

# Thermo Scientific Sarasota FD910 and FD950 Liquid Density Meters

For use in general industrial and chemical applications

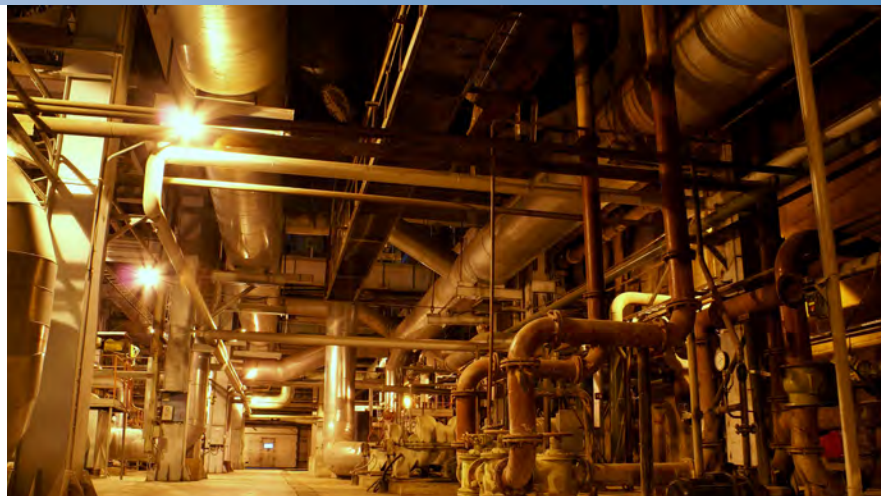
The Thermo Scientific™ Sarasota liquid density meters accurately measure density or density related variables. These online continuous meters provide key information for process monitoring and control, quality control and product interface detection.

Features include:

- Measurement at process conditions
- Straight through flow path
- Materials to suit applications
- Compact and lightweight, easy to install
- Hazardous area approvals
- Converter electronics to suit application



Thermo Scientific Sarasota FD910 and Sarasota FD950 Liquid Density Meters



## Repeatable & Accurate

Thermo Scientific Sarasota liquid density meters fulfill demanding application requirements within the oil and gas, petrochemical, and chemical industries.

Specific applications include:

- Blending
- Product identification
- Interface detection
- Dilution measurement
- Process/quality control
- SG measurement
- Process efficiency
- Product consistency
- Volumetric to mass flow metering systems

These devices utilize the proven vibrating element design which is widely accepted as the most accurate method of continuous, online density measurement. In fact, our twin tube design is inherently more stable than single tube technology, and an integral, high grade PT100 temperature element within the instrument allows compensation of the density meter for temperature effect and may be used for compensation to reference conditions. Our meters detect any variation of process constituents or final product quality

in near real-time to improve productivity, minimize product waste and reduce costs when compared to sampling methods.

## Compact & Easy-to-Install

Compact and lightweight, the density meters tolerate significant plant vibration and can be installed directly into existing pipe work without the need for upstream flow conditioning or instrument supports. Installation is quick and simple with minimal pipeline disturbance or process downtime. The straight-through sensor offers an unobstructed flow path to ensure minimal pressure drop and higher flow rates to keep your products moving at optimal speed.

## Durable & Functional

A choice of sensor materials is offered for wetted parts, including Hastelloy® C276 for improved corrosion resistance and stainless steel for general industrial use. With hazardous area approvals and secondary containment on all models, these instruments withstand tough industrial environments to ensure a significant return on investment.

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### The Sarasota FD910 for Industrial Applications

The Sarasota FD910 meets the demands of general process monitoring and control applications across a vast number of industries. With its stainless steel construction, the Sarasota FD910 industrial density meter is best suited to those general process applications that do not require the specialist materials offered by the other models in the range.

### The Sarasota FD950 for Chemical Applications

The wetted parts of the Sarasota FD950 are made of Hastelloy C276 making it the most corrosion resistant option of the range. It is ideal for aggressive applications in the petrochemical, chemical, and pharmaceutical industries.



### Calibration and Service

Calibration of the Sarasota liquid density meters is conducted in-house on a calibration rig that is traceable to national standards. Supporting documentation is available including a traceable equipment list. For most applications, installation is straightforward, on-site calibrations are generally unnecessary and the instruments are usually maintenance free. However, our dedicated service team offers commissioning, maintenance and repair services for our liquid density meters and associated electronics. On-site visits, in-house repairs and maintenance contracts can be arranged as required.

### Density Converter Electronics

The Sarasota liquid density meters can provide output variables such as specific gravity, % concentration, °Brix, °API, °Baume, line density or referred density, when used in conjunction with a Sarasota density converter. The Thermo Scientific™ Sarasota HME900 integral, field-mounted density converter option provides a direct HART-compatible 4-20 mA output, whereas the Thermo Scientific™ Sarasota CM515 remote, panel-mounted computer provides a local display and a variety of operator selectable outputs that feed into a plant's optimization system.



Thermo Scientific Sarasota HME field-mounted density converter.



Thermo Scientific Sarasota CM515 panel-mounted density converter.

**Functional Specifications**

|  |   |
|--|---|
| Transducer Calibration Accuracy              | Available to $\pm 0.1$ kg/m <sup>3</sup> ( $\pm 0.0062$ lb/ft <sup>3</sup> )  |
| Repeatability                                | 0.02 kg/m <sup>3</sup> (0.0012 lb/ft <sup>3</sup> )   |
| Flow Range                                   | Vertical installation: 0 l/min to 300 l/min (0 USG/min to 79 USG/min);<br>Horizontal installation: 5 l/min to 300 l/min (1.3 USG/min to 79 USG/min)   |
| Operating Density Range                      | 0 kg/m <sup>3</sup> to 2100 kg/m <sup>3</sup> (0 lb/ft <sup>3</sup> to 131.1 lb/ft <sup>3</sup> )   |
| Installation                                 | Vertical installation (standard), horizontal installation (optional); No instrument or pipe work supports required  |
| Pressure Effect (corrected)                  | 0.003 kg/m <sup>3</sup> /bar (0.000013 lb/ft <sup>3</sup> /psi) note: correction coefficients applied   |
| Temperature Effect (corrected)               | 0.005 kg/m <sup>3</sup> /°C (0.0002 lb/ft <sup>3</sup> /°F) note: correction coefficients applied   |
| Density Meter Dimensions                     | See dimensional diagrams  |
| Shipping Dimensions                          | 590 mm x 390 mm x 290 mm (approximately 24 in x 16 in x 12 in)  |
| Net Weight                                   | 11 kg (24 lb)   |
| Shipping Weight                              | 15 kg (33 lb)   |
| Environmental Rating                         | IP65 (NEMA 4X)  |
| Electrical Connections                       | Screw terminals; Cable entry: 2 x 3/4-in NPT  |
| Temperature Measurement                      | High accuracy 1/3 DIN integral 4-wire PT100   |
| Local Display (H version density meter only) | 4 1/2-digit 7.6 mm (0.3 in) 7-segment LCD display. Resolution 0.1% or 0.01% depending on display variable   |
| Secondary Containment                        | As flange rating to Class 300 then 2.5 times maximum safety flange rating to Class 600  |
| Factory Calibration Range                    | 650 kg/m <sup>3</sup> to 1600 kg/m <sup>3</sup> (40.58 lb/ft <sup>3</sup> to 99.98 lb/ft <sup>3</sup> )   |
| Ambient Temperature Range                    | -20°C to +60°C (-4°F to +140°F) ambient   |
| Process Temperature Range                    | Sarasota FD910 / FD950: -50°C to +180°C (-58°F to +356°F)   |
| Output                                       | F option (frequency output): Frequency related to density on 2-wire current modulated loop 6 mA to 18 mA, 4-wire PT100; H option (head mounted electronics): Analog 4-20 mA related to density or density derived variable, HART protocol |
| Power Supply                                 | F option (frequency output): 13-28 VDC 10 mA average (peak 18 mA) H option (head mounted electronics): 2 x 13-28 VDC 25 mA; 4-20 mA current pressure input available  |
| Maximum Operating Pressure                   | Sarasota FD910 / FD950: as flange rating  |

**Material Specifications**

|                     |  |
|---------------------|--|
| Sensor              | Sarasota FD910 stainless steel (316L / 1.4404)<br>Sarasota FD950: Hastelloy C276   |
| Other Wetted Parts  | Sarasota FD910 (Class 150, 300) / 316L stainless steel (316L / 1.4404)<br>Sarasota FD910 (Class 600) / FD950: Hastelloy C276 |
| Case                | Stainless steel (316 / 316L / 1.4404)  |
| Electronics Housing | Copper free aluminum grey epoxy finish; Plate glass window for local display option  |

**Process Connections**

|  |   |
|--|---|
| 1-in ASME B16.5 RF (raised face)       | Sarasota FD910: stainless steel (316 / 316L / 1.4404) – Class 150, 300 or 600<br>Sarasota FD910: duplex (A 182 Gr.F51) – Class 150, 300 or 600<br>Sarasota FD950 only: Hastelloy C276 – Class 150, 300 or 600 |
| 25-mm BSEN1092 RF (raised face-type B) | Up to maximum PN100   |
| Other Flange Types                     | Consult Thermo Fisher   |

| Compliance/Certification                       |  |
|--|--|
| Quality Assurance                              | ISO 9001:2008  |
| CE mark  | Compliant  |
| Electromagnetic Compatibility                  | Compliant (EN 61326:1997) (89 / 336 / EEC)   |
| Pressure Equipment Directive (97/23/EC)        | Category III   |
| Low Voltage Directive                          | Compliant (2006 / 95EC)  |
| Safe Area Use                                  | As standard  |
| BS EN ISO 15156 / NACE MR0175 Conformance      | Compliant on both Sarasota FD910 and Sarasota FD950 only   |
| ATEX Conformance: Intrinsically Safe (94/9/EC) | F option (frequency output): Ex II 1 G EEx ia IIC T6 (-20°C < Ta < +60°C)<br>H option (head mounted electronics): Ex II 1 G EEx ia IIC T4 (-20°C < Ta < +60°C)   |
| ATEX Conformance: Flameproof (94/9/EC)         | Ex II 2 G EEx d IIC T4 (Tamb = -20°C to +60°C) or T3 (Tamb = -20°C to +60°C)<br>Temperature classification of T4 or T3 for use with maximum process fluid temperature of +115°C or +180°C respectively |
| Canadian Standards Association (CSA)           | Explosion-proof Class 1, Groups B, C and D   |
| Calibration Certification                      | Optional traceable calibration equipment listing available   |
| Material Traceability                          | Wetted and pressure retaining parts traceability to EN 10204.3.1; Certification available  |

### Ordering Information

#### Model Number

FD910: Sarasota FD910 Industrial Liquid Density Meter

FD950: Sarasota FD950 Chemical Liquid Density Meter

#### A. Signal Output:

F = Frequency output

H = Smart head mounted electronics

#### B. Transducer Accuracy:

2 =  $\pm 0.25$  kg/m<sup>3</sup> (0.016 lb/ft<sup>3</sup>)

1 =  $\pm 0.1$  kg/m<sup>3</sup> (0.0062 lb/ft<sup>3</sup>), optional

#### C. Temperature Range:

G = -20°C to 120°C (-4°F to 248°F)

H = -50°C to 180°C (-58°F to 356°F)

#### D. Processing Connections:

B0 = 1-in ASME B16.5 RF Class 150 stainless steel (*only Sarasota FD910*)

B1 = 1-in ASME B16.5 RF Class 150 duplex (*only Sarasota FD910*)

B2 = 1-in ASME B16.5 RF Class 150 Hastelloy (*only Sarasota FD950*)

F0 = 1-in ASME B16.5 RF Class 300 stainless steel (*only Sarasota FD910*)

F1 = 1-in ASME B16.5 RF Class 300 duplex (*only Sarasota FD910*)

F2 = 1-in ASME B16.5 RF Class 300 Hastelloy (*only Sarasota FD950*)

A0 = 1-in ASME B16.5 RF Class 600 stainless steel (*only Sarasota FD910*)

A1 = 1-in ASME B16.5 RF Class 600 duplex (*only Sarasota FD910*)

A2 = 1-in ASME B16.5 RF Class 600 Hastelloy (*only Sarasota FD950*)

D = 25-mm BS EN 1092 RF (type B) up to max PN100

#### E. Certification:

S = Non-hazardous / safe area

I = Intrinsically safe

D = Flameproof / explosion proof

C = CSA Class I Div 1, Groups B, C & D

#### F. Options:

M = Wetted parts traceability certification to BS EN 10204 3 1 b

N = NACE MRO175 conformance certification

T = Traceable calibration equipment listing

W = WinHME900 communications software and modem (*head mounted versions only*)

D = Non-destructive testing (NDT) by dye penetrant

For more information, visit our website at [thermoscientific.com](http://thermoscientific.com)

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This product is manufactured in a plant whose quality management system is ISO 9001 certified.

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