



**Accurate, Ultra-High-Pressure  
Measurement Solutions for  
Hydrogen Applications**

**Micro Motion® High-Pressure Coriolis  
Flow Meters**

Proven automation solutions and local expertise to help you overcome your toughest challenges.



## Does your flow measurement technology perform under pressure?

High-pressure applications come with unique challenges and place a greater demand on equipment to perform at or close to operating thresholds. Whether you're working in a challenging environment with a hydrogen application, or with hydrogen dispensers, the need for a highly accurate flow meter that can meet the parameters of safe and effective operations is essential. Process variables such as fluctuating flow rates, material safety or thermo-shock during the filling process add to the challenges in growing markets such as alternative fuels. A safe fuel source that reduces carbon emissions makes a compelling case for hydrogen, giving operators a means to operate cleaner and more efficiently.

### Use less but do more.

As the universe's most abundant element, Hydrogen fuel is three times as powerful and useful as gas and comparable fossil fuels.



### Increase efficiency up to 80%.

Most internal combustion engines operate at an efficiency level of about 25% compared to a stationary fuel cell when used with heating and power systems which can achieve efficiency levels that exceeds 80%.



### Double the distance.

Energy-efficient hybrid vehicles today could potentially go 1,200 miles on a "full tank" instead of only 600 miles.



### Go green.

In a hydrogen fuel cell, the majority of the emissions involve water vapor and hot air. Each vehicle converted from gasoline to hydrogen fuel eliminates five metric tons of CO<sub>2</sub> out of the atmosphere.





Hydrogen energy is one of the world's most abundant natural resource and is also renewable, which presents an opportunity for operators to be extremely proficient while minimizing their environmental impact.

## High-Pressure Coriolis Flow Meters



The Micro Motion High-Pressure Coriolis flow meters are specifically designed to meet the challenges of ultra high-pressure environments. The unique meter design provides customers a highly accurate and reliable solution that can withstand the most extreme pressure thresholds in applications where flow measurement is critical.

**MICRO MOTION™**



Operators can achieve a greater level of consistency by coupling hydrogen fuel cells with the industry leading performance found in the Micro Motion High-Pressure Coriolis flow meters.

## Don't let your equipment crack under pressure.

Designed for high-pressure environments up to 15,374 psi (1,060 bar), operators have the confidence to operate safely using a meter that has a fully welded body, standard rupture disks, and is designed to meet ASME B31.3.

## Benefit from dispenser confidence with superior accuracy.

Precision flow technology delivers 0.5% mass flow batch accuracy, which correlates to better accounting and assurance of how much hydrogen was utilized. Furthermore, the heightened integrity of the technology ensures that the whole dispenser will meet its accuracy classification upon third party inspection.

## No additional equipment needed.

Coriolis flow meters are notorious for their heightened accuracy. Operators can rest assured in their measurement readings. Micro Motion Coriolis flow meters can handle the changes in pressure within the dispenser without affecting the measurement. Additionally, the meter has been independently analyzed for fatigue to ensure it will handle the cycling pressure and temperature to withstand the whole life of the dispenser.

## Leverage the power of single device.

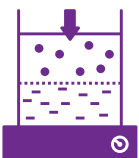
Provide direct inline measurement of mass flow and temperature—all from a single device. Offered in a compact footprint that won't take up much space in the dispenser. A wide range of Div. 1 / Zone 1 electronics that can be mounted remotely or at the device for the ultimate flexibility.



## Ensure your flow measurement technology can withstand the pressure of your operations.

The Micro Motion High-Pressure Coriolis Flow Meter portfolio offers a wide range of pressure thresholds without compromising the integrity of the flow measurement reading and eliminates the need to utilize multiple devices. Designed with the challenges of high-pressure hydrogen in mind. Constructed with all stainless steel wetted components to avoid embrittlement issues from high-pressure hydrogen. Offered in three different pressure ranges to meet the specific needs of both the hydrogen car, and the bus and truck market.

### What's your challenge?



Does your equipment fail to withstand the pressure threshold, require continuous maintenance, or do you have to rely on multiple devices to achieve an accurate flow measurement?

### What's your opportunity?



Meeting a plethora of high-pressure requirements (350 MPa, 700 MPa), the Micro Motion HPC015 can not only meet the pressure demands of your operations, it delivers consistent and highly accurate measurement readings giving you the utmost level of measurement confidence.

## Meet or exceed your operational demands



ASME B31.3 Process Piping Code contains requirements for piping typically found in high-pressure applications



SAE J2601-1 Highly accurate and repeatable in applications over 1,000 bar (15,000 psi). The Micro Motion High-Pressure Coriolis Flow Meter delivers the highest pressure threshold capacity to date

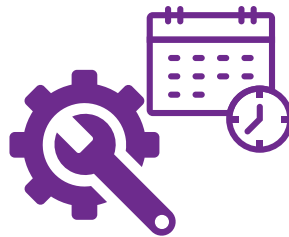
# PED

European Pressure Equipment Directive 2014/68 EU (PED) applies to the design, manufacture and conformity assessment of stationary pressure equipment with a maximum allowable pressure greater than 0.5 bar

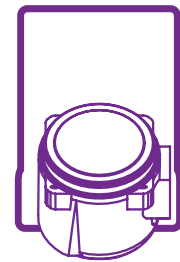
## Benefit from the ease of using a single device



Ease-of-use combined into a single, highly accurate instrument



Reduced maintenance with no internal parts or spares to stock



Easy access to process intelligence  
The High-Pressure Coriolis Flow Meter is a true Coriolis flow meter with an integral transmitter designed for industry-leading performance

## Harness the power of diagnostic insight



### Access to immediate and repeatable process data

Operators can easily identify process variables and alert conditions from a single screen with detailed historian data from your device; having this valuable information instantly available is essential in expediting the troubleshooting process and crucial in mitigating expensive downtime.



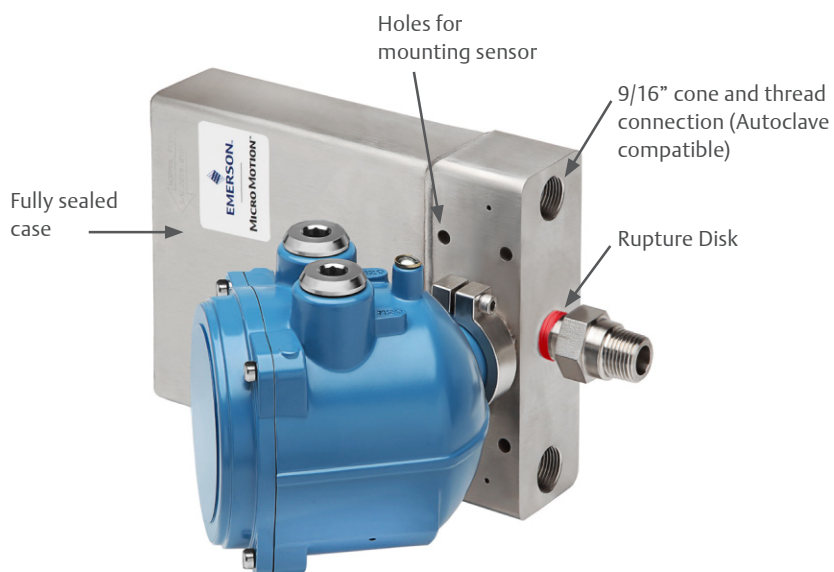
### Smart Meter Verification

Smart Meter Verification enables operators to harness the power to transform diagnostic data into actionable information to ensure greater operational safety, quality, efficiency and certainty.



For more information, visit [www.emerson.com/micromotionhighpressurecoriolis](http://www.emerson.com/micromotionhighpressurecoriolis)

# Micro Motion High-Pressure Coriolis Flow Meters - HPC015



## Dedicated meter

- Meets needs of both 350 MPa and 700 MPa H2 dispensers
- Designed to SAE J2601-1 standards
- Maintain the highest safety and quality using a meter that has a fully sealed body, standard rupture disks, and is designed to meet ASME B31.3
- Advanced electronics and diagnostics for easy integration
- Meet system accuracy goals with a 0.5% mass flow batch accuracy

## Coriolis flow meters

Coriolis flow meters offer dramatic benefits over traditional volumetric measurement technologies such as:

- Deliver accurate and repeatable process data over a wide range of flow rates and process conditions
- Provide direct in-line measurement of mass flow and temperature – all from a single device
- Have no moving parts, so maintenance costs are minimal
- Have no requirements for flow conditioning or straight pipe runs, so installation is simplified and less expensive
- Provide advanced diagnostic tools for both the meter and the process



## Extensive Electronics and Diagnostics Offering

### Micro Motion MVD Direct Connect



The Micro Motion MVD Direct Connect combines the performance of Micro Motion Coriolis flow meters with a direct Modbus interface.

- Integrated transmitter reduces meter footprint in dispenser, simplifies wiring, and speeds commissioning time
- All process variables such as mass flow, volume flow, liquid density and temperature available through the high-speed Modbus signal
- Barrier needed for hazardous area approvals
- Smart Meter Verification Basic included

### Micro Motion 5700 Transmitter



Delivering the best in measurement technology and unparalleled support, the 5700 transmitter's intuitive design ensures measurement confidence, valuable process insight and productivity through simplified solutions.

- Up to five configurable input/output channels, including EtherNet/IP
- Configure the intuitive display on the device locally without needing additional tools
- Smart Meter Verification Basic and installation verification included

### Micro Motion 4200 Transmitter



Easily integrate Coriolis flow meters into existing processes for improved measurement and reduced maintenance. This loop powered transmitter makes it possible to replace existing 2-wire flow devices with minimal effort and without incurring additional power or cabling costs.

- 2-wire transmitter can help reduce wiring costs
- SIL 2 coverage
- SIL 3 capable with multiple meters
- Built in historian
- Zero verification and Smart Meter Verification Basic included

### HCP015 Specifications

<b>Gas Mass Flow Accuracy</b>	± 0.50% of batch
<b>Temperature Accuracy</b>	± 1 °C ± 0.5% of reading
<b>Pressure Ranges</b>	
<b>HPC015M</b>	482 bar (6,991 psi)
<b>HPC015N</b>	963 bar (13,960 psi)
<b>HPC015P</b>	1,060 bar (15,374 psi)
<b>Wetted Components</b>	Stainless Steel
<b>Flow Rates</b>	0 - 3.6 kg/min
<b>Temperature Limits</b>	-46 - 200°C (50.8 - 392°F)
<b>End Connection</b>	9/16" Cone and Thread (Autoclave compatible)
<b>Approvals</b>	ATEX and IECEx (Zone 1 and 2), CSA (Div. 1 and 2)



For more information, visit [www.emerson.com/micromotionhighpressurecoriolis](http://www.emerson.com/micromotionhighpressurecoriolis)

# Delivering insight for better measurement and better process management



## Smart Meter Verification overview

Smart Meter Verification enables you to check your flow meter's health without taking your meter out of line. Its diagnostics continuously monitor meter health to empower users to take action and avoid safety and measurement issues as a result of corrosion, erosion, over-pressurization, build-up and other sources of potential instrument damage.

Smart Meter Verification performs a traceable calibration verification with a patented tube integrity diagnostic, as Coriolis flow meter calibration factors are directly related to the mechanical stiffness of the flow tubes. This method provides early detection of instrument damage, before it creates a safety risk or accuracy shift. This traceable calibration verification, as well as a verification of all electrical components, is now included as a standard feature.

[Emerson.com/SmartMeterVerification](https://www.emerson.com/SmartMeterVerification)



## Benefits of Smart Meter Verification

- Troubleshoot any process and isolate/confirm meter performance with rapid and actionable verification feedback
- Proactively monitor the condition of meters with regular verification, trending and forecasting the need for calibration
- Assure stability of operation with ongoing measurement verification, including verifying meter after process events or upsets
- Accessible directly at the meter, through digital connectivity or via the Smart Wireless THUM Adapter, for flexibility of use

# Easily monitor meter performance without interrupting your process

## Agency recognition



Traceable calibration verification results on the Smart Meter Verification report has been tested and evaluated by NMI and Exida and can be used to extend proof testing and recalibration intervals for some applications. The reports serve as the manufacturers recommended calibration verification for EPA, FDA, and meets the recommendations for AGA and other agencies.

## Non-uniform coating detection



Enhance maintenance and Clean-In-Place (CIP) programs to avoid proving failures, measurement inaccuracies and quality challenges.

## Intuitive Interface



Quickly generate agency-recognized reports and confidence in your Coriolis measurement through ProLink, Ethernet webpages and AMS.

## Two versions to address your verification needs

	Basic	Professional	
<b>Sensor Compatibility</b>	CMF, CMFS, HPC, F, H, R, and T		
<b>Transmitter Compatibility</b>	Direct Connect, 1500, 1700, 2400S, 2500, 2700, Series 3000, 4200, 5700 (Enhanced Core Processors Only)	Direct Connect, 1500, 1700, 2400S, 2500, 2700, Series 3000, 4200 (Enhanced Core Processors Only)	5700
<b>Access</b>	Included	Licensed	90-Day Trial, Licensed
<b>Calibration Verification</b>	●	●	●
<b>Zero Verification</b>	● *	● *	●
<b>Electronics Verification</b>	●	●	●
<b>Scheduler</b>	●	●	● *
<b>History of Previous Results</b>	●	●	●
<b>Verification Report</b>		● **	● **
<b>Non-Uniform Coating Diagnostic</b>			●
<b>Multiphase Diagnostic</b>			● +
<b>Flow Range Diagnostic</b>			● +

\* Access with ProLink III

\*\* Access and export Report with ProLink III, Ethernet webpage, and/or AMS SNAP-ON

+ 24-Hour historian visualization in ProLink III Professional

### Basic

- Calibration and electronics verification **now included with all Enhanced Core Processors**
- Follow actionable NE107 alert recommendations to resolve operational challenges quickly
- Verify measurement is within factory specification under current flowing conditions

### Professional

- Optimize instrumentation and process compliance
- Generate reports recognized by regulatory agencies (e.g. EPA, FDA, API, SIS) to extend recalibration, proving and proof-test intervals
- Detect non-uniform coating to protectively clean equipment before it leads to quality, safety or proving challenges
- Improve measurement performance by diagnosing process upsets or an improper installation

# Accurate, Ultra-High-Pressure Measurement Solutions for Hydrogen Applications



## MICRO MOTION™

Proven automation solutions and local expertise to help you overcome your toughest challenges.

### Emerson Automation Solutions

Worldwide Headquarters  
7070 Winchester Circle  
Boulder, Colorado USA 80301  
T: +1 800-522-6277  
T: +1 303-527-5200  
F: +1 303-530-8459  
Mexico: +52 55 5809 5300  
Argentina: +54 11 4809 2700  
Brazil: +55 15 3413 8000  
Chile: +56 2 2928 48 00  
Peru: +51 15190130

### Emerson Automation Solutions

Central Europe: +41 41 7686 111  
Eastern Europe: +41 41 7686 111  
Dubai: +971 4 811 8100  
Abu Dhabi: +971 2 697 2000  
Austria: +43 2236 607-0  
France: 0800 917 901  
Germany: +49 (0) 2173 3348 0  
Italy: 8008 77334  
The Netherlands: +31 318 495 555  
Belgium: +32 2 716 77 11  
Spain: 900 901 986  
U.K.: 0870 240 1978  
Russian/CIS: +7 495 995 9559

### Emerson Automation Solutions

Australia: (61) 3 9721 0200  
China: (86) 21 2892 9000  
India: (91) 22 6662 0566  
Japan: (81) 3 5769 6803  
South Korea: (82) 31 8034 0000  
Singapore: (65) 6 363 7766  
Chile: 56 22 4310 7432



[Emerson.com/micromotionhighpressurecoriolis](https://emerson.com/micromotionhighpressurecoriolis)



[Facebook.com/EmersonAutomationSolutions](https://facebook.com/EmersonAutomationSolutions)



[LinkedIn.com/company/Emerson-Automation-Solutions](https://linkedin.com/company/Emerson-Automation-Solutions)



[Twitter.com/EMR-Automation](https://twitter.com/EMR-Automation)

The Emerson logo is a trademark and service mark of Emerson Electric Co. Brand logotype are registered trademarks of one of the Emerson family of companies. All other marks are the property of their respective owners. © 2020 Emerson Electric Co. All rights reserved.  
BR-002441 / Printed in US / 04-20



**EMERSON™**

**CONSIDER IT SOLVED™**