Thermo Scientific Sarasota 200
Clamp-On Ultrasonic Multi-Path Flowmeter for Non-Intrusive Liquid Measurement

The Thermo Scientific Sarasota 200 clamp-on ultrasonic liquid flowmeter measures flow in industrial pipes with superior accuracy and reliability. The non-intrusive, transit-time system is designed for demanding applications and is capable of measuring with up to eight velocity paths on two full pipes simultaneously with accuracy of 0.5% to heighten process optimization. The flexible clamp-on system also installs easily with no process downtime.

Features & Benefits
- Achieves measurement accuracy up to 0.5% on full industrial pipes for process optimization
- Simultaneously measures up to eight velocity paths on two pipes using one flowmeter for capital cost reduction
- Multi-drop feature allows up to four Sarasota 200 systems to be used in parallel for optimization
- Measures a wide range of bi-directional flows without changing the transducer or path positions to minimize programming and increase productivity
- Multi-path feature reduces flow profile uncertainties, particularly in more challenging flow measurement applications
- Comprehensive internal fault diagnostics increase uptime
- Clamp-on system installs easily with no downtime
- Non-intrusive design and no moving parts prolong instrument life

Highly Accurate & Reliable
Critical water resource management applications require highly accurate flow measurement to achieve tighter control over the process, eliminate waste, save time and improve cost control. The Thermo Scientific Sarasota 200 ultrasonic flowmeter is designed to help automate and control process parameters by providing highly accurate flow measurement (up to 0.5%) in full industrial pipes. The non-intrusive system combines a multi-path configuration and smart transducer technology to reliably measure eight velocity paths on up to two pipes simultaneously to improve process efficiency and lower capital costs.

Advanced Transit Time Technology
The Sarasota 200 transit time flowmeter is engineered for accuracy. “Front end” processing within the transducers minimizes the effect of external interference. Advanced digital signal processing also minimizes signal distortion and spurious signal detection to reduce errors. This performance allows the flow rate to be calculated to a typical overall accuracy of 2% to 5%.

Easy-to-Install & Use
The clamp-on Sarasota 200 system installs easily without process interruption or downtime. Since the transducers install on the outside of the pipe, there are no additional costs incurred for pipe modification, spool pieces or drilling. The transducers are also available with optional magnetic clamps to further expedite installation. Once installed, the system requires minimal power (~3W), enabling the unit to be solar powered. It also offers very strong remote access capability and functionality to increase worker safety and productivity.
Principle of Operation
The multi-path, clamp-on Sarasota 200 flowmeter system operates using the transit time method. Each pair of transducers simultaneously transmits and receives signals, enabling accurate velocity measurements to be taken across the full width of the pipe at up to 250 times per minute. As the number of paths is increased, the number of times the velocity of the full pipe width is calculated also increases. The result is a reduction in the uncertainty of the measurement with greater accuracy achieved due to the higher path count. The flow velocity measured in the pipe is averaged with the average velocity multiplied by the cross-section of the pipe to provide the volumetric flow rate.

System Advantages
- Engineered to minimize errors caused by external interference, signal distortion and signal detection to increase measurement accuracy
- 1 MB of internal data logging with the capability of recording up to 24 discrete parameters
- RS232 for PC communications and RS232 for modem
- Field-proven Thermo Scientific GAFA Microsoft® Windows®-based PC software for local or remote operation via modem
- Easy-to-use software facilitates set-up, diagnostics, data downloads and new operating software uploads

Applications
- Hydroelectric power generation
- Large pipes for cooling and condenser water
- Power plants
- Turbine efficiency monitoring systems
- Wastewater applications (WWTP, Sewer CSO)
- Water resource management
- Abstraction compliance and legislation compliance
### Model Number
**S200:** Thermo Scientific Sarasota 200 Clamp-On Ultrasonic Multi-Path Flowmeter

### Power Supply
- **0:** 11 VDC to 30 VDC
- **1:** AC power module (90 V to 264 V, 47 Hz to 63 Hz AC)
- **2:** Internal battery for standby operation when AC power fails (includes AC power module as in option 1)
- **3:** Other power sources — consult Thermo Fisher Scientific

### Transducer Frequency
**1000:** 1 MHz clamp-on transducer

### Number of Paths
**X:** Number of paths

**NOTE:** Each velocity path needs two transducers (maximum 8 paths = 16 transducers)

### Transducer Type
**S:** Standard cable

**NOTE:** A T-box interface is provided with each transducer

### Transducer Cable Length
- **30:** 9 m (30 ft)
- **50:** 15 m (50 ft)

### Cable Length for T-Boxes
- **05:** 5 m (16 ft)
- **20:** 20 m (66 ft)
- **35:** 35 m (115 ft)
- **10:** 10 m (33 ft)
- **25:** 25 m (82 ft)
- **50:** 50 m (164 ft)

### Transducer Connections
**G/X:** Star junction box; **X** = number required (1 per transducer array)

### Magnetic Clamps
- **N:** No magnetic clamps
- **MC/X:** Magnetic clamps; **X** = number of pairs

### Certification
**N:** No certification

### Options
**J/X:** Coupling compound, Sil-Glyde®, 4-oz tube; **X** = number of tubes

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**NOTE:** Consult your Thermo Fisher sales representative for details of additional services including site assessments, transducer mounting systems, installation and commissioning

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**Thermo Scientific Sarasota 200 Clamp-On Ultrasonic Multi-Path Flowmeter — Dimensional Diagram**

- **10 mm (0.39 in) diameter mounting holes (4 places)**
- **240 mm (9.5 in) x 300 mm (11.8 in)**
- **155 mm (6.1 in) x 166 mm (6.6 in)**
- **380 mm (15.0 in) x 410 mm (16.2 in)**
One Flowmeter for Multiple Applications

The new Sarasota 200 clamp-on flowmeter integrates easily with installed Thermo Scientific Sarasota 200 open-channel flowmeters, enabling current customers to mix-and-match clamp-on and insertion transducer pipe applications as well as partially full pipe or open channel applications. Regardless of the combination of applications, up to two measurement points can operate from the same flowmeter at the same time for superior process optimization and cost control.

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**Performance Specifications**

- **Accuracy**: Overall accuracy typically 2% to 5% of flow reading, depending on site conditions and number of paths; Transducer frequency 2%, matched pairs to 0.5%; Accuracy of n paths = Accuracy of 1 path/square root of n
- **Velocity Range**: Bi-directional; up to 13 m/s (40 ft/s)
- **Pipe Diameter**: 0.45 m (18 in) to 5 m (200 in); consult factory for smaller or larger pipe diameters
- **Fluid**: Suitable for water and low viscosity liquids (< 50 cSt); Tolerates suspended solids up to 2,000 ppm; Best performance achieved with minimal aeration, and saline and temperature gradients
- **Process Temperature**: Up to +100°C (+212°F)
- **Pipe Material**: Steel, concrete, PVC (magnetic clamps for carbon steel pipes only)

**Transducer Specifications**

- **Type**: Two encapsulated transducers; 9m (30 ft) standard cable length
- **Temperature Rating**: Standard transducers: process temperature, -40°C to +100°C (-40°F to +212°F)
- **Frequency**: 1 MHz

**Functional Specifications**

- **Velocity Paths/Inputs**: Up to 8 paths (16 transducers)
- **Communications**: RS232 for PC communications (1200 to 38400 baud); RS232 for modem (1200 to 19200 baud); 2x 12 bit isolated 4-20 mA or 1-5 V (programmable); 2x volt-free contacts (programmable); fault relay; RS485 half or full duplex
- **Power Supply**: 11-30 VDC: running mode consumption at 12 V typically 0.25 A, sleep mode consumption 0.02 A, mean current dependent on selected intermittent operation; Mains adapter: 90-264 V, 47-63 Hz AC (optional); Internal battery for standby operation (optional, requires mains adapter); Other power sources on application; Intermittent mode for low power consumption
- **Data Logging**: 1 MB capacity; Programmable for function, selectable from measured and calculated parameters (maximum 24); Programmable sampling period 30 sec to 30 min
- **Software**: Thermo Scientific GAFAs Microsoft Windows-based software for local PC operation or remote PC operation via modem; Software allows setup, diagnostics, data download and new operating software upload

**Flowmeter Physical Specifications**

- **Material**: Front opening, painted, pressed steel casing, two-line LCD front display
- **Dimensions**: 380 mm (15.0 in) width x 300 mm (11.8 in) height x 155 mm (6.1 in) depth
- **Environmental Rating**: IP55 waterproof; Suitable for outside installation
- **Mounting**: Typically wall mounted; Other mounting options on application
- **Weight**: 9 kg (20 lb) including battery
- **LCD**: 20 character x 2-line LCD

**Compliance**

- **Quality Assurance**: ISO 9001:2000
- **CE**: CE compliant
- **Flowmeter Standards**: Sarasota 200 operating platform is capable of compliance with ISO 6416, IEC 41 and ASME PTC 18
- **Safe Area Use**: As standard
- **Communication Protocol**: RTU, ASCII Modbus

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