



**What ensures measurement to accurate standards?**

The SITRANS FUT1010 calibrated ultrasonic flow meter tells you exactly what's flowing

Answers for Industry.

**SIEMENS**



## SITRANS FUT1010

# Custody transfer accuracy with WideBeam ultrasonic flow technology

With the latest innovation from Siemens, the WideBeam ultrasonic technology has gone custody transfer. The result is the versatile SITRANS FUT1010 flow meter developed for liquid and gas applications within the hydrocarbon industry.

Thanks to the WideBeam ultrasonic transit time technology the SITRANS FUT1010 achieves highly accurate flow measurement. And with the TransLoc™ mounting system, the transducers are permanently mounted on the outside of the sensor, preventing contact with the medium.

The result is no cavities or clogging by high paraffin liquids found in many hydrocarbon applications.

The SITRANS FUT1010 is available in two configurations, both featuring TransLoc:

- A version for liquid hydrocarbon applications
- A version for gas measurement

As a manufacturer of best-in-class flow meters, Siemens offers a ground-breaking technology wrapped in an innovative design.

Combine this with 40+ years of presence within the field of ultrasonic flow measurement, and you can rest assured that you are getting the right solution.

There is no need to search further.

# Well-proven technologies ensure high precision

**WideBeam ultrasonic signal processing, TransLoc transducer mounting system and automatic zero drift correction. These are features that make the SITRANS FUT1010 an excellent choice for high performance hydrocarbon applications.**



## WideBeam signal processing

Siemens' WideBeam transit time technology increases flow measurement precision. The resonant frequency of the pipe wall is used to transmit the beam into the media with the wall acting as a waveguide. The result is a strong coherent signal, which is the basis of the meter's high accuracy and rangeability.

## TransLoc transducer mounting system

With the permanently mounted transducer system, TransLoc, Siemens has developed a highly accurate and reliable custody transfer solution for the hydrocarbon industry. Using TransLoc, the WideBeam transducers are permanently mounted onto the sensor, permitting flow calibration and subsequent use in custody transfer accuracy applications. The transducers are sealed

completely, protecting them from harsh environments. And with an IP65 enclosure rating and the use of dry couplant, high performance and low maintenance is guaranteed.

## Zero drift compensation

To correct for zero drift without interrupting flow, the SITRANS FUT1010 dynamically compensates for variations in the transducer temperature. If not corrected, such conditions can impact accuracy.

## SITRANS FUT1010 benefits in short

- WideBeam performance that meets custody transfer accuracy
- TransLoc mounting system is virtually maintenance-free
- High viscosity range (up to 2800 cst)

Liquid applications		Gas applications	
Pipelines	Custody transfer, allocation, line balance, interface detection, densitometer reading	Upstream	Production wells, gathering, separation and dehydration
Terminals	Check metering, transmix metering, product identification	Midstream	Underground storage, transmission, compressor stations
Refineries	Process control, blending, tank measurement, ship loading and unloading	Downstream	Electric power generation, industrial use, gas processing plants
Transportation	Crude oil pipelines, LPG pipelines, multiple product pipelines, airport facilities		
Downstream	Petrochemical and processing plants		

# Calibration to custody transfer accuracy

Whether liquid or gas, the SITRANS FUT1010 meets the highest industry requirements



	Technical Specifications
Calibrated accuracies	Liquid: <0.15% of flow - Gas: <0.2% of flow
Repeatability	±0.05% to 0.1% of actual reading
Flow ranges	Liquid: ±40 f/s (±12 m/s) - Gas: up to ±120 f/s (±36.5 m/s), both bidirectional
Temperature ranges	-20 °F to 200 °F (-28 °C to 93 °C)
Sensor diameters	4 to 24 inches (DN100 to DN600)
Data inputs	4 x 4-20 mA, programmable (pressure, temp., etc.)
Data outputs	4 x isolated 4-20 mA, 2 x 0-10 VDC, 4 x digital pulse outputs (2x open collector, 2x 0-5V TTL)
Communication	RS232 (standard) and Modbus RS485/422 (optional)
Enclosure ratings	Sensor: IP65 (NEMA 4X), transmitter: IP66 (NEMA 7)
Approvals	INMETRO, CSA, FM, CRN and ATEX

The SITRANS FUT1010 is available in a liquid and gas version. With performance meeting OIML R117 and API recommendations, the ultrasonic flow meter can be used for numerous upstream, midstream and downstream measurement tasks. These include check metering, underground storage surveillance, process control etc. A wide variety of sensor sizes ensures availability for virtually any application, including custody transfer applications where the permanent TransLoc system allows laboratory calibration.

Being that the SITRANS FUT1010 come with the TransLoc transducer mounting system, they can be used for applications that require custody transfer accuracy. The transducers are fixed in place and cannot be moved without intent. And since the dry coupling compound is made to last, there is no need to worry about time-consuming maintenance tasks.



To accommodate varying customer accuracy requirements, the flow meters are available with two, three or four paths, and are suitable for installation in Zone 1 and hazardous areas.

If the installation requires it, the SITRANS FUT1010 can be delivered with upstream and/or downstream tubes and a flow conditioner.

Available sensor sizes include 4 to 24 inches (DN100 to DN600) with ANSI



Class 150, 300 and 600 flange ratings for the liquid meter and ANSI Class 300 and 600 for the gas version.

The SITRANS FUT1010 is available with a variety of local approvals, including:

- INMETRO
- CSA
- FM
- CRN
- ATEX

#### **Liquid version highlights**

The performance of the liquid version of the SITRANS FUT1010 flow meter meets OIML R117 and API requirements, which makes it ideal for a wide range of custody transfer pipeline, terminal, refinery and transportation applications.

Thanks to the WideBeam technology, the SITRANS FUT1010 is characterized by a stable performance that allows

continuous operation in applications where the measured media is contaminated by e.g. water or gas.

Output options include liquid density and API, making the liquid version a perfect replacement for intrusive densitometers.

It also comes with complete application and operation diagnostic functions that assure calibration and operational integrity.

Since the transducers are located on the outside of the sensor using the TransLoc mounting system, the SITRANS FUT1010 easily accommodates scraper and pig detection.

#### **Gas version highlights**

Since the SITRANS FUT1010 is compliant with AGA-9 there are strict requirements to the manufacturing

process and accuracy of the flow meter. In addition, the internal AGA-8 table allows the meter to report standard volume flow without the need for a separate volume compensating flow computer. This ensures high precision while being useful for fixed gas compositions.

Applications with valve-generated acoustic noise for example, are perfect candidates for the SITRANS FUT1010, since the non-intrusive configuration and high operating frequencies rejects such noises.

The WideBeam technology enables additional features such as the ability to reduce the impact of cross and swirl flow by the use of a "bounce" or reflect path configuration.

# From liquid hydrocarbon to gas applications

Hardly any application goes undetected - the SITRANS FUT1010 does them all

## Oil pipeline monitoring

Given the high accuracy of the liquid SITRANS FUT1010 flow meter, it is well-suited for pipeline monitoring tasks. It feeds the operator with real-time flow information so he can determine the media conditions in the pipeline and become immediately aware of any changes.

This way, the SITRANS FUT1010 supports the operator in making informed decisions about the pipeline operation that maximize delivery and performance control.

## Custody transfer accuracy

Since the SITRANS FUT1010 comes with the TransLoc mounting system that allows laboratory calibration, the flow meter meets the performance requirements of the OIML R117, API and AGA standards. This makes it the perfect match for any liquid or gas custody transfer application in the hydrocarbon upstream, midstream and downstream segments, whether it being from a pump station, distribution line, refinery or production facility.



## Gas wellhead measurement

In the upstream segment, the SITRANS FUT1010 is very suitable for measurement at gas production wells. To accurately measure the amount of gas flowing from a well, measurements have to be taken as close to the wellhead as possible. Since pressure at the wellhead is usually extremely high, a choke valve is typically used to control the gas flow rate.

When the gas mixed with sand and water passes through the choke valve it slowly erodes, generating a lot of noise that can interfere with a flow meter's accuracy. The SITRANS FUT1010, however, has noise-reducing filters and uses ultra-high ultrasonic frequencies that enable full functionality and performance.

## Gas pipeline monitoring

The SITRANS FUT1010 is a perfect suit for transportation of gas. By strategically locating flow meters along a pipeline, the control center is being fed with real-time flow data. Operators can analyze this data to get an exact

picture of the pipeline performance, making discrepancy detection much more effortless and quick.

This solution offers a great improvement compared to more commonly used types such as orifice plates and displacement transmitters coupled with a flow computer.

## Underground gas storage

In underground storage facilities, the SITRANS FUT1010 can be used to monitor the amount of gas pumped to and from the storage area. If the gas is being pumped from a vessel, for instance, the flow reading can be used as a reference to check the vessel total versus the flow meter total.

This allows operators to control the flow throughout their facility while detecting possible leaks. For such applications, the large turndown ratio of the SITRANS FUT1010 ultrasonic flow meter proves superior compared to that of orifice plate meters.

Since the SITRANS FUT1010 comes with the TransLoc mounting system that allows laboratory calibration, the flow meter meets the performance requirements of the OIML R117, API and AGA standards.



## Get more with Siemens ultrasonic flow measurement

Siemens offers a wide range of ultrasonic flow solutions for the hydrocarbon industry.

### System and performance check meters

Clamp-on ultrasonic check meter kits are available for both liquid and gas flow measurement. They come in a sturdy rolling case with a telescope handle that holds all the equipment needed to conduct performance and verification tests, including cables, multiple transducers, transmitter etc.

The check meters are used to verify the performance of existing metering equipment in pipelines, enabling distribution companies to increase operation efficiency by revealing measurement issues and discrepancies.

### Stand-alone thickness gauge

The Siemens product portfolio also includes an easy-to-use digital pipe wall thickness gauge, which is an indispensable tool in accurate ultrasonic flow measurement. For a meter to correctly measure flow, the inside diameter of the pipe

must be known. Since even small errors can have some effect on the flow reading, the pipe thickness gauge has to be extremely precise.

### Liquid ultrasonic inline flow system

The inline flow system with the SITRANS F US SONO 3100 sensor combined with the SITRANS FUS060 high performance transmitter is ideal for challenging applications within the petrochemical flow, distribution and on/offshore industries.

The transmitter meets the requirements of the OIML R117 standards and with an ATEX approval at hand it is designed for remote installation in hazardous as well as non-hazardous environments.

With the Profibus PA communication protocol, the system makes an optimal solution for fiscal metering where demanding accuracy and repeatability requirements set up by the hydrocarbon industry have to be met.

## Get more information

[www.siemens.com/flow](http://www.siemens.com/flow)

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