

The Thermo Scientific Sarasota 200 measures flow directly in open channels without causing obstruction and without the need for weirs or flumes. Suitable for use in full or part-full conduits, its multi-path configuration and smart transducer technology ensure accurate, reliable measurement to improve process control and reduce operational expenses.

Thermo Scientific Sarasota 200

Ultrasonic Multi-Path Flowmeter
for Water and Wastewater



Applications

- Effluent legislation
- Sewage treatment
- Abstraction compliance
- Flood prediction
- Water resource management
- Hydroelectric power generation
- Irrigation
- Leak Detection

The Thermo Scientific Sarasota 200 ultrasonic multi-path flowmeter calculates flow directly from the measurement of water velocity and depth. This velocity-area method overcomes the inherent limitations of traditional methods of volumetric flow measurement which usually require the construction of a weir or flume. The traditional methods can be expensive and obstructive, and can 'drown out' in high flow conditions.

For installation in rivers, open channels, or closed conduits, the Sarasota 200 operates over the full bi-directional flow range without causing obstruction or head loss. While this ultrasonic method is traditionally associated with applications where the water is relatively clean and free from weed and entrained air, the Sarasota 200 meets the demands of applications such as sewer flow measurement.

Smart ultrasonic transducers are installed in the channel and combine with depth inputs to build an accurate flow profile. Onsite characteristics such as varying water levels, skew flow or complex channel shapes are taken into account via specific path configurations (e.g., inline or crossed).

'Front end' processing within the transducers minimizes the effects of external interference and advanced processing minimizes signal distortion. Software filtering ensures that spurious signals do not cause error, allowing the flow rate to be calculated to a typical overall accuracy of 2% to 5% to ensure process optimization.



When equipped with the intermittent option, the Sarasota 200 has low inherent power consumption, making it ideal for use with alternative power sources when mains power is unavailable.

Other features include programmable data logging and Thermo Scientific GAFA

Microsoft® Windows®-based software for local and remote downloading of data and diagnostics.

We also offer a range of services, including site surveys and evaluation, installation, commissioning, and system maintenance.

Features

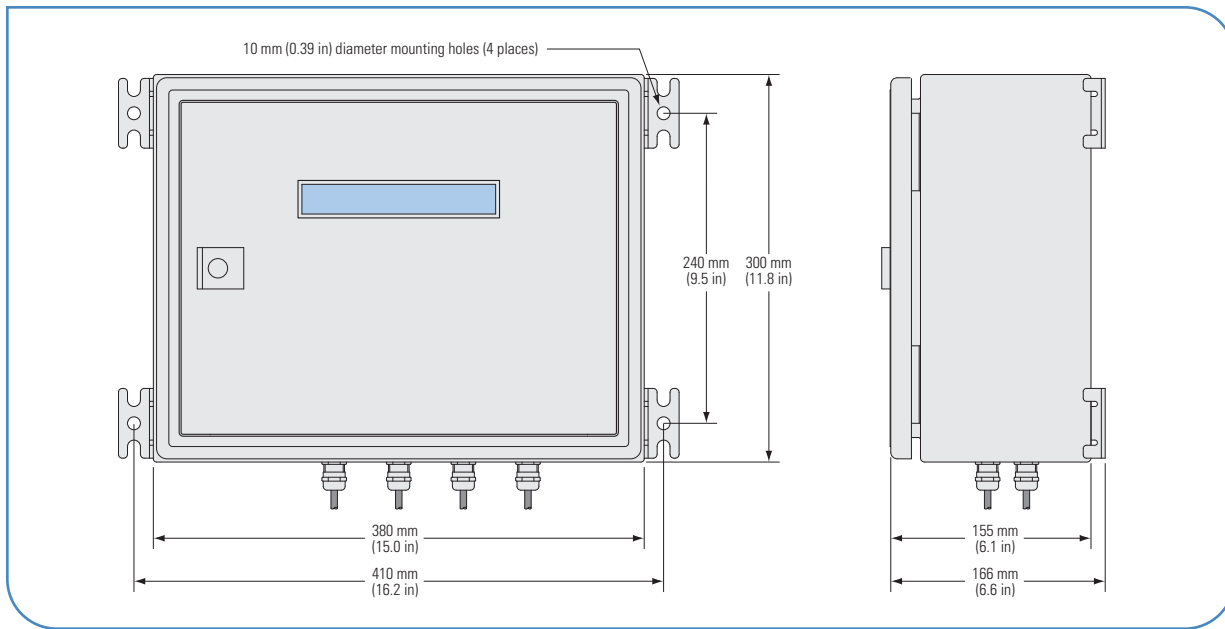
- Single or dual channel (up to 8 paths)
- Weatherproof IP65 enclosure
- Low power consumption
- ISO 6416 compliant
- Smart transducer technology
- Local and remote PC communications
- Onboard data logging
- IEC 41 compliant



Reliable Leak Detection for Large Diameter Pipes

By setting up two Sarasota 200 flowmeters in a master-slave configuration, operators can easily compare upstream and downstream flow measurement within large diameter pipes (1000 mm diameter and greater) to ensure reliable leak detection. Measurements are taken at the top by the slave and at the bottom by the master, with the master calculating all of the flow comparisons. If the flow measurement exceeds a pre-defined threshold, the master triggers a series of alarms that culminate with closure of the pipeline.

Sarasota 200 Ultrasonic Multi-Path Flowmeter — Dimensional Diagram



MODEL NUMBER

S200: Thermo Scientific Sarasota 200 Ultrasonic Multi-Path Flowmeter

S200LD: Thermo Scientific Sarasota 200 Ultrasonic Multi-Path Flowmeter with Leak Detection Software

A. POWER SUPPLY

0: 11 V to 30 VDC (standard)

1: Mains adapter/AC power module (90 V to 264 V, 47 Hz to 63 Hz AC)

2: Internal battery for standby operation (includes mains adapter/AC power module)

3: Other power sources — consult Thermo Fisher sales department

B. TRANSDUCERS

1X: 250 kHz smart transducer (X = number of transducers)

2X: 500 kHz smart transducer (X = number of transducers)

3X: 1 MHz smart transducer (X = number of transducers)

4X: Intrinsically safe 1 MHz smart transducer (X = number of transducers)

5X: 1 MHz smart insertion transducer (X = number of transducers)

NOTE: 2 transducers per velocity path + 1 transducer per ultrasonic depth required

C. TRANSDUCER CONNECTIONS

X: Star junction box (X = number of star boxes)

NOTE: Up to 2 star boxes per transducer array

D. CABLE

XXX: URM76 cable (XXX = length of cable in meters)

MODEL NUMBER

S200

POWER SUPPLY

A

TRANSDUCERS

B

TRANSDUCER CONNECTIONS

C

CABLE

D

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

Thermo Scientific Sarasota 200

Performance Specifications

Accuracy	Overall accuracy typically 2%-5% of flow reading, depending on site conditions; Transducer frequency 2%, matched pairs to 0.5%
Velocity range	Bi-directional; Maximum depends on path length <i>e.g.</i> , 10 m/s for 100 m path (33 ft/s for 330 ft path)
Channel widths	Suitable from 200 mm (7.87 in) to 200 m (656.17 ft)
Water depths	From 100 mm (4 in) to 20 m (65 ft), subject to channel or conduit width
Channel shape	Programmable cross section
Fluids	Tolerates suspended solids up to 2,000 ppm; Best performance achieved with minimal weed, aeration, and saline and temperature gradients
Approach length	Recommended 5 x channel width

Flowmeter Physical Specifications

Material	Front opening, painted, pressed steel casing, 2-line LCD front display
Dimensions	380 mm (15.0 in) x 300 mm (11.8 in) x 155 mm (6.1 in) (width x height x depth)
Mounting	Typically wall mounted; Other mounting options on application
Environmental rating	IP65 waterproof; Suitable for outside installation
Weight	9 kg (20 lb) including battery
Display	20 character x 2-line LCD

Transducer Physical Specifications

Material	Encapsulated piezo-electric transducers; 250 kHz, 500 kHz: Integral drive circuits and signal amplifiers; 1 MHz: drive circuit and signal amplifier inline (T Box)
Dimensions	250 kHz: 100 mm diameter, 75 mm length (approx 4 in x 3 in); 500 kHz: 50 mm diameter, 75 mm length (approx 2 in x 3 in) 1 MHz: 37 mm diameter, 37 mm length (approx 1.5 in x 1.5 in)
Mounting	Mounting hardware available to suit open channels of various shapes, and for pipes via internal fittings or 'hot' or 'cold' tapped methods
Connections	Cable used: URM76 with additional outer polypropylene sheath for continuous immersion with overall diameter 8 mm (0.3 in) Star junction box (1 per transducer assembly of maximum 4 transducers) 1 x URM76 cable per transducer connected to star box. Maximum length 5 m (approx 16 ft) 1 x URM76 cable per star box connected to flowmeter. Maximum length 300 m (approx 1000 ft)
Environmental rating	250 kHz, 500 kHz open channel: IP68 continuous immersion to 2 bar (29 psi) 1 MHz open channel or closed conduit: IP68 continuous immersion to 15 bar (217.6 psi)

Functional Specifications

Velocity paths/inputs	Up to 8 paths (16 transducers)
Depth inputs	Up to 4 ultrasonic depth transducers; Up to 2 analog depth inputs via 4-20 mA connections (subject to overall maximum of 4)
Communications	RS232 for PC communications (1200 to 38400 baud); RS232 for modem (1200 to 19200 baud); 2 x 12 bit isolated 4-20 mA or 1-5 V (programmable); 2 x volt free contacts (programmable); Fault relay
Transducer frequency options	250 kHz for 50-200 m (165-655 ft) paths; 500 kHz for 5-80 m (15-260 ft) paths; 1 MHz for 500 mm to 10 m (20 in to 30 ft) paths; Where there is overlap, the choice is governed by water conditions. Refer to ISO6416.
Operating temperature range	Transducers: -20°C to +50°C (+4°F to +122°F); Flowmeter: -10°C to +50°C (+14°F to +122°F)
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 12); Programmable sampling period 30 secs to 30 mins
PC software	Thermo Scientific GAFA Microsoft Windows-based PC software for local PC operation or remote PC operation via modem; Software allows setup, diagnostics, data download, new operating software upload

Compliance

Quality assurance	ISO 9001:2000
CE mark	Compliant
Flowmeter standards	Complies with ISO 6416 (equivalent to BS3680 pt 3E)
Safe area use	As standard
Hazardous area use	Applicable to 1 MHz transducers only via 1 x barrier per transducer; Subject to cable restrictions Transducer: (Epsilon 06 ATEX 2041) II 2 G EEx ib IIB T4; Interface: (Epsilon 06 ATEX 2041) II (2) G (EEx ib) IIB
Communications protocols	RTU; ASCII Modbus

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