

How can the guess work be taken out of flow measurement?

SITRANS F US clamp-on ultrasonic flow meters ensure reliable readings that improve process efficiency and productivity

Answers for Industry.

SIEMENS

Don't guess how much money's flowing through your pipe. Clamp-on and know!

With no moving parts to wear or foul, no need to cut the pipe for installation, and high accuracy thanks to the patented WideBeam ultrasonic flow measurement technology, there is nothing to lose.

SITRANS F US Clamp-on Flowmeters Bringing you the WideBeam advantage

The clamp-on ultrasonic flow technology offers several advantages over other flow measurement methods, number one being the utilization of external transducers.

They are quickly and easily mounted on the outside of the pipe, making them the perfect choice for retrofit applications and applications where corrosive, toxic or high pressure liquids and gases rule out the option of cutting the pipe.

With the use of the WideBeam technology, clamp-on flowmeters from Siemens have proven their superiority in both the field and the lab. They offer several benefits:

- Measurement of practically any liquid and gas
- Performance unaffected by viscosity, flow rate, pipe size, solids and aeration content
- High accuracy and repeatability through automatic temperature compensation and zero drift correction
- Installation flexibility on pipe sizes up to DN 9140 (360")

Combine this with flexible configuration options that allow you to either customize your flowmeter or to order complete systems, you can rest assured that we have the right solution for you.

Whatever your choice...
There is no need to search further.



The transducer is key

One of the keys to the high performance of the ultrasonic flowmeters from Siemens is the transducers.

They are available with Doppler and WideBeam transit time measurement capabilities, and as hybrid versions for added flexibility. This ensures that there is a solution for practically any installation.

The patented WideBeam technology increases flow measurement precision by reducing the sensitivity to any change in the medium type or physical properties.

The signal-to-noise ratio is optimized by utilizing the resonance frequency of the pipe wall to transmit



the sound signal into the media with the wall acting as a waveguide. This method produces a particularly strong, focused and coherent signal.

Custody transfer accuracy

With the permanently mounted transducer system TransLoc™ available for the pre-calibrated flowmeters, Siemens has developed a highly accurate and reliable custody transfer solution for the hydrocarbon industry.

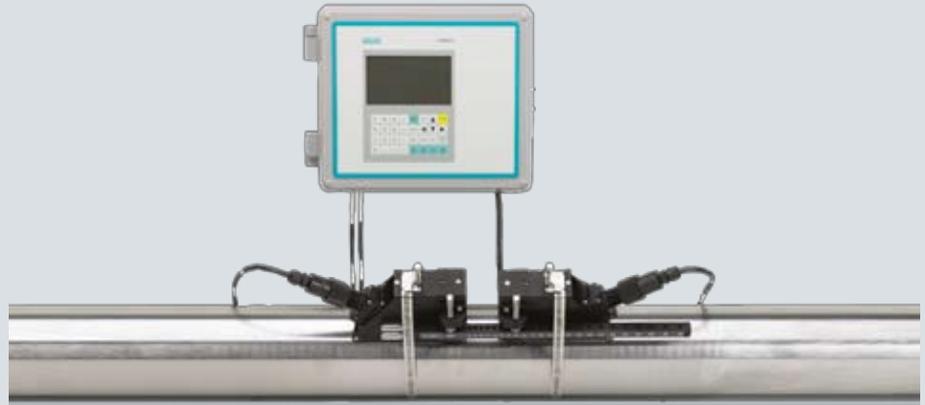
Using TransLoc, the WideBeam transducers are permanently mounted onto the sensor, which permits flow calibration and subsequent use in custody transfer accuracy applications.

Transducer selection

Since the accuracy of a clamp-on ultrasonic flowmeter depends on choosing the right transducer, this selection is crucial for a meter's performance. Siemens offers four types of transducers: universal, universal high temperature, high precision and Doppler.

Before deciding on the most appropriate transducer, several factors such as pipe thickness, diameter and material, liquid/gas type, amount of aeration have to be taken into account. By evaluating all of these aspects before choosing your final configuration, you are sure that your meter will work exactly the way you want it. Right from day one.

	Universal	High temp.	High precision	Doppler
Homogeneous liquids with moderate aeration	X	X	X	
Moderately aerated liquids and multiple products		X	X	
Highly aerated liquids or slurries				X
Natural or process gases			X	
Liquid temperatures from 120 °C to 232 °C (248 °F to 446 °F)		X		
Steel pipes and liquid temperatures below 120 °C (248 °F)	X		X	
Wall thickness less than 32 mm (1.25")	X			
Steel pipes with diameter/wall thickness ratio above 10	X			
For increased accuracy on steel pipes		X		



Flexible or pre-configured? The choice is yours...

The complete SITRANS F US flowmeter portfolio is geared toward general as well as specific solutions:

SITRANS FUS1010	General industry
SITRANS FUS1020	Basic general industry
SITRANS FUP1010	Portable
SITRANS FUE1010	Energy
SITRANS FUH1010	Hydrocarbon
SITRANS FUG1010	Gas
SITRANS FUT1010	Liquid hydrocarbon and gas

With flexible configuration options combined with permanent and portable versions, finding exactly what you need has become a lot easier.

The flowmeters are either available as customized versions that can be configured from a wide selection of transducers and enclosures or as pre-configured check metering kits. These kits that come with all the required equipment are available for selected industries.

As a crucial accessory, the clamp-on program also includes an easy-to-use, stand-alone digital ultrasonic pipe wall thickness gauge. Its high precision makes it an valuable flow tool since even the smallest pipe thickness miscalculations can have an impact on accuracy.

Versatility and flexibility

Since ultrasonic flowmeters can be used within a wide variety of applications and industries they are becoming the metering technology of choice. The versatile SITRANS FUS1010 illustrates this perfectly.

It offers numerous advantages in application adaptability that cannot be matched by any other single flow measurement technology. Main features include:

- Zero pressure drop
- Insensitivity to outside noise
- High turn down ratio
- WideBeam and Doppler mode
- Interface software

The flexible SITRANS FUS1010 is available with single, dual and four channel/path configurations. This is in addition to the three enclosure types: IP65 (NEMA 4X), IP65 (NEMA 7) compact and IP66 (NEMA 7) wall mount.

To accommodate more basic applications, the SITRANS FUS1020 is the optimal choice. It comes with either universal or high precision transducers to accommodate a wide variety of applications.

Versatile standard solutions

With flexible configuration options you can either customize your flowmeter by choosing from a wide selection of transducers, number of channels and enclosures, or to decide on a complete pre-configured system available for selected industries...



Portability in nature, ease in use

For applications that do not require long-term continuous flow monitoring or pipes where operators need to check the flow against a known or expected value, Siemens also offers portable versions of the clamp-on ultrasonic flowmeter.

The SITRANS FUP1010 is available with a waterproof IP67 enclosure that makes the flowmeter ideal for outdoor use. The rugged, impact resistant case enables it to withstand rough treatment that would damage other meters.

The SITRANS FUP1010 portable meter operates on AC or DC power. It has an internal battery that provides several hours of operation with quick recharge.

With the dual channel version, switching between Doppler and transit time operation for quick adaptation to varying conditions can be done without changing meters. This makes it suitable for any liquid; even those with high aeration or suspended solids. Utilizing the meter's internal data logger, process history can be recorded and stored or downloaded to a PC or laptop.

Check metering kits

If you need a portable meter that needs to be moved from site to site as part of a flow survey or flow check

measurement, the pre-configured check metering kits are the ideal solution. They can be utilized to check the performance and accuracy of any type and brand of flow or energy meter.

The kits come in a weatherproof and sturdy rolling case with a telescope handle. The case holds all the equipment including cables, multiple transducers and the ultrasonic transmitter; no extra parts need to be ordered.

The clamp-on ultrasonic check metering kits are available for the following industries: general liquid, water and wastewater, energy and gas.



HVAC and Power Solutions

Seamless measurement without interruption



The energy meter family with its rugged and high precision characteristics is ideally suited for thermal energy and power applications, and is particularly suitable for large pipe sizes.

The permanent version is available in single and dual channel models, and the portable as dual channel. Using the dual channel function, the meter can be configured to measure two different pipes, or to apply the second channel as a dual path for convoluted pipe configurations.

Highlight features of the complete SITRANS FUE1010 flowmeter family includes:

- Accurate measurement at low flow and delta T
- Precise energy rate and total consumption computation
- Customized display with option to save 50 flow measurement sites with the portable version
- Choice of clamp-on or 1000 ohm insert RTD's for extra resolution and improved accuracy

Key application areas for the SITRANS FUE1010 include high precision revenue grade sub-metering of thermal energy production, chilled and hot water HVAC installations, measurement of ammonia and glycol mixtures, and energy efficiency monitoring of HVAC equipment and nuclear power plants.

As a stand-alone energy meter, the SITRANS FUE1010 can be used as a remote communication module. Inputs from other data sources are transferred into the built-in data logger, making it easy to time-stamp all data and download it for billing, efficiency and operation analysis.

The portable version of the SITRANS FUE1010 as well as the pre-configured check metering kit are reliable sources for checking existing meters.



They can be used to verify the performance and accuracy of any type and brand of flow or energy meter by tracking the usage of both flow and BTU measurement. Upon completion of the survey a test report can be printed.

Water and Wastewater Solutions

Flexible and economical dual technology



The clamp-on ultrasonic transit time and Doppler flowmeters are engineered to measure a diverse range of flow applications found in the municipal water and waste water industries.

They can be mounted on any pipe size and pipe material and range from simple, single meter installations to complete flow metering and/or leak detection systems for large distribution and collection system plants. Additional applications include:

- Raw and potable water
- Chemicals
- Raw sewage and effluent
- Mixed liquor and sludges

For the water and waste water industry there are several clamp-on ultrasonic flowmeter solutions available. These include the flexible and versatile SITRANS FUS1010 that provides both transit time mode for relatively homogeneous liquids and Doppler for liquids with extensive suspended solids or aeration.

Single, dual or four channel configurations facilitate the installation on a very wide range of applications. Dual channel meters can be set up on two separate applications and can also provide math functions

between the two channels. The same applies for the four channel meter, which can monitor multiple lines and has multi-path functions, which greatly reduces the cost per measurement channel.

The SITRANS FUS1020 features basic flow measurement functionalities, which makes it an affordable alternative to more complex solutions. This does not mean, however, that it compromises on high performance.

SITRANS FUP1010 is ideal to be used as a check meter for existing conventional meters and to monitor applications that do not have existing metering. Single and dual channel models are available that come with both WideBeam transit time and Doppler technology, making them ideal for plant testing and survey applications.

The SITRANS FUP1010 is also available as a pre-configured, all-inclusive water kit that comes in a weatherproof and sturdy rolling case. The case holds all equipment needed to conduct flow measurements, including cables, multiple transducers and the ultrasonic flow computer.

This significantly eases the portability of the meter, making it the perfect choice for performance check or verification of any type or brand of flowmeters installed anywhere in a water or waste water plant.

Gas Solutions

In the field and in the lab, our solutions prove reliable



Siemens externally mounted SITRANS FUG1010 gas meters bring several advantages to the gas industry. Thanks to the WideBeam technology they are tolerant of most wet gas environments, which ensures accurate readings.

Such conditions are so challenging that most competing meters are incapable of delivering readings, which underlines the strength of the WideBeam technology. It has proven its reliability and accuracy in numerous gas installations around the world.

SITRANS FUG1010 flowmeters are very versatile, making them ideal for most natural, specialty, and process gas industry applications, including:

- Check metering
- Lost and unaccounted for (LAUF) analysis
- Allocation measurement
- Flow survey verification
- Production well testing
- Underground storage applications
- Gas fired power stations

The SITRANS FUG1010 comes with gas interface software that facilitates data extraction and enables identification of the type of gas running through a pipe at

any given time. When the meter detects a change in gas composition, a relay alarm is triggered which alerts the plant or pipeline operator.

Additional features include an internal AGA-8 table for fixed gas composition for standard volume computation, easy commissioning with Zeromatic path that automatically sets to zero without stopping flow, and immunity to most pressure-reducing valve noises, making installation in very close proximity to valves and pumps possible.

Single, dual or four paths configurations as well as an optional rugged stainless steel transducer enclosure are available, permitting permanent and direct burial installations. It is also compatible and in compliance with the American Gas Association's AGA-10 speed of sound measurement practice.

The SITRANS FUG1010 is available in a pre-configured version ideal for use as a check metering device. Applicable uses include installations where a flowmeter is not currently installed or where the performance of an existing meter needs to be checked or verified. This makes it an invaluable tool in gas processing and storage plants.

Hydrocarbon Solutions

Addressing the needs of the hydrocarbon industry



Siemens is the answer when rugged, durable and accurate metering is required. The SITRANS FUH1010 meters are specifically designed to address the needs of the hydrocarbon industry in applications where traditional meters cannot perform.

Using the SITRANS FUH1010 for such demanding conditions has several customer benefits:

- Flow measurement under a wide range of viscosities
- Ideal for pipelines carrying multiple products
- Output options include standard volume and mass
- Enables reliable interface detection
- Easy and quick installation with zero process down time

The SITRANS FUH1010 flowmeters are a great match for crude oil, refined petroleum or liquefied gas applications. They are available in single, dual, three or four path versions and employ the WideBeam technology, which ensures maximum accuracy. Clamp-on flowmeters for the hydrocarbon industry are available in three different versions.

The SITRANS FUH1010 Interface Detector offers extremely precise interface, crude oil and multi-product identification. It is ideal for scraper "pig" detection and density indication. The system provides the user with outputs that include API

number, density, and specific gravity at base temperature at both reference and current operating conditions.

The Precision Volume SITRANS FUH1010 flow meter dynamically compensates for changes of viscosity as liquid properties change for continuous correction of Reynolds number. It allows analog output of inferred viscosity values in addition to diagnostic data.

The Standard Volume SITRANS FUH1010 for accurate standard volume and mass flow measurement is suitable for high-end applications that carry multiple liquids and liquids with varying viscosity. It is also ideal for line balance applications that require normalized volume or mass output.

Outputs are available for density and API. For even more precise density compensation, analog inputs from densitometers, temperature sensors, viscometers and pressure transmitters can be utilized.

In addition to the dedicated hydrocarbon flowmeters mentioned here, SITRANS FUS1010 and SITRANS FUP1010 flowmeters can be used for hydrocarbon applications under limited conditions such as single liquids and limited viscosity range.

Pipeline Leak Detection Solutions

Safeguarding against valuable product loss and environmental hazards



With the Siemens pipeline leak detection system based on the clamp-on ultrasonic flow technology, pipeline operators can achieve a unique combination of superior sensitivity, reliability and robustness; something that only the fewest manufacturers can deliver...

Siemens pipeline leak detection system offers strong benefits such as ease of installation, leak location, product identification, sensitivity, accuracy and reliability.

The system is based on the clamp-on ultrasonic flow technology, which offers highly unique features: easy transducer mounting on the outside of the pipe, minimized maintenance, no deposit formations, and most importantly, installation without pipe modification or flow interruption.

This makes the Siemens solution particularly suitable for pipeline retrofit projects. And since system components are specified on a project-by-project basis, each solution fits the customer's exact needs and requirements.

A unique combination of temperature and pressure algorithms and computation models, continuous Reynolds number flow profile compensation and sonic signature liquid density and viscosity identification makes the system extremely sensitive; even at very low flow conditions.

By means of alarm thresholds, that can be set in accordance with user requirements to accommodate specific operating conditions, the leak detection system detects releases in real-time. If an imbalance between the

inlet and outlet data is detected, an alarm is activated, calling for operator attention. On the user-friendly display the operator can quickly and easily identify where the release is located and take action accordingly.

An additional display feature includes a visual trend line that facilitates identification of very small releases that occur before the alarm thresholds are breached.

Key features at a glance:

- Complete software and hardware solution
- Real-time detection of small and large product releases under flow and no flow conditions
- Easily accessible pipeline performance data
- Operation unaffected by changes in liquid properties
- Product type and quality identification
- Pig passage alarm and tracking

For hydrocarbon storage sites, tank farms and pipelines, the clamp-on leak detection system can be combined with the SITRANS FUT1010 flowmeter to create an integrated leak detection and custody transfer accuracy solution.

Benefits include straightforward communication between the two systems as well as lower capital cost due to fewer instruments needed.

Hydrocarbon Liquid and Gas Solutions

TransLoc transducer mounting brings WideBeam into the wetted world



The SITRANS FUT1010 is the latest ultrasonic flowmeter developed for the hydrocarbon industry. Thanks to the WideBeam ultrasonic transit time technology it achieves highly accurate flow measurement.

Featuring the TransLoc mounting system, WideBeam transducers are permanently mounted onto the sensor, preventing contact with the medium. This means no cavities or clogging by high paraffin liquids found in many hydrocarbon applications. It also permits flow calibration and subsequent use in applications that require custody transfer accuracy.

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

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

The performance of the liquid version 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 standard volume or mass, liquid density and API, making it a perfect replacement for intrusive densitometers. With the transducers mounted on the outside of the sensor, it easily accommodates scraper and pig detection. It also compensates for changes in liquid temperature, viscosity and density to assure the highest performance regardless of operating conditions.

Since the gas version of the SITRANS FUT1010 is compliant with AGA-9 there are strict requirements to the manufacturing process and accuracy of the flowmeter. 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.

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. It also makes the flowmeter a perfect candidate for applications with valve-generated acoustic noise.

Get it all from Siemens



Siemens Sensor Systems has the vision and experience to provide solutions for various industrial needs, both now and tomorrow. Over and above instrumentation, our insight into sharpening the competitive edge may even surprise you.



By choosing Siemens you gain the benefit of:

Your total solution provider

Siemens is the market leader in total solutions for process automation and instrumentation. More than merely a supplier, Siemens is integrated into the value chain, providing services from engineering to commissioning or services, locally or worldwide.

TIA – Totally integrated automation

Thanks to a common program environment, database and open communication systems, our products, systems and solutions can be totally integrated into any industry sector. Siemens TIA solutions are scalable, engineered for upgrade from stand-alone to automated system on demand.

The power of a single partner

Standardized concepts across technology and business areas make it easy to exploit Siemens synergies to the full, for any size or complexity of task.

Future-proof product range

Continual innovation and technological leadership ensure future-proof automation and instrumentation systems.

Flexibility

Our breadth of technologies means we are always able to offer the best combination or adaptation of sensor and transmitter, for any application in virtually any industry.

Accuracy

We test and calibrate all flowmeters in our own EN 45001-approved laboratories. Our meters meet or exceed international OIML standards, ensuring long-term accuracy – and traceability back to international norms.

The best flowmeter for the job

Siemens offers the ultimate flexibility in its range of flowmeters. For a given task, we can often provide solutions based on two or three different technologies. The broadness of our range means we always find the best flowmeter for the job. The overview makes it easy to select just the right SITRANS F US flowmeter solution for your very application.



SITRANS F US

Ultrasonic flowmeters achieve greater accuracy rates – 0.25% of actual flow – than previous generations of transit time flowmeters and Doppler-based systems. Siemens line of ultrasonic flowmeters can detect weak signals and be used for a wide spectrum of applications.



		FUE380	FUS380	SONOKIT / FUS060	SONO 3100 / FUS060	SONO 3300 / FUS060	FUS1010	FUP1010	FUE1010	FUG1010	FUH1010	FUS1020	FUT1010
Water and Wastewater	Abstraction		○	◐	◐	◐	●	●				●	
	Water treatment		○	◐	●	●	●	●				●	
	Distribution		○	◐	●	●	●	●				●	
	Wastewater treatment		○	○	○	○	●	●				●	
	Irrigation		●	●	◐	◐	○	●				◐	
HVAC / Energy	District heating	●	●	◐	◐	◐	●	●	●			●	
	Distribution/transmission	●	●	◐	◐	◐	●	◐	◐			◐	
	District cooling and chillers	●	●	◐	◐	◐	◐	◐	●			◐	
Hydrocarbon	Upstream			○	●	●					●		●
	Midstream			◐	●	●					●		●
	Downstream			●	●	●					●		●
Gas	Natural gas									●			●
	Process gas									●			●
	Storage									●			●
	Allocation									●			●
	Check-metering									●			○
Others	Aerospace						○	●					
	Chemical			○	○	○	●	●				●	

● Most often used ◐ Often used ○ Can be used

Meter	SITRANS FUS1010	SITRANS FUE1010	SITRANS FUS1020	SITRANS FUP1010
				
Flow range	±12 m/s (±40 ft/s), bidirectional	±12 m/s (±40 ft/s), bidirectional	±12 m/s (±40 ft/s), bidirectional	±12 m/s (±40 ft/s), bidirectional
Flow sensitivity	0.0003 m/s (0.001 ft/s) of flow	0.0003 m/s (0.001 ft/s) of flow	0.0003 m/s (0.001 ft/s) of flow Flow rate independent	0.0003 m/s (0.001 ft/s) of flow
Sensor sizes	DN 6.4...9140 (0.25"...360")	DN 6.4...9140 (0.25"...360")	DN 6.4...9140 (0.25"...360")	DN 6.4...9140 (0.25"...360")
Optional inputs	Current: 2x 4-20 mA DC Voltage: 2x 0-10 V DC Temperature: 2x 4 wire 1 kΩ RTD	Current: 2x 4-20 m Voltage: 2x 0-10 V DC Temperature: 2x 4 wire 1 kΩ RTD Totalizer commands (clear/hold)		Current: 2x 4-20 mA DC Voltage: 2x 0-10 V DC Temperature: 2x 4 wire 1 kΩ RTD
Outputs	Current: 2x 4-20 mA DC Voltage: 2x 0-10 V DC Status Alarm: 4x SPDT relays Frequency: 2x 0-5 kHz RS232 Modbus	Current: 2x 4-20 mA DC Voltage: 2x 0-10 V DC Status Alarm: 4x SPDT relays Frequency: 2x 0-5000 Hz RS232 Modbus	Current: 4-20 mA DC 1x for single channel 2x for dual channel 1x 0-5 kHz pulse rate, digital RS232	Current: 2x 4-20 mA DC Voltage: 2x 0-10 V DC Status Alarm: 4x SPDT relays Frequency: 2x 0-5 kHz RS232
Accuracy	±0.5-1% at <0.3 m/s (1ft/s)	±0.5-1% at <0.3 m/s (1ft/s)	±1-2% at <0.3 m/s (1ft/s)	±0.5-2% at <0.3 m/s (1ft/s)
Repeatability	±0.15% at <0.3 m/s (1ft/s)	±0.15% at <0.3 m/s (1ft/s)	±0.15-1% at <0.3 m/s (1ft/s)	±0.15% at <0.3 m/s (1ft/s)
Data refresh rate	5Hz	5Hz	5Hz	5Hz
Enclosure rating	IP65 (NEMA 4X), IP65 (NEMA 7) IP66 (NEMA 7)	IP65 (NEMA 4X)	IP65 (NEMA 4)	IP67
Liquid temp. Optional	-40...+120 °C (-40...+250 °F) -40...+230 °C (-40...+450 °F)	-40...+120 °C (-40...+250 °F) -40...+230 °C (-40...+450 °F)	-40...+120 °C (-40...+250 °F)	-40...+120 °C (-40...+250 °F) -40...+230 °C (-40...+450 °F)
Power supply	90-240 V AC, 50-60 Hz, 30 VA 9-36 V DC, 12 W	90-240 V AC, 50-60 Hz, 30 VA 9-36 V DC, 12 W 100-240 V AC, 50-60 Hz 9-36 V DC, 10W Internal battery	100-240 V AC, 50-60 Hz, 30 VA 9-36 V DC, 12 W	100-240 V AC, 50-60 Hz, 30 VA 9-36 V DC, 12 W Internal battery
Approvals	INMETRO, CSA, FM, ATEX	FM, CSA, CE, (dedicated) UL, ULc, CE (portable)	UL, ULc, CE	UL, ULc, CE

Meter	SITRANS FUH1010	SITRANS FUG1010	SITRANS FUT1010 Liquid	SITRANS FUT1010 Gas
				
Flow range	±12 m/s (±40 ft/s), bidirectional	±30 m/s (±100 ft/s), bidirectional	±12 m/s (±40 ft/s), bidirectional	±30 m/s (±100 ft/s), bidirectional
Flow sensitivity	0.0003 m/s (0.001 ft/s) of flow Flow rate independent	0.0003 m/s (0.001 ft/s) of flow Flow rate independent	0.001 f/s, (0.0003 m/s) of flow Flow rate independent	0.001 f/s, (0.0003 m/s) of flow Flow rate independent
Pipe size	DN 6.4...9140 (0.25"...360")	DN 25...152 (1"...60")	DN 100...600 (4"...24")	DN 100...600 (4"...24")
Optional inputs	Current: 4x 4-20 mA Temperature: 2x 4 wire 1 kΩ RTD	Current: 2x 4-20 mA Temperature: 2x 4 wire 1 kΩ RTD	Current: 4x 4-20 mA (pressure, temp., etc.)	Current: 4x 4-20 mA (pressure, temp., etc.)
Outputs	Current: 2x 4-20 mA DC Voltage: 2x 0-10 V DC 2x 0-5 kHz pulse rate, digital quad RS232 Modbus	Current: 2x 4-20 mA programmable standard Voltage: 2x 0-10 V DC Frequency: 2x 0-5 kHz RS232 Modbus	Current: 4x 4-20 mA Voltage: 2x 0-10 VDC Pulse: 2x open collector, Pulse: 2x 0-5V TTL RS232 Modbus RS485/422	Current: 4x 4-20 mA Voltage: 2x 0-10 VDC Pulse: 2x open collector, Pulse: 2x 0-5V TTL RS232 Modbus RS485/422
Accuracy	±0.5-1% at <0.3 m/s (1ft/s) Calibratable to 0.15...0.3% of flow 0.05% of API No.	±0.5-1% at <0.3 m/s (1ft/s) Calibratable to 0.5% of flow	<0.15% at <0.3 m/s (1ft/s)	<0.2% at <0.3 m/s (1ft/s)
Repeatability	±0.05% at <0.3 m/s (1ft/s)	±0.15% at <0.3 m/s (1ft/s)	±0.05-0.1% of actual reading	±0.05-0.1% of actual reading
Data refresh rate	5Hz	5Hz	5Hz	5Hz
Enclosure rating	IP65 (NEMA 4X), IP65 (NEMA 7), IP66 (NEMA 7)	IP65 (NEMA 4X), IP65 (NEMA 7), IP66 (NEMA 7)	IP65 (NEMA 4X) - sensor IP66 (NEMA 7) - transmitter	P65 (NEMA 4X) - sensor IP66 (NEMA 7) - transmitter
Liquid temp. Optional	-40...+120 °C (-40...+250 °F) -40...+230 °C (-40...+450 °F)	-40...+60°C (-40...+140 °F) Consult factory for higher temperatures	-28...+93 °C (-20...200 °F)	-28...+93 °C (-20...200 °F)
Power supply	90-240 V AC, 50-60 Hz, 30 VA 9-36 V DC, 12 W 90-240 V AC, 50-60 Hz, 15 VA 9-36 V DC, 10 W	90-240 V AC, 50-60 Hz, 30 VA 9-36 V DC, 12 W 90-240 V AC, 50-60 Hz, 15 VA 9-36 V DC, 10 W	90-240 V AC, 50-60 Hz, 30 VA 9-36 V DC, 12 W	90-240 V AC, 50-60 Hz, 30 VA 9-36 V DC, 12 W
Approvals	INMETRO, CSA, FM, ATEX	INMETRO, CSA, FM, ATEX	INMETRO, CSA, FM, ATEX (PED)	INMETRO, CSA, FM, ATEX (PED)

Get more information

www.siemens.com/flow
www.siemens.com/processinstrumentation
www.siemens.com/processautomation

Siemens Industry, Inc.
Industry and Automation Division
Center of Competence Ultrasonic flow
HAUPPAUGE, NY 11788
USA

www.siemens.com/flow

Subject to change without prior notice
Order No.: E20001-A170-P730-V1-7600
WS 04105.0
Printed in the USA
DISPO 27900
© Siemens AG 2010

The information provided in this brochure contains merely general descriptions or characteristics of performance which in case of actual use do not always apply as described or which may change as a result of further development of the products.

An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract. All product designations may be trademarks or product names of Siemens AG or supplier companies whose use by third parties for their own purposes could violate the rights of the owners.