Product Specifications

Sarasota 200

Ultrasonic Multipath Flowmeter for Water and Wastewater

The Sarasota 200 measures flow directly in open channels without causing obstruction and without the need for weirs or flumes. Its multipath configuration and smart transducer technology ensure accurate, reliable performance in critical applications such as abstraction, sewage treatment, effluent monitoring, and flood warning. It is also suitable for use in full or part full conduits.

Applications

- Effluent legislation
- Sewage treatment
- Abstraction compliance
- Flood prediction
- Water resource management
- Hydro electric power generation
- Irrigation

The Sarasota 200 ultrasonic multipath 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 can meet 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. On-site characteristics such as varying water levels, skew flow, or complex channel shapes are taken into account via specific path configurations (*e.g.,* in-line 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%.

Measurement of water abstracted from a river to monitor compliance with abstraction license.

Its low inherent power consumption with intermittent option makes the Sarasota 200 ideal for use with alternative power sources when mains power is unavailable.

Other features include programmable data logging and GAFA Windows® PC based software for local and remote downloading of data and diagnostics.

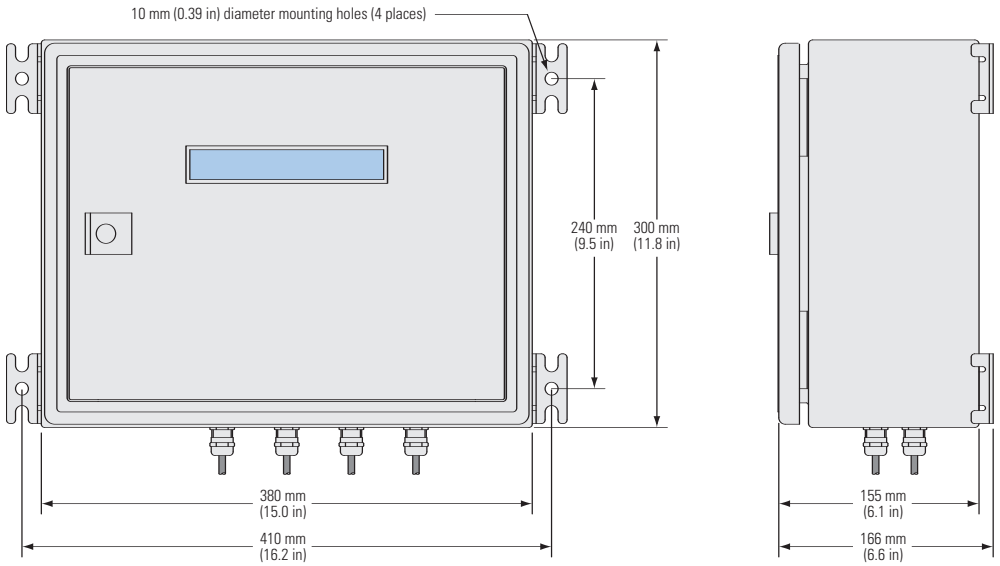
Thermo engineers can undertake site surveys and evaluation, installation, commissioning, and system maintenance.

Features

- Suitable for up to 4 velocity paths
- Weatherproof IP65 enclosure
- Low power consumption
- ISO 6416 compliant
- Smart transducer technology
- Local and remote PC communications
- On-board data logging

Monitoring effluent from sewage treatment works for compliance with environmental legislation (Urban Wastewater Directive).

Sarasota 200 Ultrasonic Multipath Flowmeter — Dimensional Diagram



MODEL NUMBER
S200: Sarasota 200 Ultrasonic Multipath Flowmeter

A. POWER SUPPLY
0: 11 V to 30 V DC (standard)
1: Mains adapter (90 V to 264 V, 47 Hz to 63 Hz AC)
2: Internal battery for standby operation (with mains adapter included)
3: Other power sources — consult Thermo 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)
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: 1 star box required per transducer array

D. CABLE
XXX: URM76 cable (XXX = length of cable in meters)

MODEL NUMBER	POWER SUPPLY	TRANSDUCERS	TRANSDUCER CONNECTIONS	CABLE
S200	A	B	C	D

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

Sarasota 200 Ultrasonic Multipath Flowmeter

	Specification
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 *e.g.,* 10 m/s for 100 m path (33 ft/s for 330 ft path)
Channel Widths	Suitable from 500 mm (20 in) to 200 m (650 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, two 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 in-line (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	Mounted on submersible assemblies to suit application
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 1 MHz open channel or closed conduit: IP68 continuous immersion to 15 bar
Functional Specifications	
Velocity Paths/Inputs	Up to 4 paths (8 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 V DC: 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	GAFA Windows®-based PC software for local PC operation or remote PC operation via modem; Software allows setting-up, 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: EEx ia IIB T4 (-20°C ≤ T_A ≤ 40°C); Barrier: EEx ia IIB (-20°C≤ T_A ≤ 40°C)
Communications Protocols	RTU; ASCII Modbus®

Thermo ELECTRON CORPORATION

Process Instruments

United Kingdom: King's Worthy, Winchester, Hampshire S023 7QA UK — +44 (0)1962 625000, +44 (0)1962 885530 fax

United States: 9303 W. Sam Houston Pkwy. S. Houston, TX 77099 USA — (877) 290-7422, (713) 272-2273 fax

www.thermo.com