### Technical Data

**FLUXUS® H831**  
Area-rated non-intrusive ultrasonic metering for the hydrocarbon processing industry

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#### Physical quantities

| Flow |  
| --- | --- |
| 1. Operating (actual) volumetric flow rate | 2. Standard volumetric flow rate as per ASTM 1250/TP25/D4311 |

| Analytics |  
| --- | --- |
| 1. API gravity, density, normalized density | 2. Interface detection: slope of the HPI |
| 3. Fluid identification: according to specific application fluid table |

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#### Measurement uncertainty

| Volumetric flow rate | ±1% of reading ±0.02 ft/s |
| HPI functionality |  
| Standard volumetric flow rate uncertainty | ±1 (crude oil, refined products, liquefied gases, heavy oils) |
| Repeatability of density (operating density / normalized density) | ±1 (with field calibration of the speed of sound) |

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#### Transmitter

- **Hazardous area rating**: ATEX/IECEx Zone 1, FM Class I, Div. 1 & 2  
- **Power supply**: 100 … 230 V AC / 50 … 60 Hz, 12 / 24 V DC  
- **Inputs**: Pt100 / Pt1000, 4 - 20 mA active / passive, binary  
- **Outputs**: 4 - 20 mA active / passive, 4 - 20 mA HART active / passive, pulse / frequency / binary  
- **Digital communication**: Modbus RTU/TCP, HART, Profibus PA, Foundation Fieldbus, BACnet  

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#### Available transducers

- **Hazardous area rating**: ATEX/IECEx Zone 1, FM Class I, Div. 1  
- **Pipe size range (liner diameter)**: 0.25 … 250 in  
- **Temperature range (Pipe wall)**: -40 … +450 °F  

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For more detailed information please download the Technical Specifications here: www.flexim.com.

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**FLUXIM® H831**  
Area-Rated Non-Intrusive Ultrasonic Metering for the Hydrocarbon Processing Industry

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**Processing, Storage, Allocation & Distribution in Hazardous Locations**

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**FLUXUS® H831**  
Non-intrusive ultrasonic flow meter for highly dynamic flows

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**For more detailed information please download the Technical Specifications here: www.flexim.com.**
“Fit for Purpose” Design

**FLUXUS® H831** is specifically designed for hazardous process control applications

Whether onshore or offshore, the oil and gas industry is exposed to the severe challenges of maintaining safe working practices in potentially explosive atmospheres or hazardous areas. Instrumentation should, therefore, always be “fit for purpose” and reliable.

The FLUXUS® H831 goes above and beyond the needs of the hydrocarbon industry. With its larger LCD, explosion-proof housing, hermetically sealed electronic components, and safe process inputs, the meter does not compromise operational safety. Under normal operating conditions, operators can use its magnetic pen to change meter parameters and configuration without ever needing to open the housing.

Furthermore, the combination of a rugged and robust area-rated design, single or dual measurement channels, and faster processor capabilities provides optimal performance and durability under the harshest environments. With the FLUXUS® H831, operators can safely and conveniently monitor their flows every step of the way, improve field management, and increase efficiencies.

Industry-Specific and Analytically Focused

**Single product & multi-product standard volume compensation and interface detection algorithms**

As crude oil and refined hydrocarbon properties change with variations in pressures and temperatures, volumetric flow rate correction is needed to accurately measure dynamic flows. The FLUXUS® H831 leverages ultrasonic transit time sound of speed measurement, industry-specific algorithms, and state-of-the-art processing techniques to accurately and reliably report compensated volumetric flows. It also offers a great deal of additional analytical functions to determine, e.g., API gravity, operational (actual flowing) density, density at base conditions, and kinematic viscosity.

The FLUXUS® H831 is equipped with databases for a wide range of applications from light hydrocarbons ([LPG, NGL, TP25 liquids](#)) to crude oils / refined products ([ASTM1250](#)). Application-specific configuration is handled via an editable table in the transmitter with liquid names and specific properties ([density, API](#)).

**Check Metering & Meter Calibration**

The FLUXUS® H831 can be used to verify the performance of other flow meters, including customary transfer meters. The particularly advantageous non-invasive installation allows a check of various third-party flow meters without having to stop operations or divert flows. This enables field personnel to evaluate meter performance and calibrate devices when necessary.

**Process Monitoring, Product Quality Determination, and Interface Detection at Tank Farms**

As fuel oils are transported from oil refineries to end-users in complex distribution systems, the need for product identification and quality is key for efficient operations and product balancing. Ensuring that the product is directed to the right storage tanks can make a big difference to the bottom line. Accurate and reliable interface detection and flow measurement is required to minimise product contamination.

With the FLUXUS® H831, different liquids can be identified and displayed on the meter when their measured properties match the characteristics in the meter-resident fluid table. These advanced analytical calculations are based on sound speed and temperature. A rate-of-change parameter is output that enables the operator to reliably detect and track batch interfaces along the pipeline.

### Table of typical hydrocarbon products

<table>
<thead>
<tr>
<th>Name</th>
<th>API gravity</th>
<th>Density at 60° F (kg/m³)</th>
<th>Sound speed at 60° F (m/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPG</td>
<td>100 ... 150</td>
<td>502 ... 611</td>
<td>768 ... 798</td>
</tr>
<tr>
<td>Butane</td>
<td>111</td>
<td>581</td>
<td>951</td>
</tr>
<tr>
<td>Pentane</td>
<td>93</td>
<td>630</td>
<td>1051</td>
</tr>
<tr>
<td>Naphtha</td>
<td>70 ... 85</td>
<td>653 ... 702</td>
<td>1152 ... 1213</td>
</tr>
<tr>
<td>Gasoline</td>
<td>47 ... 48</td>
<td>709 ... 792</td>
<td>1221 ... 1326</td>
</tr>
<tr>
<td>Kerosene</td>
<td>37 ... 50</td>
<td>779 ... 839</td>
<td>1309 ... 1385</td>
</tr>
<tr>
<td>Crude Oil</td>
<td>29 ... 45</td>
<td>801 ... 881</td>
<td>1337 ... 1439</td>
</tr>
<tr>
<td>Heating Oil</td>
<td>22 ... 37</td>
<td>839 ... 921</td>
<td>1385 ... 1491</td>
</tr>
<tr>
<td>Fuel Oil</td>
<td>17 ... 22</td>
<td>921 ... 952</td>
<td>1419 ... 1532</td>
</tr>
<tr>
<td>Marine Fuel</td>
<td>11 ... 17</td>
<td>952 ... 992</td>
<td>1532 ... 1607</td>
</tr>
<tr>
<td>Bunker Asphs</td>
<td>5 ... 10</td>
<td>999 ... 1036</td>
<td>1617 ... 1646</td>
</tr>
</tbody>
</table>

### Pipeline Integrity & Leak Detection

Calculation of standard volumetric flow rates allows the mass flow rate balancing of different measuring points when monitoring the integrity of pipeline systems. Measuring different points (segments) of the pipeline provides insightful information to end-users regarding product losses or process upsets. Leak detection monitoring relies on compensated volume balance methodology where flow meters continually monitor differences in flow rates between each pipeline segment and warn when a change in density or flow rate occurs. With the FLUXUS® H831, flow compensation is done directly within the meter allowing for rapid and accurate flow calculation within the system.
### Technical Data

**FLUXUS® H831** Area-rated non-intrusive ultrasonic metering for the hydrocarbon processing industry

#### Physical quantities

| Flow | 1. Operating (actual) volumetric flow rate  
|      | 2. Standard volumetric flow rate as per ASTM D1250/TP25/D4311  
|      | 3. Flow velocity  
|      | 4. Mass flow rate  

#### Analytics

| 1. API gravity, density, normalized density  
| 2. Interface detection: slope of the HPI physical quantities  
| 3. Fluid identification: according to specific application fluid table |

#### Measurement uncertainty

| Volumetric flow rate | ±1% of reading ±0.02 ft/s  
| HPI functionality | Standard volumetric flow rate uncertainty ±1 | Crude oil, refined products, liquefied gases, heavy oils  
| Repeatability of density | ±1 [with field calibration of the speed of sound] |

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