

**SIEMENS**  
*Ingenuity for life*



Take total control of your HVAC system with cost-saving flow and thermal energy meters

Because you can't manage what you don't measure



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## Bringing HVAC to new levels of energy efficiency

With energy costs continuing to rise every year, it's more important than ever to ensure that your HVAC applications are running as efficiently as possible – and that you know exactly where and when that energy is being used. After all, the system that works so hard to keep a building comfortable and safe often accounts for more than 50% of that building's total energy consumption. Siemens can help. Our diverse portfolio of flow and thermal energy meters provides the real-time data you need to assess your operational efficiency and more effectively manage your energy usage.

Remember: you can't manage what you don't measure. Let Siemens empower you to take total control of your system – and your savings.

# Reliable flow and thermal energy meters for every application



Whether your HVAC system is new or existing, and whatever your operating conditions may be, there is a flow or thermal energy meter from Siemens to get the job done reliably and cost-efficiently. With Siemens, you'll experience:

- Accurate measurement of liquids, gases and steam
- Flexible installation options, including compact and remote versions
- Plug-and-play communication modules for easy integration and upgrades
- Minimal maintenance requirements
- Robust construction and materials

## **SITRANS F US Ultrasonic Flow Meters**

Available in both inline and clamp-on varieties, SITRANS F US ultrasonic technology measures flow accurately in installations characterized by low load periods or low flow. The clamp-on meters feature sensors mounted externally on the pipe, making them an excellent option for retrofit projects where the pipe can't be cut into or the flow can't be stopped. A portable version of the clamp-on meter is also available for temporary installations and meter verification. SITRANS F US meters can be paired with insert or clamp-on temperature sensors to support hot or chilled water thermal energy measurement.

## **SITRANS F M Electromagnetic Flow Meters**

SITRANS F M electromagnetic flow meters are the right choice for the vast majority of hot and chilled water applications, including new installations and small line sizes (less than 12 in). This highly accurate flow technology replaces traditional mechanical meters when greater functionality is required. SITRANS F M meters are ruggedly constructed to withstand nearly any environment and come equipped with an ebonite rubber liner for increased durability.

## **SITRANS F C Coriolis Flow Meters**

The most accurate flow metering technology available, SITRANS F C Coriolis flow meters are ideal for installation on gas and oil feed lines to boilers as well as for measuring condensate. Their compact design also makes these meters a good option for low-flow applications. Other benefits of SITRANS F C include the capability for multiparameter measurement (e.g. mass flow, volume flow, density and temperature), very high turndown ratio and low pressure drop.



### SITRANS F X Vortex Flow Meters

SITRANS F X vortex flow meters have the unique capacity for measuring steam flow, making them the perfect match for saturated or superheated steam applications. Because vortex meters can function relatively independent of conductivity, temperature, density and pressure, they work very well for systems that experience fluctuating process conditions, such as burners, boilers and compressed air systems. For added convenience, SITRANS F X incorporates two-wire technology with integrated pressure and temperature sensors, eliminating the need for cables.

### SITRANS P DS III Differential Pressure Transmitter

The tried-and-tested SITRANS P DS III can measure flow in a variety of HVAC applications, including natural gas boilers, air ducts, combustion intakes, boiler stacks and chilled water. The transmitter is durable enough to function in a very wide range of temperatures and pressures and can be paired seamlessly with an assortment of primary elements (e.g. pitot tubes, Venturi or orifice plates).

### SITRANS FEC920 Energy Calculator

SITRANS FEC920 is a high-accuracy thermal energy calculator designed for heating and cooling systems. It can be paired with one of several SITRANS F flow meters or existing flowmeters with 4-20 mA or frequency outputs to provide

an instant, easy-to-read calculation of thermal energy. The modular design of the SITRANS FEC920 makes it possible to configure the calculator to the specifics of the customers heating or cooling applications. Outputs include 4-20 mA, Frequency and Data highway including BACnet, Modbus And Ethernet IP.

### SITRANS F M Verificator

For energy billing applications where even the smallest metering error can result in major revenue loss, the highly advanced SITRANS F M Verificator carries out on-site validation of electromagnetic flow meter performance. The fully automatic test takes only 15 minutes after connection and checks the transmitter, flow meter insulation and sensor magnetism, then outputs a verification report according to ISO 9000 and 14001. Verification is traceable to NIST and international standards.

### HVAC Service Program

HVAC technology has advanced to the point where outside technical expertise is sometimes required, which is why Siemens offers individualized service packages ideally suited to meet your HVAC needs. Expertly-trained field service engineers are available to visit your site and provide a wide range of services including start-up assistance, troubleshooting, repairs, periodic calibration and verification, flow and site surveys, hands-on training, equipment rentals and more. Call the Siemens US Support Center at 1-800-333-7431 to get started.

	Electromagnetic			Thermal Energy
	MAG 3100	MAG 5100W	MAG 8000 w/datalogger	FEC920
				
<b>Sensor Size</b>	0.50" – 78"	1" – 78"	1" – 48"	–
<b>Process Temperature</b>	-40 - 212 °F High temp option 356 °F	-40 – 158 °F (remote transmitter) -5 – 122 °F (integral transmitter)	32 – 158 °F	Customer specific ranges available upon request. Input from RTD or TC transmitter
<b>Accuracy</b>	0.20% or 0.40% of rate	0.20% or 0.40% of rate	0.2% or 0.4% of rate	According to flow and temperature device accuracy
<b>Pressure Rating</b>	Max 232 psi ≤ 78" Max 1450 psi ≤ 12" Special request: Consult Factory	Max 280 psi (1"–24") Max 145 psi (28"–78")	Max 280 psi (1"–24") Max 145 psi (28"–48")	–
<b>Straight Run (For best performance)</b>	5x pipe diameter up 3x pipe diameter down	5x pipe diameter up 3x pipe diameter down	5x pipe diameter up 3x pipe diameter down	–
<b>Outputs</b>	Current: 4 – 20 mA Digital: Pulse, Frequency, 5000/HART  6000 transmitter only Plug-in modules: HART Modbus* DeviceNet Profibus PA, DP Foundation Fieldbus	Current: 4 – 20 mA Digital: Pulse, Frequency, 5000/HART  6000 transmitter only Plug-in modules: HART Modbus* DeviceNet Profibus PA, DP Foundation Fieldbus	2 individual passive pulse outputs (incl. net flow volume) Integrated standard IrDA interface Add-on communication modules, RS232 / RS485 with Modbus RTU protocol Encoder interface module for AMR/AMI GSM/GPRS ( wireless )	Analog 4-20 mA (2) (500 ohm maximum) Relay output Max 1A at 230V RMS +/- 15%; Min: 5mA @ 5V Maximum current through terminals: 1A BACnet IP server (Std), Modbus TCP/IP server, EtherNet/IP client/server
<b>Applications</b>	Chilled Water Hot Water Condenser Water Domestic Water Chemical Dosing	Chilled Water Hot Water Condenser Water Domestic Water Chemical Dosing	Domestic Water (Not designed for process control)	Chilled Water Hot Water Flow measurement on feed or return line. Water or Water/Glycol mixture UL, ULc Approval RoHs compliant Conforms to OIML R75 Class 4 and EN1434 Standards
<b>Options</b>	Liners: Soft rubber EPDM PTFE PFA Ebonite Linatex ANSI Class 150 / 300 / AWWA Special requests: Consult Factory	Liners: Ebonite hard rubber EPDM NBR hard rubber	Liner: EPDM Fire meter approval for 2"-12"	100...230 V AC, 50 ... 60 Hz, or 2 4 V D C

Clamp-on Ultrasonic		Pressure	Coriolis		Vortex
FS230	FS220	DS III	FC330	FC2100	FX330
					
0.25" – 394"	0.25" – 394"	–	0.50" – 3"	0.06" – 1.50"	Flanged 0.50" – 12" Sandwich 0.50" – 4"
-40 – 450 °F	-40 – 450 °F	-40 – 2000 °F	-58 – 392 °F	-58 – 356 °F	-40 – 464 °F
±0.5-1.0% of rate at ≥ 1 ft/s	1.0% of rate at ≥ 1 ft/s	≤ 0.065%	± 0.10% of rate	± 0.10% of rate	Steam and gases: ±1% Liquids: ±0.75%
Limited only by pipe	Limited only by pipe	0.014 – 10,150 psi	Max 1450 psi	Max 5946 psi (Hast) Max 3844 psi (316L) Pressure limits tube sizes / material dependant	14.5 – 1450 psi (Higher pressures on request)
10x pipe diameter up 5x pipe diameter down	10x pipe diameter up 5x pipe diameter down	–	None required	None required	20x pipe diameter up 5x pipe diameter down
Current: Up to 4 – 20 mA DC Voltage: 2x 0-10V DC Status alarm: Up to 4 SPDT relays Frequency: Up to 4 0-10 kHz RS232 Modbus (optional)	Current: 1x 4 – 20 mA DC Status alarm: 1x relay 30V DC Pulse: 41.6 ms ... 5 s pulse duration Frequency: 0 ... 12.5 kHz (50 % duty cycle) Modbus RTU RS 485	Current: 4 – 20 mA HART Fieldbus Profibus	Current: 0 – 20 mA Digital Pulse, Frequency Relay Digital Input  Digital Communication: HART Modbus	Current: 4 – 20 mA Digital Pulse, Frequency Relay Digital Input  Digital Communication: HART DeviceNet Profibus PA, DP Modbus RTU	Current: 4 – 20mA HART Pulse Profibus PA (pending) Foundation Fieldbus (optional)
Chilled Water Hot Water Condenser Water Condensate Domestic Water Fuel Oil Verification	Chilled Water Hot Water Condenser Water Condensate Domestic Water	Chilled Water Hot Water Condenser Water Condensate Domestic Water Steam Compressed Air Natural Gas	Condensate Fuel Oil Natural Gas	Condensate Fuel Oil Natural Gas	Chilled Water Hot Water Condenser Water Condensate Domestic Water Natural Gas Steam
Single channel Dual path Dual Channel, 4 Path and Four channel Portable ultrasonic clamp on Check Metering Kit available through rental program.	–	Orifice Plate Venturi Pitot Tube	<b>Flanges:</b> ANSI / ASME B16.5 CL150lb RF CL300lb RF CL600lb RF <b>Pipe threads:</b> ASME B1.20 (NPT), ISO228-1 G (BSPP), VCO Quick-connect <b>Hastelloy tubes</b>	316 SS Hastelloy tubes  Pipe thread: NPT  ASME Flanges: CL150lb RF CL600lb RF	Flanges: CL150lb RF CL300lb RF CL600lb RF  Wafer style: CL150lb RF CL300lb RF CL600lb RF SIL 2

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