



Smith Meter[®] Ultra[™] Series

Liquid ultrasonic flowmeters



Flow measurement and more

TechnipFMC's Ultra Series ultrasonic flowmeters are for much more than just flow measurement. That's because they come with convenient interface options such as a touch-screen or a simple ethernet connection to a PC, state-of-the-art diagnostics and communication tools and robust on-board memory, allowing you to use your meter for data tracking and analysis. Remote communications options also allow you to monitor product flow from anywhere.

That cutting-edge technology is backed by TechnipFMC's experience. With 85 years of custody transfer measurement, we're known for the quality, accuracy and reliability of our meters. Our measurement specialists, engineers and service technicians understand every customer's application is unique, and we'll make sure the job is done right, the first time.

But what sets TechnipFMC's Ultra Series ultrasonic flowmeters apart is they're the best solution over the widest range of applications. Each of our ultrasonic meters is tested in our industry-leading accredited Flow Research and Test Center, which can simulate the widest range of flow conditions in the world. That capability gives you assurance that your ultrasonic meters will work with the accuracy you need, even for the most difficult applications.

Benefits of ultrasonic technology



Low pressure drop

Pressure drop is equivalent to an equal length of straight pipe reducing pumping cost and operating expense.



Low maintenance

No moving parts that need to be replaced due to wear - especially beneficial in severe operating environments increasing operational flexibility and decreasing maintenance expense.




Ideal for problematic applications

State-of-the-art meter characterization in the Flow Research and Test Center guarantees superb accuracy performance from the simplest to most challenging and problematic applications.



Operational flexibility

Wide measurement range for light refined products to heavy viscous crude oils, bidirectional flow capability, and resistance to fouling from the straight pass through design provides exceptional performance over a range of applications.



TechnipFMC

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Ultra Series™ key benefits and features



Ultra Series key benefits

▶ Measurement accuracy

The Ultra Series ultrasonic flowmeters have the accuracy you've come to expect from TechnipFMC's Smith Meter products, with 85 years' experience in custody transfer and over 300,000 meters in operation.

▶ High viscosity, heavy oil applications

Our industry-leading, accredited Flow Research and Test Lab, paired with an advanced velocity profile correction algorithm, make the Ultra Series 6c and 8c proven custody-transfer solutions for difficult applications.

▶ On-board intelligence

Communications and diagnostics tools and on-board memory make the meter a data tracking and analysis system. Its communications options allow you to monitor your data remotely.

▶ Flow testing Integration in manufacturing

When project critical deliveries are needed, the one-stop shop experience allows Ultra Series meters to be flow tested as part of our manufacturing process in our Flow Research and Test Center. There is no need to coordinate with 3rd party flow facilities, which saves time and money making your purchasing experience more convenient.

Ultra Series unique features

▶ High speed electronics

The all-new, high-speed digital signal processor provides outstanding measurement reproducibility over a wide range of operating conditions, ensuring optimum accuracy for every barrel of product.

▶ Digital signal filtering

Advanced digital-signal filtering provides superior performance that will not drift with time, reducing the frequency of recalibration and the long-term operating expense of the meter.

▶ On board memory

Historical log data is stored directly on the meter for reliability and improved access, enabling detailed historical analysis and diagnosis of meter alarms or process conditions.

▶ Flexible communication options

Ethernet and serial communication options are provided. Built-in fiber optic input can reduce installation costs by eliminating the need for additional components and housing. A wide range of analog, digital, and pulse inputs or outputs are available for configuration flexibility.

▶ **In-line transducer replacement**

Each transducer is held inside a protective housing, isolating it from the process fluid. Accessing the transducers does not require costly shutdown, production delays, or special tooling.

▶ **Web-based operator interface**

The intuitive interface design makes accessing advanced diagnostic data simple, eliminating the cost of maintaining separate interface software and expands accessibility to any device with network access and a web browser.

▶ **Optimized transducer for heavy oil**

Specialized high viscosity transducers provide optimum signal transmission quality, assuring accurate volumetric measurement for difficult crude oil applications

Ultra 6C, 8C added features

▶ **True swirl and crossflow compensation**

Crossing measurement paths on the same plane provide direct measurement of swirl and crossflow. That measurement characteristic improves accuracy over extended ranges, even in difficult installations with less straight pipe upstream, reducing installation cost.

▶ **Heavy oil, high viscosity applications**

The Ultra 6c and 8c have a proven track record of measurement accuracy over a wide measurement range for products from LPG to heavy crude oils. Operational flexibility is greatly increased because the Ultra 6c and 8c meters can handle a wide diversity of products and operating conditions.

▶ **Advanced flow profile algorithms and diagnostics**

The Ultra 6c and 8c meters continuously monitor flow profile and signal quality parameters for meter performance diagnostics. The meters can detect sudden variations in the product and alert operators to changing fluid properties, flow profile or meter performance.

Ultra Series™ specifications

Measurement Paths

- ▶ Ultra 4c: 4 paths in 4 chordal planes using a total of 8 transducers
- ▶ Ultra 6c: 6 paths in 4 chordal planes using a total of 12 transducers
- ▶ Ultra 8c: 8 paths in 4 chordal planes using a total of 16 transducers

Repeatability

Complies with API MPMS Chapter 5.8

Linearity

- ▶ Ultra 4c: ±0.25% or better
 - ▶ Ultra 6c: ±0.15% or better
 - ▶ Ultra 8c: ±0.12% or better
- (based on operating conditions)

Flange Connections

ASME B16.5 RF, Class 150, 300, 600, and 900

Product Range

Refined product and crude oils over 2,000 cSt depending on meter size

Approvals/compliance

- ▶ API MPMS Chapter 5.8
- ▶ NACE
- ▶ ATEX, IEC, Ex, UL/CUL
- ▶ OIML R 117-1

Specifications and approvals are based on model and application.

Applications

- ▶ Custody Transfer
- ▶ Pipeline Transportation
- ▶ Bulk Terminal Loading/Unloading
- ▶ Floating Storage and Off-Loading Vessels (FSOs and FPSOs)
- ▶ Line Balancing
- ▶ Inventory Control
- ▶ Allocation
- ▶ Line Integrity

Ultra Series flow chart*

Size	Maximum flow rate		
	Inches (mm)	BPH	m/h
6 (150)		5,500	870
8 (200)		9,600	1,530
10 (250)		15,000	2,380
12 (300)		22,800	3,620
14 (350)		24,000	3,820
16 (400)		33,600	5,340
18 (450)		42,000	6,680
20 (500)		50,000	7,950
22 (550)		60,000	9,540
24 (600)		78,000	12,400
26 (650)		90,000	14,310
28 (700)		108,000	17,170
30 (750)		120,000	19,080
32 (800)		138,000	21,940
34 (850)		156,000	24,800
36 (900)		180,000	28,620
40 (1,000)		222,000	35,290
48 (1,200)		312,000	49,600



Dynamic testing to ISO/IEC 17025 ensures accuracy

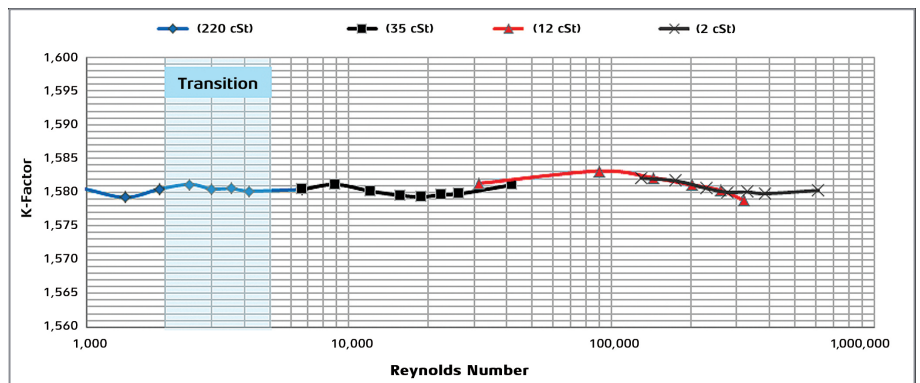
With the variety of crude oils today, TechnipFMC gives you the peace of mind that Ultra Series ultrasonic meters work with the accuracy you need, whether for leak detection or custody transfer.

That's because they're tested in our industry-leading ISO/IEC 17025:2005-accredited Flow Research and Test Center, whose experts can simulate the widest range of flow conditions in the world, and whose quality is backed by 40 years of experience in testing.

Our Flow Research and Test Center can test up to 30-inch meters using hydrocarbon fluids on flow rates up to 42,000 bph (6,670 m³/h) and viscosities up to 300 cSt. Using dynamic testing, our technicians can achieve Reynolds Numbers ranges no other lab in the world can. That world-leading capability means TechnipFMC's Ultra Series ultrasonic flowmeters measure in the field with the accuracy you need for highly viscous, heavy crude oils and other similar applications.

12" Ultra 8c performance in Erie flow lab

Testing Over Reynolds No. Range 1,000 to 672,746



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