

Processing, Storage, Allocation & Distribution  
in Hazardous Locations

## FLUXUS<sup>®</sup> H831

Area-Rated Non-Intrusive Ultrasonic Metering  
for the Hydrocarbon Processing Industry

ATEX/IECEX Zone 1 Rated

Rugged Explosion Proof/  
Flame Proof Housing

Live Pressure & Temperature  
Inputs

Single & Dual Channel

Standard Volumetric Flow Rate  
Measurement Reporting

Analytic Functionality:  
API & Density Determination  
According to ASTM D1250, GPA TP25  
and D4311 Standards

Mass Flow Rate  
Measurement Reporting

**FLEXIM Sets Standards**  
when measuring matters







## “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.

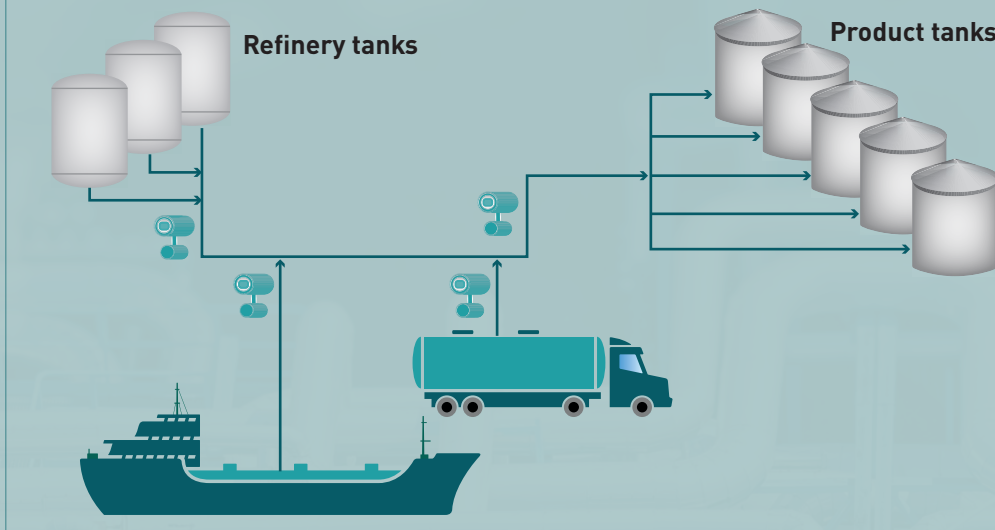
## Industry-Specific and Analytically Focused

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

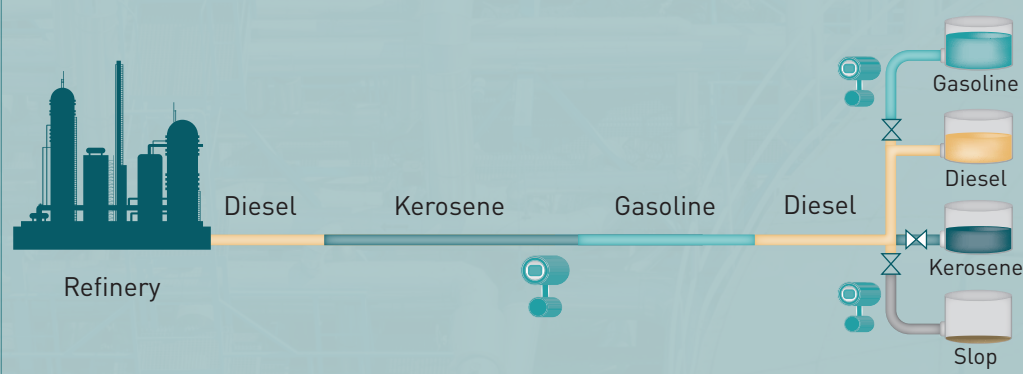
As crude oil and refined hydrocarbon properties change with variations in pressures and temperatures, volumetric flow rate correction is needed to accurately measure dynamic flows. The FLUXUS® H831 leverages ultrasonic transit time sound of speed measurement, industry-specific algorithms, and state-of-the-art 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 liquids) to heavy hydrocarbons (asphalts D4311). Application-specific configuration is handled via an editable table in the transmitter with liquid names and specific properties (density, API).

### 1. Flow measurement of refined products from refinery to storage tanks



### 2. Flow and density measurement of multiproduct pipelines to storage



### Table of typical hydrocarbon products

Name	API gravity	Density at 15 °C (kg/m³)	Sound speed at 15 °C (m/s)
LPG	100 ... 150	502 ... 611	768 ... 998
Butane	111	581	951
Pentane	93	630	1051
Naphta	70 ... 85	653 ... 702	1152 ... 1213
Gasoline	47 ... 68	709 ... 792	1221 ... 1326
Kerosene	37 ... 50	779 ... 839	1309 ... 1385
Crude Oil	29 ... 45	801 ... 881	1337 ... 1439
Heating Oil	22 ... 37	839 ... 921	1385 ... 1491
Fuel Oil	17 ... 22	921 ... 952	1491 ... 1532
Marine Fuel	11 ... 17	952 ... 992	1532 ... 1607
Bitumen/Asphalts	5 ... 10	999 ... 1036	1617 ... 1666

## 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.

## 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.

## Check Metering & Meter Calibration

The FLUXUS® H831 can be used to verify the performance of other flow meters, including custody 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.





**FLEXIM GmbH,**  
Berlin  
Phone: +49 30 93 66 76 60  
info@flexim.de

**FLEXIM Austria GmbH**  
Olbendorf  
Phone: +43 33 26 529 81  
office@flexim.at

**FLEXIM Instruments Benelux B.V.**  
Berkel en Rodenrijs  
Phone: +31 10 24 92 333  
benelux@flexim.com

**FLEXIM France SAS**  
Limonest  
Phone: +33 4 27 46 52 10  
info@flexim.fr

**FLEXIM Instruments UK Ltd.**  
Northwich  
Phone: +44 1606 781 420  
sales@flexim.co.uk

**FLEXIM Middle East**  
Dubai South  
Phone: +971 4430 5114  
salesme@flexim.com

**FLEXIM India**  
Rohini New Delhi  
Phone: +91 98114 49285  
salesindia@flexim.com

**FLEXIM Instruments Asia Pte Ltd.**  
Singapore  
Phone: +65 67 94 53 25  
salessg@flexim.com

**FLEXIM Instruments China**  
Beijing Shi  
Phone: +86 21 64 95 75 20  
shanghai@flexim.com

**FLEXIM S.A, Chile**  
Las Condes  
Phone: +56 22 32 03 62 80  
info@flexim.cl

**FLEXIM AMERICAS Corporation, USA**  
Edgewood, NY  
Phone: +1 63 14 92 23 00  
salesus@flexim.com

## 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 1250/TP25/4311
3. Flow velocity
4. Mass flow rate

**Analytics**

1. API gravity, density, normalised 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 ±0.005 m/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)

### Transmitter

Hazardous area rating ATEX/IECEx Zone 1, FM Class I, Div. 1  
Power supply 100 ... 230 V AC / 50 ... 60 Hz  
20 ... 32 V DC

Outputs 4 ... 20 mA passive [Ex ia] or active/passive  
4 ... 20 mA HART passive [Ex ia] or active/passive

Digital outputs pulse/frequency/binary, [Ex ia] available  
Inputs Pt100/Pt1000, [Ex ia] available

Digital communication 4 ... 20 mA active [Ex ia] or active/passive  
Modbus RTU, HART, Profibus PA, Foundation Fieldbus

### Available transducers

Hazardous area rating ATEX/IECEx Zone 1, FM Class I, Div. 1  
Pipe size range 0.25 ... 250 in (0.635 ... 635 cm)  
(Inner diameter)  
Temperature range -40 ... +450 °F (-4 ... +232 °C)  
(Pipe wall)

For more detailed information please download the Technical Specifications here: [www.flexim.com](http://www.flexim.com).



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