of digitalization.

Digitize your productivity.

From the smallest dose of chemicals to the massive quantities of bunker fuel pumped into a cargo ship, the Siemens Coriolis Mass flow meter portfolio harnesses the power of digital signal processing to bring you market-leading accuracy, a best-in-class update rate with unmatched customization flexibility for applications of every size and scope.

SITRANS F C flow systems simplify your day-to-day operation thanks to innovative features like an easy-to-navigate graphical interface. Siemens, a trusted partner with satisfied customers around the world, ensures consistent, top quality solutions complemented by worldwide expert-level support for full system integration.

With SITRANS F C, Coriolis Mass flow measurement has never been easier – or more innovative.



By choosing a SITRANS F C digital Coriolis Mass solution from Siemens, you can optimize your entire process for increased productivity, enhanced efficiency and a better bottom line across virtually every industry.



Embrace the benefits of digitalization with SITRANS F C. Our Coriolis Mass flow transmitter platform is driven by powerful digital signal processing technology, delivering true multiparameter measurements with the highest levels of accuracy and reliability.

Customized solutions for every industry.

Application: Cost-efficient carpet dyeing

To ensure that their coloring agents are correctly proportioned, Lano Carpets, producing 20,000 m² of tufted carpet every day, uses a SITRANS F C solution as part of their continuous dye production process.

The Siemens Coriolis flow meter provides maximum precision for the pump control system and ensures that switching to a new color is virtually automatic, with significantly reduced product loss compared to the former solution.

Key customer benefits include:

- High precision flow rate and density measurement, ensuring accurate control
- The Coriolis meter eliminated the risk of errors in color mixing, resulting in consistent and reliable color output.
- Accurate volumetric flow rate calculation

Application: Enhancing wellhead output – Affiliated industries/OEMs

Requiring more efficient treatment of raw oil in the field, a large oil and gas corporation needed a solution to better manage the consumption, pumping time, content and quality of oil flowing from multiple wellheads.

They commissioned a series of custom-built skids including compact SITRANS F C flowmeters, which provide highly accurate measurements and valuable insight into how the separators on the skid should be adjusted for maximum effectiveness.

Key customer benefits include:

- Significant increase in the output of high-quality raw oil free from particles or entrained gas
- Multiparameter measurement of volume, density, temperature and oil-water fraction
- Efficient data transfer to the control system via Modbus communication

Application: Increasing production of drilling fluid – Oil & gas industry

For many years, an oilfield services plant that manufactures chemical mixtures for drilling fluid relied on load cells to measure the chemicals in the mixing house.

As the load cells used up a significant amount of valuable floor space, required regular recalibration and slowed down operations, the company installed a digital Coriolis Mass flow meter from Siemens instead.

The solution soon proved that its durable construction rendered it immune from process noise, and that its accuracy was repeatable over an extended duration. Before long, the company decided to exchange all load cells with Coriolis meters.

Key customer benefits include:

- Minimized effects from pipe vibrations and fluctuating measurement parameters
- Never-before-achieved level of 0.1% precision
- Rapid increase in productivity due to in-situ flow measurement and real-time readings

Application: Improving quality control for vaccines – Food & Beverage/Pharma industries

To achieve the critical goal of scaling up production without compromising performance, Eptipix, a producer of vaccines, incorporated a Siemens Coriolis flow system into the blending process.

Eptipix now depends on the compact and modular footprint of the Siemens solution to establish a normal product density profile by monitoring oil density and volumetric flow as the water phase is blended in. Data derived from the meter helps to determine when fluid addition rates or the mixer speed should be adjusted.

Key customer benefits include:

- Easy fit into the small manufacturing area
- High 0.1% measurement performance
- Simple-to-use HMI
- Outstanding technical support

Because every drop counts.

SITRANS F C low flow.

Digitize and enhance your low-flow performance with a Coriolis Mass flow solution from Siemens. You benefit from market-leading accuracy for mass flow, density and concentration measurement – along with world-class reliability resulting from high immunity to process noise, low pressure loss and a stable zero point. The update rate ensures immediate step response in dynamic applications.

The SITRANS F C low-flow portfolio offers you the flexibility to pair a SITRANS FCT020 or FCT040 digital transmitter with any sensor needed. Each sensor meets the needs of specific processes requiring precise measurement at the lowest flow rates – including batching, dosing and filling of both liquids and gases.

SITRANS FCS 100 in sizes of 0.04" and 0.08" (1mm and 2mm)

In mini-plant applications, for research and development and in industries where accurate recipe control means everything, the SITRANS FCS 100 is a superior choice. Its tube design offers optimal hygiene, safety and SIP/CIP cleanability. The large wall thickness extends the lifetime of the meter with added corrosion resistance and durability in high-pressure environments.

SITRANS FCS 100 in sizes of 0.16", 0.25" and 0.30" (4mm, 6mm and 8mm)

The SITRANS FCS100 is a highly versatile sensor thanks to its rigid construction and compact design, making it ideal for applications that require multiple sensors to fit into small spaces. Its plug-and-play interface simplifies installation, while its rugged stainless steel enclosure protects against corrosion. The FCS100 low flow sensor is well suited for processes ranging from mini-plants in the pharmaceutical industry to harsh environments within the chemical and oil and gas industries.



The versatile top performers.

FCT020 and FCT040 transmitters.

The SITRANS F C transmitter program has been designed to deliver market-leading accuracy and data update speed while also ensuring unmatched noise immunity and simplicity in use. Based on a digital platform and driven by a powerful measurement algorithm, Siemens Coriolis transmitters are individually configurable to deliver true multiparameter measurements – including mass flow, volume flow, density, temperature and concentration (e.g. Brix and Plato) – and feature a range of innovations to enhance your operational efficiency.

The results: The new transmitters offer exceptional accuracy down to 0.1% and repeatability of 0.05% along with a stable zero point and high resistance to process noise. The flexible F C transmitter program includes the right solution for every application, with a intelligent design for convenient installation and a choice of wall-mount, compact or remote configuration for most sensor sizes.



Minimize errors and maximize stability

Next-generation SITRANS F C flowmeters digitize the signal at the earliest stage of the measurement process, resulting in a very strong signal-to-noise ratio. You benefit from exceptional measurement accuracy along with high resistance to process noise and a stable zero point.

Constructed for excellence - SITRANS FC sensors.

The SITRANS Coriolis is a remarkable digital Coriolis flow solution that combines the SITRANS Coriolis sensor with the state-of-the-art SITRANS FCT020 and FCT040 transmitters.

Our goal in developing the new Siemens Coriolis product was to enhance productivity by increasing the efficiencies. The result is a cutting-edge flowmeter at the top of its class in accuracy and reliability – yet space-saving and easy to work with.

Robust and compact

The SITRANS Coriolis sensor is one of the most compact Coriolis sensors on the market. Its small size simplifies installation and replacement, and also allows you to optimize your plant layout by fitting multiple units into tight spaces.

Its robust frame and housing guarantee superior resistance to external vibrations, creating an ideal measurement environment.

The sensor's tube is designed with a short length and large diameter, minimizing pressure loss and allowing for a significantly higher mass flow rate through the meter. You benefit from a high turndown ratio of greater than 100:1 along with added flexibility in application sizing and configuration.

The Siemens FCS line of Coriolis sensors also offers:

- Size options from 0.04" to 10" (DN 1 to 250) for a broad selection of applications
- Self-draining tubes built to resist fluid and solid residue build-up
- Stable zero point

High precision, low maintenance

The SITRANS Coriolis flow systems features accuracy of 0.1% of flow rate and a density accuracy of 0.5 kg/m³ for enhanced quality control. It is also capable of measuring and separating the measurement of two homogeneously mixed substances passing through the same medium, known as fraction flow.

With the SITRANS FC solution you also get:

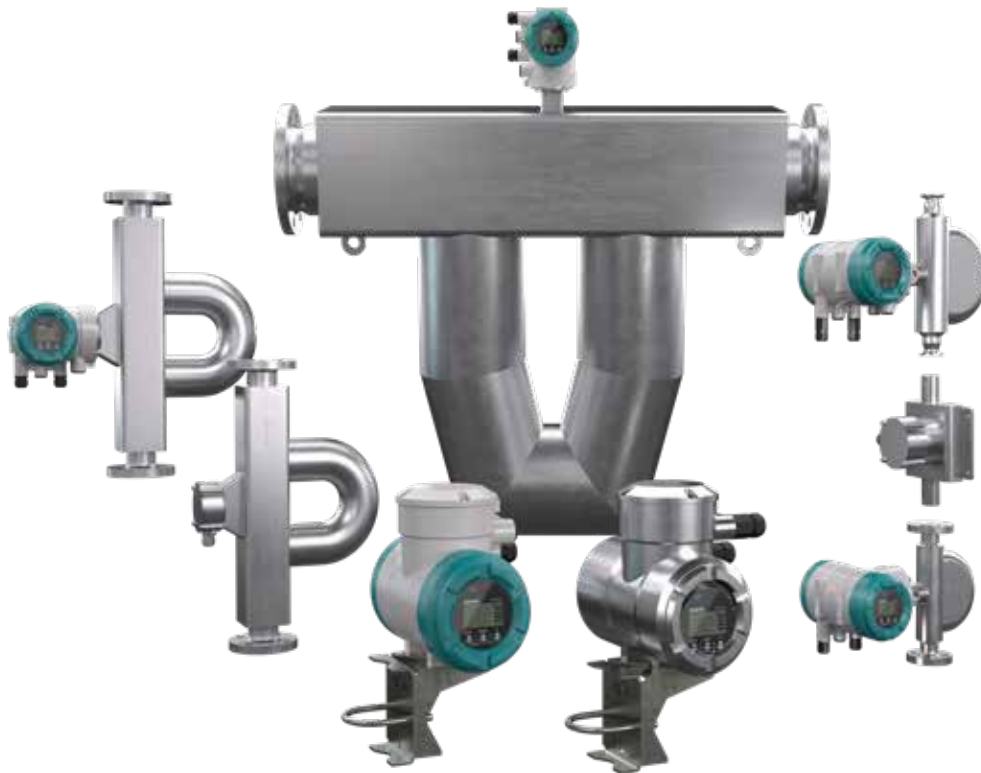
- Flexibility for direct integration into DCS automation systems via HART/PROFIBUS/Modbus or to serve as a standalone solution
- High turndown ratio to ensure consistent measurement across a wide range of flow rates
- High-performance monitoring of fast batching, dosing and filling applications
- Option for remote sensor configuration, providing the opportunity to optimize transmitter placement
- Low cost of ownership and maintenance-free design with no moving parts or wear



High-performance tube shape

The sensor's tube shape results in market-leading accuracy of 0.1% and high sensitivity for optimal measurement of even very low flows. The thick tube walls protect against corrosion and enhance reliability.

A new chapter in the world of Coriolis flow measurement



SITRANS FC is the range of Siemens Coriolis mass flowmeters that provides high performance process measurements. The extensive portfolio provides multi-parameter measurement solutions for all fluid types, including liquids, gases and multi-phase fluids. The SITRANS FC family provides flexibility, in terms of sizes, performance level and sensor types, as well as approvals & certification. Each SITRANS FC Coriolis Mass Flowmeter comprises one SITRANS FCSX00 Sensor and one SITRANS FCTOX0 transmitter.

All sensors can be combined with compact or remote mounted transmitters (SITRANS FCS100 precision sensors are compatible with remote mounted transmitters only), guaranteeing a maximum of flexibility to exactly meet the needs of your measurement task.

Your benefits at a glance

Engineering and project management	3 to 6 measurements in one device reduces spending on each measured value	Use Siemens measurement experts to minimize project expenditure	Intuitive sizing software helps to optimise specification
Installation	Compact tube design helps OEMs to reduce skid footprint	Flexible mounting position lowers installation complexity	Adaptable choice of process connections avoids costly modifications to existing plant
Configuration and commissioning	Easy setup wizard shortens commissioning time	Siemens Process Device Manager (PDM) for simple plant wide configuration	The error management function allows the user to set alarms and warnings according to the application.
Operation	Zero point quality and high accuracy ensure user product quality with less waste	Intelligent dynamic range maintains performance when re-scaling production	Self-verification alerts via PDM to process upsets, resulting in reduced downtime
Maintenance and asset management	Tube health check monitors key diagnostics for effective predictive maintenance and unplanned downtime	Consistent design throughout with MicroSD card functions combine to optimise technician training	Interchangeable parts and extensive portfolio contribute to reduced spares cost

SITRANS FCS100: High-precision measurement of very small quantities.

Extremely small.dual bent Coriolis flowmeter series for highly accurate measurement at lowest flows. The dual tube design compensates for fluctuations of density, temperature, pressure, and environment conditions. This provides a consistent,repeatable and accurate measurement especially for small size Coriolis flow meters.



Measuring range	0.01 to 1500 kg/h	Sensor size	DN1, DN2, DN4, DN6, DN8
Maximum process temp.	-58 to +500 °F -50 to +260 °C	Maximum pressure	Up to 4183 psi Up to 285 bar
Wetted materials	Alloy 22 and 316L/1.4404	Build-in length	Standard According to NAMUR NE132 Customer specific
Communication protocols	HART Profibus PA Modbus Profinet	Features	Functional Safety SIL2/3 Custody Transfer (NTEP) NAMUR NE 21, NE 95 Tube Health Check
Connections		Approvals	
Threaded	Internal G (BSPP) Internal NPT	Ex-approvals	FM, ATEX, IECEx, Korea Ex
Flanges	ASME B15.5 EN 1092-1 JIS B 2220	Marine (class 2 and 3)	American Bureau of Shipping Det Norske Veritas Lloyds Register Bureau Veritas Korean Register
Hygienic	DIN32676 Clamp		

SITRANS FCS500: Cost-efficient multi-parameter measurement

The versatile Coriolis Mass flow meter with superior turndown and lowest pressure drop. Ideal for a broad range of standard applications, this series is a flexible and cost-effective solution for highly accurate flow and density measurements. Features such as concentration measurement or the Tube Health Check function allow the meters to be adjusted to your needs. Specifically designed and certified for food & beverage, biotechnology and pharmaceutical utility applications. This series is the right choice for the daily constraints of hygienic processes, ensuring continuous product quality and minimizing losses.



Measuring range	0.8 to 255 000 kg/h	Sensor size	DN10, DN15, DN25, DN40, DN65, DN80
Maximum process temp.	-94 to +392 °F -70 to +200 °C	Maximum pressure	Up to 1450 psi Up to 100 bar
Wetted materials	316L SS/1.4404	NAMUR NE132 build-in length	Standard According to NAMUR NE132 Customer specific
Communication protocols	HART Profibus PA Modbus Profinet	Features	Functional Safety SIL2/3 Custody Transfer (NTEP) NAMUR NE 21, NE 95 Tube Health Check
Connections		Approvals	
Threaded	Internal G (BSPP) Internal NPT	Ex-approvals	FM, ATEX, IECEx, Korea Ex
Flanges	ASME B15.5, EN 1092-1 JIS B 2220	Hygienic	3A EHEDG
Hygienic	DIN32676 Clamp ISO2852 Clamp DIN11851 Thread SMS1145 Thread	Marine (class 2 and 3)	American Bureau of Shipping Det Norske Veritas Lloyds Register Bureau Veritas Korean Register

SITRANS FCS600: Precise measurement under extreme conditions

Highest performance under the most demanding conditions. With the most robust and durable design, this sensor offers unrivaled performance for demanding and critical applications e.g. for precise measurements in high pressure applications. Safety is always a concern, especially when operating under high pressures. Therefore, this series has been designed to meet the highest security requirements. Combined with advanced diagnostics such as the "Tube Health Check" function, operations are safely under control at all times.



Measuring range	1.5 to 170 000 kg/h	Sensor size	DN15, DN25, DN40, DN65
Maximum process temp.	-321 to +662 °F -196 to +350 °C	Maximum pressure	up to 10000 psi up to 700 bar
Wetted materials	316L SS/1.4404 or Alloy 22	Namur NE132 build-in length	Standard According Namur NE132 Customer specific
Communication protocols	HART Profibus PA Modbus Profinet	Features	Functional Safety SIL2/3 Custody Transfer (NTEP) Namur NE 21, NE 95 Tube Health Check
Connections		Approvals	
Threaded	Internal G (BSPP) Internal NPT	Ex-approvals	FM, ATEX, IECEx, Korea Ex
Flanges	ASME B15.5, EN 1092-1, JIS B 2220	Hygienic	3A EHEDG
Hygienic	DIN32676 Clamp ISO2852 Clamp	Marine (class 2 and 3)	American Bureaux of Shipping Det Norske Veritas Lloyds Register Bureaux Veritas Korean Register

SITRANS FCS700: Large quantities in small footprints

Delivering best-in-class accuracy and most flexible installation at high flow rates. The unmatched accuracy at the low end of the measuring range offers maximum flexibility from engineering to final operation. This series unifies a long service life with low maintenance costs and reliable performance.



Measuring range	125 to 1 100 000 kg/h	Sensor size	DN100, DN150, DN200
Maximum process temp.	-94 to +662 °F -70 to +350 °C	Maximum pressure	Up to 1450 psi Up to 100 bar
Wetted materials	316L SS/1.4404 or Alloy 22	Namur NE132 build-in length	Standard According Namur NE132 Customer specific
Communication protocols	HART Profibus PA Modbus Profinet	Features	Functional Safety SIL2/3 Custody Transfer (NTEP) Namur NE 21, NE 95 Tube Health Check
Connections		Approvals	
Threaded		Ex-approvals	FM, ATEX, IECEx, Korea Ex
Flanges	ASME B15.5 EN 1092-1 JIS B 2220	Hygienic	American Bureaux of Shipping Det Norske Veritas Lloyds Register Bureaux Veritas Korean Register
Hygienic			

SITRANS FC transmitters deliver market-leading accuracy and ease of use.

Tailor them to your exact needs with a wide range of enclosures, communication options and approvals. Delivering best-in-class accuracy and most flexible installation at high flow rates. The unmatched accuracy at the low end of the measuring range offers maximum flexibility from engineering to final operation. This series unifies a long service life with low maintenance costs and reliable performance.

SITRANS FCT020	SITRANS FCT040 (In addition to FCT020 features)
Multilingual wizard for easy setup and guidance through the main configuration	Tube Health Check and key diagnostics for inline meter verification without disturbing running measurements
Event Management as unique and useful support to run the process effectively and safely	Extensive range of optional functions selectable at time of ordering
Data mobility provided by microSD card for easy transfer to other devices for fast setup or to pc for in-depth process analysis or remote services	Batching function and Viscosity function
Widest range of I/O combinations in the market for most flexible adjustment to the existing system periphery	Dynamic Pressure Compensation for consistently accurate and stable measurement even with significant fluctuations in operating pressures
Universal power supply to install the device anywhere in the world	Inline concentration measurement
Hart, Modbus communication	Integrated net oil computing acc. API standard
NAMUR NE95 compliance, SIL 2 and SIL 3 compliance	Hart, Modbus, Profibus PA communication

SITRANS FC flow meter systems

Each SITRANS FC Coriolis Mass flow meter is built from one Sitrans FCS sensor and one SITRANS FCT transmitter.

FCS sensors have a common twin tube U-shaped design. The four available sensor types are defined by size, wetted part materials, pressure & temperature rating, and process connection type. Generally, sensors can be combined with compact or remote mounted transmitters. Two transmitter versions, FCT020 standard and FCT040 advanced, provide a choice of performance, measurement functions, housing material and output types.

Compact example:

FCS600 sensor with FCT020 standard transmitter becomes a complete FC620 Coriolis flow meter. Specification of sensor size, transmitter and process connections is required.

Remote example:

FCS600 sensor with FCT040 advanced transmitter becomes a complete FC640 Coriolis flow meter. Specification of sensor size, terminal housing design, transmitter, process connections and cable are required.

The SITRANS FC Coriolis Mass flow family provides great flexibility.

Your application need is covered, with a wide range on sensor sizes from 0.04" to 10" (DN1 up to DN250) including various process connections, wetted part materials and temperature ranges. You can choose from different performance levels and can select several optional functions.



Measuring everything that matters:

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Siemens Process Instrumentation offers best-in-class measurement and seamless integration into your automation system. We are the total solution provider for flow, level, pressure, temperature, weighing, positioners and more.

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