Product Data Sheet
PS-00232, Rev X
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Micro Motion® Technical Overview and Specification Summary

MICRO MOTION™

EMERSON™

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Micro Motion products

Emerson's world-leading Micro Motion Coriolis flow and density measurement devices have set the standard for superior measurement technology. Micro Motion offers the best measurement solutions for any process challenge.

Micro Motion advantages

Technology leadership

Micro Motion is committed to technology innovations that deliver the highest-performing solutions for your complex measurement challenges.

Widest breadth of products

Micro Motion has the widest range of flow and density measurement devices for virtually any process, application, or fluid. A wide variety of wetted materials, line sizes, and an extensive range of output options enable optimal system integration.

Unparalleled value

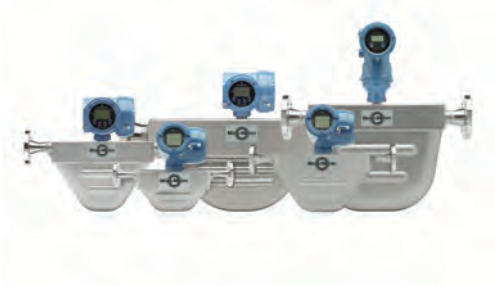
Benefit from expert field and technical application service and support made possible from more than one million meters installed worldwide and over 40 years of flow and density measurement experience.

Micro Motion Coriolis flow and density meters

ELITE

Peak performance Coriolis meter

- Ultimate real world performance
- Best fit-for-application
- Superior measurement confidence



F-Series

- High performance compact drainable Coriolis meter
- Best flow and density measurement in a compact, drainable flow meter
- Broadest range of application coverage
- Superior reliability and safety

T-Series

Straight tube full-bore Coriolis meter

- Superior flow measurement in a single straight tube flow meter
- Comprehensive hygienic application coverage
- Superior reliability

R-Series

General purpose flow and density Coriolis meter

- Simple to install and easy to use Coriolis flow measurement
- Broadest range of application coverage
- Superior reliability

H-Series

Hygienic compact drainable Coriolis meter

- Best flow and density measurement in a compact hygienic flow meter
- Comprehensive hygienic application coverage
- Exceptional reliability and safety

LF-Series

Extreme low-flow Coriolis meter

- Highest precision miniaturized flow meter
- Scalable platform for the most demanding low-flow applications
- Superior reliability

CNG-Series

Compressed Natural Gas (CNG) Coriolis meter

- Specifically designed for both light and heavy duty vehicle dispensers
- Custody transfer approved
- Compact design with no moving parts, special mounting, or flow conditioning required

HPC010P

Ultra-High Pressure Flowmeter

Global industry standard for ultra high pressure environments

- A Coriolis mass flow meter designed for high pressure environments up to 15,000 psi (1,034.21 bar), such as chemical injection for the oil and gas industry
- Micro Motion MVD™ Direct Connect™ technology for space and weight savings
- Variety of transmitter options provide multivariable outputs to accommodate any design requirements
- ETO available for full stainless steel wetted materials aimed at hydrogen dispensing applications

TA-Series

TA-Series Flow and Density Meters

- Ideal for handling corrosive fluids, such as acids and bases
- Exceptional reliability and safety

Flow and density meter specifications

Table 1: Application type

Sensor	Continuous control	Batching / loading / blending	Custody transfer
ELITE	●	●	●
CNG-Series	●	●	●
F-Series	●	●	◐
H-Series	●	●	●
LF-Series	●	●	
R-Series	●	●	
T-Series	●	●	
TA-Series	●		
HPC010P	●	●	

● Supported on all models ◐ Supported on some models

Table 2: Measurement accuracy

Sensor	Liquid mass flow	Liquid density	Liquid volume flow	Gas mass flow
ELITE	±0.05%	±0.0002 g/cm^3 (±0.2 kg/m^3)	±0.05%	±0.25%
CNG-Series				±0.50%
F-Series	±0.10%	±0.0005 g/cm^3 (±0.5 kg/m^3)	±0.10%	±0.50%
H-Series	±0.10%	±0.0005 g/cm^3 (±0.5 kg/m^3)	±0.10%	±0.50%
LF-Series	±0.50%	±0.005 g/cm^3 (±5.0 kg/m^3)		±0.50%
R-Series	±0.40%	±0.003 g/cm^3 (±3.0 kg/m^3)	±0.40%	±0.75%
T-Series	±0.15%	±0.002 g/cm^3 (±2.0 kg/m^3)	±0.25%	±0.50%
TA-Series	±0.10%	±0.001 g/c	±0.10%	n/a

Table 2: Measurement accuracy *(continued)*

Sensor	Liquid mass flow	Liquid density	Liquid volume flow	Gas mass flow
HPC010P	±0.2%	±0.005 g/cm^3 (±0.5 kg/m^3)	±0.2%	±0.50%

Table 3: Capabilities

Sensor	Self-draining	Sanitary / hygienic	2-phase flow / entrained gas	Smart Meter Verification	High temperature	High pressure	Cyrogenic
ELITE	◐	◐	●	●	◐	◐	◐
CNG-Series	●					●	
F-Series	●		●	●	◐	◐	◐
H-Series	●	●	●	●			
LF-Series							
R-Series	●					◐	
T-Series	●	●					
TA-Series	◐			●			
HPC010P	●			●		●	

● Supported on all models ◐ Supported on some models

Table 4: Wetted materials

Sensor	300-series stainless steel	Super Duplex	Nickel Alloy C22	Titanium	Tantalum
ELITE	●	◐	●		
CNG-Series					
F-Series	●		●		
H-Series	●				
LF-Series					
R-Series	●				
T-Series				●	
TA-Series					●
HPC010P			●		

● Supported on all models ◐ Supported on some models

Table 5: Fits nominal line sizes

Sensor	Inches	Millimeters
ELITE	1/14 - 14	1 - 350
CNG-Series	1/2 - 3/4	15 - 20
F-Series	1/4 - 4	8 - 100

Table 5: Fits nominal line sizes *(continued)*

Sensor	Inches	Millimeters
H-Series	1/4 - 3	8 - 80
LF-Series	1/32 - 1/4	0.8 - 8
R-Series	1/4 - 4	8 - 50
T-Series	1/4 - 2	8 - 50
TA-Series	1/4 - 2	8 - 50
HPC010P	1/10 - 3/4	3 - 20

Micro Motion transmitters and controllers

5700

Advanced field-mount transmitter

- Integral and remote mount options
- Wide variety of I/O and application capabilities to fit your needs
- Large graphical display
- Real time data logging and storage

4200

2-wire transmitter

- Integral and remote mount options
- Compact, integral 2-wire transmitter design saves electrical cost and space for use on integrated systems and skids
- Large graphical display
- Certified for SIL2 and SIL3 Safety applications per IEC 61508

1700/2700

Versatile field-mount transmitter

- Integral and remote mount options
- Wide variety of I/O and application capabilities to fit your needs
- Available with a full stainless steel housing for harsh environments

1500/2500

Compact control-room transmitter

- DIN rail mount with flexible installation options
- Wide variety of I/O and application capabilities to fit your needs

3300
Rack/panel mount discrete controller
3500
Rack/panel mount transmitter with discrete controller

3350
Field mount discrete controller
3700
Field mount transmitter with discrete controller

2400S
Compact integral transmitter
- Simple I/O options
- Offers powerful diagnostics like Smart Meter Verification in a condensed form factor

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EtherNet I/P Module
- Access all process variables and diagnostics
- Simple EtherNet integration and retrofit

FMT
Compact filling and dosing transmitter
- Easy-to-clean, hygienic design that enables SIP/CIP
- Highest accuracy and fast response time

Transmitter and controller specifications

Table 6: Output variables

Transmitter	Mass / volume flow	Net product content / flow[1][2]	Temperature	Density	Concentration[2]
1500	•				
1700	•				
2400S	•	•	•	•	•
2500	•	•	•	•	•
2700	•	•	•	•	•
FMT	•		•	•	
3300	•				
3350	•				
3500	•	•	•	•	•
3700	•	•	•	•	•
4200	•		•	•	•
5700	•	•	•	•	•
• Supported on all models					

(1) Flow rate of product based on concentration. For example, in a dissolved sugar solution, the measurement is the flow rate of the sugar alone, and in a net oil application, the measurement is water alone or oil alone.
(2) Optional feature.

Table 7: Local display

Transmitter	2-line	Graphical
1500		
1700	•	
2400S	•	
2500		
2700	•	
FMT		
3300		•
3350		•
3500		•
3700		•
4200		•
5700		•
• Supported on all models		

Table 8: Power

Transmitter	AC	DC	Loop powered (2-wire)
1500		●	
1700	●	●	
2400S	●	●	
2500		●	
2700	●	●	
FMT		●	
K-Series	●	●	
3300	●	●	
3350	●	●	
3500	●	●	
3700	●	●	
4200			●
5700	●	●	
● Supported on all models.			

Table 9: Outputs

Transmitter	4–20 mA	10 kHz pulse	Discrete	HART® (1)	Modbus®	FOUNDATION™ Fieldbus	DeviceNet™	PROFIBUS-PA	PROFIBUS-DP
1500	●	●	●	●	●				
1700	●	●	●	●	●				
2400S	●	●	●	●			●		●
2500	●	●	●	●	●				
2700	●	●	●	●	●	●		●	
FMT	●	●	●		●				●
3300	●	●	●	●	●				
3350	●	●	●	●	●				
3500	●	●	●	●	●				
3700	●	●	●	●	●				
4200	●		●(2)	●					
5700	●	●	●	●	●	●			
● Supported on all models, although some combinations may be unavailable.									

(1) HART® or WirelessHART®
(2) Supported only when Channel B is licensed.

Table 10: Ethernet outputs

Transmitter	EtherNet/IP(1)	PROFINET	Modbus® TCP
1500	●		

Table 10: Ethernet outputs *(continued)*

Transmitter	EtherNet/IP[1]	PROFINET	Modbus® TCP
1700	•		
2400S			
2500	•		
2700	•		
FMT	•		
3300	•		
3350	•		
3500	•		
3700	•		
4200			
5700	•	•	•
• Supported on all models			

(1) Integrated in the Model 5700 Transmitter, or with the use of the Micro Motion EtherNet/IP module.

Table 11: Inputs

Transmitter	10 kHz pulse	Discrete	4–20 mA	HART[1]	4-wire remote sensor	9-wire remote sensor
1500				•	•	•
1700				•	•	•
2400S		•		•		
2500		•		•	•	•
2700		•		•	•	•
FMT		•		•		
3300	•	•				
3350	•	•				
3500		•		•	•	•
3700		•		•	•	•
4200				•		•
5700		•	•	•	•	•
• Supported on all models, although some combinations may be unavailable.						

(1) HART® or WirelessHART®

Table 12: Mounting

Transmitter	Integral – Field	Remote – Field	Remote – Control room	Remote – Rack / panel mount
1500			•	
1700	•	•		

Table 12: Mounting *(continued)*

Transmitter	Integral – Field	Remote – Field	Remote – Control room	Remote – Rack / panel mount
2400S	●			
2500			●	
2700	●	●		
FMT	●			
3300			●	●
3350		●		
3500			●	●
3700		●		
4200	●	●		
5700	●	●		
● Supported on all models				

Table 13: Special application type

Transmitter	Batch controller	Custody transfer	2-phase flow / entrained gas	Filling & dosing	Smart Meter Verification	SIS Certified
1500			●	●	●	
1700			●		●	●
2400S			●		●	
2500			●		●	
2700		●	●		●	●
FMT				●		
3300	●	●				
3350	●	●				
3500	●	●	●		●	
3700	●	●	●		●	
4200					●	●
5700	●	●	●		●	●
● Supported on all models						

Table 14: Hazardous approvals

Transmitter	C1D1	C1D2	Zone 1	Zone 2
1500				
1700	●	●	●	●
2400S		●		●

Table 14: Hazardous approvals *(continued)*

Transmitter	C1D1	C1D2	Zone 1	Zone 2
2500				
2700	•	•	•	•
FMT		•		•
3300				
3350		•	•	•
3500				
3700		•	•	•
4200	•	•	•	•
5700	•	•	•	•
• Supported on all models				

Micro Motion density meters

CDM

Peak performance precision density meter

- Accredited, traceable density measurement
- Superior multi-variable I/O, meter health, and application capabilities
- Installation flexibility and compatibility

FDM

Direct insertion density meter

- Rugged, accurate density and concentration measurement
- Superior multi-variable I/O, meter health, and application capabilities
- Installation flexibility and compatibility

FVM

High performance multi-variable viscosity meter

- Rugged, accurate multi-variable measurement
- Superior multi-variable I/O, meter health, and application capabilities
- Installation flexibility and compatibility

HFVM

High performance multi-variable viscosity meter

- World-wide marine-approved design for aggressive environments
- Durable Diamond-Like Carbon (DLC) coating that is resistant to friction, chemicals, impact, and mechanical damage

GDM

Fiscal gas density meter

- Accredited, traceable density measurement
- Superior multi-variable I/O, meter health, and application capabilities
- Installation flexibility and compatibility

SGM

Gas specific gravity and gas energy meter

- Precision gas specific gravity measurement
- Superior multi-variable I/O, meter health, and application capabilities
- installation flexibility and compatibility

Density meter specifications

Table 15: Application type for liquid meters

Meter	Continuous control	Batching / loading / blending	Custody transfer	High consistency slurry	Viscosity control	Combustion control
CDM	•	•	•			
FDM	•	•		•		
FVM	•	•			•	•
HFVM	•	•			•	•
• Supported on all models						

Table 16: Application type for gas meters

Meter	Continuous control	Batching / loading / blending	Custody transfer	Combustion control
GDM	•	•	•	•
SGM	•	•	•	•
• Supported on all models				

Table 17: Measurement accuracy for liquid meters

Meter	Liquid & slurry density[1]	Liquid & slurry velocity	Liquid viscosity
CDM	±0.1 kg/m3 (±0.0001 g/ cm3)	Available as diagnostic	
FDM	±1.0 kg/ m3 (±0.001 g/cm3)		
FVM	±1.0 kg/ m3 (±0.001 g/ cm3)		±0.2 cP for 0.5-10 cP range 1% full scale above 10 cP

Table 17: Measurement accuracy for liquid meters *(continued)*

Meter	Liquid & slurry density(1)	Liquid & slurry velocity	Liquid viscosity
HFVM	±1.0 kg/ m3 (±0.001 g/ cm3)		±0.2 cP for 0.5-10 cP range 1% full scale above 10 cP

(1) Accuracy specifications shown are best possible. Specific models, options, or process/operating conditions may result in a less accurate specifications.

Table 18: Measurement accuracy for gas meters

Meter	Gas density or gas-specific gravity
GDM	±0.1% or ±0.15% of density reading
SGM	Up to 0.1% of specific gravity reading

Table 19: Capabilities of liquid meters

Meter	Self-draining	Velocity indication	Known Density Verification	High pressure
CDM	●	●	●	◐
FDM	●		●	●
FVM	●		●	●
HFVM	●		●	●
● Supported on all models ◐ Supported on some models				

Table 20: Capabilities of gas meters

Meter	High pressure	Known Density Verification
GDM	●	●
SGM		●
● Supported on all models ◐ Supported on some models		

Table 21: Wetted materials for liquid meters

Meter	300 series stainless steel	Nickel alloy C22	Titanium	Zirconium
CDM	●	●		
FDM	●	●	●	●
FVM	●			
HFVM	●			
● Supported on all models ◐ Supported on some models				

Table 22: Wetted materials for gas meters

Meter	300 series stainless steel	Aluminum	Ni-span-C
GDM	●		●
SGM	●	●	●

Table 22: Wetted materials for gas meters *(continued)*

Meter	300 series stainless steel	Aluminum	Ni-span-C
● Supported on all models ◐ Supported on some models			

Table 23: Outputs for liquid meters

Meter	Time Period Signal	Analog	HART / wireless HART	RS-485 Modbus	2-line display	FOUNDATION Fieldbus
CDM	◐	◐	◐	◐	◐	◐
FDM	◐	●	●	●	◐	◐
FVM		●	●	●	◐	◐
HFVM		●	●	●	◐	
● Supported on all models ◐ Supported on some models						

Table 24: Outputs for gas meters

Meter	Time Period Signal	Analog	HART / wireless HART	RS-485 Modbus	2-line display	FOUNDATION Fieldbus
GDM	◐	◐	◐	◐	◐	◐
SGM	●	●	●	●	●	◐
● Supported on all models ◐ Supported on some models						

Table 25: Output variables for liquid meters

Model	Density	Temperature	Concentration	Velocity	Viscosity / referred viscosity	Mass / net product flow
CDM	●	●	●	●		
FDM	●	●	●			●(1)
FVM	●	●	●		●	●(1)
HFVM	●	●	●		●	
● Supported on all models						

(1) When connected to a volumetric flowmeter

Table 26: Output variables for gas meters

Model	Density	Temperature	Concentration	Gas specific gravity / BTU / Wobbe index	Mass / net product flow
GDM	●	●	●	●	●(1)
SGM		●	●	●	●(1)
● Supported on all models					

(1) When connected to a volumetric flowmeter

Table 27: Mounting for liquid meters

Meter	Integral-field
CDM	●
FDM	●
FVM	●
HFVM	●
● Supported on all models	

Table 28: Gas meter mounting

Meter	Integral-field
GDM	●
SGM	●
● Supported on all models	

Table 29: Hazardous area approvals for liquid meters

Meter	ATEX / IECEx IIC Zone 1	ATEX / IECEx IIC Zone 2	CSA C-US C1D1	CSA C-US C1D2
CDM	◐	●	◐	●
FDM	◐	●	◐	●
FVM	◐	●	◐	●
HFVM	◐	●	◐	●
● Supported on all models ◐ Supported on some models				

Table 30: Hazardous area approvals for gas meters

Meter	ATEX / IECEx IIC Zone 1	ATEX / IECEx IIC Zone 2	CSA C-US C1D1	CSA C-US C1D2
GDM	●		●	
SGM	●		●	
● Supported on all models				

Table 31: Nominal sizes for liquid meters

Meter	Inches	Millimeters
CDM	1	25
FDM	1 or larger	25 or larger
FVM	1 or larger	25 or larger
HFVM	1 or larger	25 or larger

Table 32: Nominal sizes for gas meters

Meter	Inches	Millimeters
GDM	1/4 or larger	6 or larger
SGM	1/4 or larger	6 or larger

Performance specifications

Reference operating conditions

For determining the performance capabilities of our meters, the following conditions were observed/used:

- Water at 68 °F (20.0 °C) to 77 °F (25.0 °C) and 14.5 psig (1.000 barg) to 29 psig (2.00 barg)
- Air and Natural Gas at 68 °F (20.0 °C) to 77 °F (25.0 °C) and 500 psig (34.47 barg) to1,450 psig (99.97 barg)
- Accuracy is verified by industry leading accredited calibration stands according to ISO 17025

Accuracy and repeatability on liquids and slurries

Sensor	Accuracy[1]		Mass/volume flow repeatability
	Mass flow[2]	Volume flow[2]	
ELITE	±0.05%	±0.05%	0.025%
F-Series	±0.10%	±0.1%	0.05%
H-Series	±0.10%	±0.1%	0.05%
LF-Series	±0.50%	±0.50%	0.05%
T-Series	±0.15%	±0.25%	0.05%
TA-Series	±0.10% of rate ±z.s.	±0.10% of rate ±z.s.	±0.05% ± [½ (zero stability / flow rate) × 100] % of rate
R-Series	±0.40%	±0.4%	0.20%
HPC010	±0.20%	±0.20%	0.10%

(1) Flow rate accuracies are base percentages. For total accuracy see Measurement accuracy for liquid meters. Stated accuracy includes the combined effects of repeatability, linearity, and hysteresis.
(2) Flow rate accuracies may vary with calibration option selected. Consult the sensor Product Data Sheet for details.

Accuracy and repeatability on gases

Sensor	Accuracy[1]	Repeatability
ELITE	±0.25% of rate	0.20% of rate
CNG-Series	±0.50% of rate	0.25% of rate
F-Series	±0.50% of rate	0.25% of rate
H-Series	±0.50% of rate	0.25% of rate
LF-Series	±0.50% of rate	0.05% of rate[2]
T-Series	±0.50% of rate	0.05% of rate
TA-Series	±0.50% of rate	0.05% of rate
R-Series	±0.75% of rate	±0.5% of rate
HPC010	±0.50% of rate	±0.25% of rate

(1) Flow accuracies are base percentages. For total accuracy see Table 18. Stated accuracy includes the combined effects of repeatability, linearity, and hysteresis.

(2) ±0.05% of rate or 1/2[(zero stability/flow rate) x 100]% of flow rate, whichever is greater.

Liquid flow rates

Family	Model	Nominal Line size		Maximum flow rate			
		inch	mm	lb/min	gal/min	kg/h	l/h
ELITE	CMFS007	1/12	DN1	1.50	0.180	40.9	40.9
	CMFS010	1/10	DN2	4.03	0.484	110	110
	CMFS015	1/6	DN3	12.1	1.45	330	330
	CMFS025	1/4	DN6	77.0	9.23	2,100	2,100
	CMFS040	3/8	DN10	170	20.4	4,640	4,640
	CMFS050	1/2	DN15	250	30.0	6,820	6,820
	CMFS075	3/4	DN20	460	55.2	12,500	12,500
	CMFS100	1	DN25	950	114	25,900	25,900
	CMFS150	11/2	DN40	1,980	237	54,000	54,000
	CMF010	1/10	DN2	3.96	0.475	108	108
	CMF025	1/4	DN6	79.9	9.58	2,180	2,180
	CMF050	1/2	DN15	249	29.9	6,800	6,800
	CMF100	1	DN25	997	120	27,200	27,200
	CMF200	2	DN50	3,190	383	87,100	87,100
	CMF300	3	DN80	9,970	1,200	272,000	272,000
	CMF350	4	DN100	15,000	1,800	409,000	409,000
	CMF400	6	DN150	20,000	2,400	545,000	545,000
	CMFHC2	8	DN200	54,000	6,440	1,470,000	1,470,000
	CMFHC3	10	DN250	94,000	11,227	2,550,000	2,550,000
	CMFHC4	12	DN300	120,000	14,350	3,266,000	3,266,000
F-Series	F025	1/4	DN6	100	12	2,720	2,720
	F050	1/2	DN15	300	36	8,160	8,160
	F100	1	DN25	1,200	144	32,650	32,650
	F200	2	DN50	3,200	384	87,100	87,100
	F300	3	DN80	8,744	1,047	238,499	238,499
H-Series	H025	1/4	DN6	76	9	2,068	2,068
	H050	1/2	DN15	180	22	4,900	4,900
	H100	1	DN25	820	98	22,320	22,320
	H200	2	DN50	2,350	282	63,960	63,960
	H300	3	DN80	8,744	1,047	238,499	238,499
LF-Series	LF2M	1/32	DN1	0.014	0.0017	0.38	0.38

Family	Model	Nominal Line size		Maximum flow rate			
		inch	mm	lb/min	gal/min	kg/h	l/h
	LF3M	1/16	DN2	0.037	0.0043	1.00	1.00
	LF4M	1/8	DN3	0.992	0.119	27.00	27.00
T-Series	T025	1/4	DN6	25	3	680	680
	T050	1/2	DN15	140	17	3,800	3,800
	T075	3/4	DN20	500	60	14,000	14,000
	T100	1	DN25	1,100	132	30,000	30,000
	T150	11/2	DN40	3,200	384	87,000	87,000
TA-Series	TA010T	0.0198	2.49	12.9	1.5	350	350
	TA025T	0.24	6.1	44.1	5.3	1,200	1,200
	TA050T	0.5	13	110.2	13.2	3,000	3,000
	TA075T	0.75	19	220.5	26.5	6,000	6,000
	TA100T	0.98	24.9	661.4	79.4	18,000	18,000
	TA200T	2.00	51	1102.3	132.3	30,000	30,000
R-Series	R025	1/4	DN6	100	12	2,720	2,720
	R050	1/2	DN15	300	36	8,160	8,160
	R100	1	DN25	1,200	144	32,650	32,650
	R200	2	DN50	3,200	384	87,100	87,100
	R300	3	DN80	8,744	1,047	238,499	238,499
CDM	CDM100	1	DN25	625	75	17,000	17,000
HPC	HPC010P	± 1/8	± 3	8.8	0.22	240	49.0
FDM, FVM, HFVM		Line sizes and flow rates are installation-dependent. Contact your sales representative.					

Gas flow rates

When selecting sensors for gas applications, pressure drop through the sensor is dependent upon operating temperature, pressure, and fluid composition. Therefore, when selecting a sensor for any particular gas application, it is highly recommended that each sensor be sized using the Sizing and Selection Tool at the Micro Motion web site (Discover Flow Measurement Sizing and Selection Tool) for detailed information regarding performance and sizing of the meters.

The below table indicates flow rates that produce approximately 25 psi (1.72 bar) pressure drop on gulf coast natural gas, except for the T-Series sensor, that produces approximately 10 psi (0.69 bar) pressure drop on gulf coast natural gas.

Gas flow rate table

Note
The following table assumes natural gas with molecular weight of 16.799 at 60 °F (15.6 °C) and 1,014.7 psi (69.961 bar).

Family	Model	Mass flow		Volume flow				
		lb/min	kg/h	SCFM[1]	SCFH[2]	SCCM	Nm3/h	l/h
ELITE	CMFS007	0.5	15	12			20	

Family	Model	Mass flow		Volume flow				
		lb/min	kg/h	SCFM[1]	SCFH[2]	SCCM	Nm3/h	l/h
	CMFS010	2	45	37			63	
	CMFS015	4	112	93			158	
	CMFS025	13	364	301			511	
	CMFS040	29	796	659			1,120	
	CMFS050	42	1,144	947			1,609	
	CMFS075	80	2,185	1,808			3,072	
	CMFS100	159	4,342	3,593			6,105	
	CMFS150	330	8,990	7,440			12,642	
	CMF010	1	34	28			48	
	CMF025	17	469	388			659	
	CMF050	44	1,202	995			1,691	
	CMF100	196	5,337	4,417			7,506	
	CMF200	592	16,108	13,330			22,651	
	CMF300	1,965	53,501	44,275			75,234	
	CMF350	3,403	92,682	76,700			130,332	
	CMF400	4,976	135,507	112,140			190,553	
	CMFHC2	9,212	250,858	207,600			352,763	
	CMFHC3	16,204	441,248	365,160			620,496	
	CMFHC4	24,555	668,664	553,360			940,294	
CNG-Series	CNG050	220	600	4444			7550	
F-Series	F025	17	468	388			659	
	F050	52	1,429	1,183			2,010	
	F100	200	5,452	4,514			7,670	
	F200	666	18,137	15,018			25,515	
	F300	1,745	47,505	39,334			66,829	
H-Series	H025	17	468	388			659	
	H050	52	1,427	1,181			2,007	
	H100	186	5,070	4,198			7,132	
	H200	666	18,137	15,018			25,515	
	H300	1,745	47,505	39,334			66,829	
LF-Series	LF2M	0.227	0.103		3.034	1432		
	LF3M	0.893	0.405		11.86	5595		
	LF4M	8.026	3.640	106.7	106.7	50,350		
R-Series	R025	17	471	390			662	
	R050	53	1,432	1,185			2,014	

Family	Model	Mass flow		Volume flow				
		lb/min	kg/h	SCFM[1]	SCFH[2]	SCCM	Nm3/h	l/h
	R100	201	5,459	4,520			7,680	
	R200	668	18,168	15,043			25,559	
	R300	1,745	47,505	39,334			66,829	
T-Series	T025	2.8	76	148			251	
	T050	20	540	1,068			1,815	
	T075	75	2,000	3,950			6,711	
	T100	160	4,300	8,666			14,726	
	T150	400	10,000	24,589			41,783	
GDM				0.0059			0.01	10
SGM				0.0412			0.07	70
HPC010P	HPC010P	9	250	200			340	

(1) Standard (SCFM) reference conditions are 14.7 psig (1.014 barg) and 60 °F (15.6 °C).
(2) Normal (Nm3/hr) reference conditions are 1.013 bara and 0 °C.

Liquid density accuracy and repeatability

Note
Meters not listed in the liquid density table are not designed to measure liquid density.

Family	Accuracy		Repeatability	
ELITE	±0.0002 g/cm3	±0.2 kg/m3	0.0001 g/cm3	0.1 kg/m3
F-Series	±0.0005 g/cm3	±0.5 kg/m3	0.0002 g/cm3	0.2 kg/m3
H-Series	±0.0005 g/cm3	±0.5 kg/m3	0.0002 g/cm3	0.2 kg/m3
LF-Series	±0.005 g/cm3	±5.0 kg/m3	0.002 g/cm3	2.0 kg/m3
R-Series	±0.003 g/cm3	±3.0 kg/m3	0.0015 g/cm3	1.5 kg/m3
T-Series	±0.002 g/cm3	±2.0 kg/m3	0.0005 g/cm3	0.5 kg/m3
TA-Series	±0.001 g/cc	±1.0 kg/m3	±0.0005 g/cc	0.5 kg/m3
CDM	±0.0001 g/cm3	±0.1 kg/m3	0.00002 g/cm3	0.02 kg/m3
FDM	±0.001 g/cm3	±1.0 kg/m3	0.0001 g/cm3	0.1 kg/m3
FVM	±0.001 g/cm3	±1.0 kg/m3	0.0001 g/cm3	0.1 kg/m3
HFVM	±0.001 g/cm3	±1.0 kg/m3	0.0001 g/cm3	0.1 kg/m3
HPC010P	±0.005 g/cm3	±5.0 kg/m3	0.0025 g/cm3	2.5 kg/m3

Gas density/specific gravity accuracy and repeatability

Note
Meters not listed in the gas density/specific gravity table are not designed to measure gas density/specific gravity.

Meter	Accuracy	Repeatability
GDM	±0.1% of reading	0.02% of reading
SGM	Up to ±0.1%	0.02% of reading

Temperature accuracy

Family	Temperature accuracy
ELITE	1°C ±0.5% of reading
F-Series	1°C ±0.5% of reading
H-Series	1°C ±0.5% of reading
LF-Series	±0.5 C
R-Series	1°C ±0.5% of reading
T-Series	1°C ±0.5% of reading
TA-Series	±1.5 °C ±0.5% of reading
CDM	BS1904 Class, DIN 43760 Class A (±0.15 +0.002 x Temp C)
GDM	IEC60751 Class A C= (±0.15 + 0.002T) RTD
FDM	BS1904 Class, DIN 43760 Class B (±0.30 + 0.005T)
FVM	BS1904 Class, DIN 43760 Class B (±0.30 + 0.005T)
HFVM	BS1904 Class, DIN 43760 Class B (±0.30 + 0.005T)
HPC010P	1°C ±0.5% of reading
SGM	IEC60751 Class A C= (±0.15 + 0.002T) RTD

Viscosity accuracy and repeatability

Meter	Viscosity calibrated range	Maximum viscosity operating range	Accuracy	Repeatability
FVM	0.5 to 12,500 cP	0.5 to 20,000 cP (using up to four calibrated ranges)	±0.2 cP over the 0.5-10 cP range, and then 1% full scale of the operating calibrated range	0.5% of reading
HFVM	0.5 to 100 cP	0.5 to 100 cP (using up to two calibrated ranges)	±0.2 cP over the 0.5-10 cP range, and then 1% full scale of the operating calibrated range	0.5% of reading

Temperature rating

Family	Model	°F[1]	°C[1]
ELITE	Standard models	-400 to +400	-240 to +204
	High-temperature models	-58 to +662	-50 to +350
	CMFS models	-58 to +400	-50 to +204

Family	Model	°F[1]	°C[1]
	Super Duplex models[2]	-40 to +400	-40 to +204
CNG-Series	CNG050	-40 to +257	-40 to +125
F-Series	Standard models	-148 to +400	-100 to +204
	High-temperature models	-40 to +662	-40 to +350
H-Series	All models	-148 to +400	-100 to +204
LF-Series	All models	+32 to +149	0 to +65
R-Series	All models	-58 to +302	-50 to +150
T-Series	All models	-60 to +302	-51 to +150
TA-Series	All models	-40 to +356	-40 to +180
CDM/FDM/FVM/HFVM	All models	-58 to +392	-50 to +200
SGM		0 to +122	-18 to +50
GDM		0 to +257	-18 to +125
HPC010P	All models	-58 to +257	-50 to +125

(1) Temperature rating may be affected by electronics, hazardous area classification, and/or ambient temperature.
(2) Applications between +350 and +400 °F (+177 and +204 °C) must be approved by Micro Motion metallurgy.

Process pressure ratings

Sensor maximum working pressure reflects the highest possible pressure rating for a given meter. Selection of process fitting as well as environmental and process fluid temperatures may reduce this maximum rating. Refer to the technical data sheet or contact the factory directly for detailed sensor pressure rating charts with corresponding de ratings for specific process fittings over a range of temperatures.

All sensors comply with ASME B31.3 piping code and council directive 97/23/EC of 29 May 1997 on Pressure Equipment.

Sensor maximum working pressure

Family	Model	Wetted material	Pressure
ELITE	Standard models	Stainless steel	1,450 psig (99.97 barg) - 1,812 psig (124.93 barg)[1]
		Nickel alloy C22 (N06022)	2,465 psig (169.96 barg) - 3,626 psig (250.00 barg)
	CMFS010P CMFS010H CMFS015P CMFS015H CMF010P	Nickel alloy C22 (N06022)[2]	6,000 psig (413.69 barg)
	CMF400P	Nickel alloy C22 (N06022)	2,973 psig (204.98 barg)
	CMFHC2Y CMFHC3Y	Super Duplex	2,320 psig (159.96 barg)
CNG-Series	CNG050	Stainless steel	5,000 psig (344.74 barg)
F-Series	Standard models	Stainless steel	1,450 psig (99.97 barg)
		Nickel alloy C22 (N06022)	2,160 psig (148.93 barg)
	F025P	Stainless steel	2,320 psig (159.96 barg)

Family	Model	Wetted material	Pressure
	F050P	Stainless steel	5,000 psig (344.74 barg)
H-Series	All models	Stainless steel	1,450 psig (99.97 barg)
LF-Series	All models	Stainless steel	1,450 psig (99.97 barg)
R-Series	All models	Stainless steel	1,450 psig (99.97 barg)
T-Series	All models	Titanium	1,450 psig (99.97 barg)
TA-Series	TA010T	Tantalum	2,245 psig (154.79 barg)
	TA025T	Tantalum	1,142 psig (78.74 barg)
	TA050T	Tantalum	852 psig (58.74 barg)
	TA075T	Tantalum	1,432 psig (98.73 barg)
	TA100T	Tantalum	920 psig (63.43 barg)
	TA200T	Tantalum	687 psig (47.37 barg)
CDM	CDM100M	Stainless steel	1,450 psig (99.97 barg)
	CDM100P	Nickel alloy C22 (N06022)	3,600 psig (248.21 barg)
GDM		Stainless steel	3,625 psig (249.93 barg)
FDM	Short stem	Stainless steel, nickel alloy C22 (N06022), titanium, zirconium	3,000 psig (206.84 barg)
		Long stem	1,450 psig (99.97 barg)
FVM	Short stem	Stainless steel	3,000 psig (206.84 barg)
		Long stem	1,450 psig (99.97 barg)
HFVM	Short stem	Stainless steel	3,000 psig (206.84 barg)
HPC010P	All models(3)	Nickel alloy C22 (N06022)	15,000 psig (1,034.21 barg)
SGM		Ni-Span-C	145 psig (10.00 barg)(4)

(1) This range covers most of the pressure ratings for ELITE stainless steel meters. For a comprehensive list, see Micro Motion ELITE Coriolis Flow and Density Meters Product Data Sheet

(2) Models CMF010P, CMFS010P, CMFS015P, and CMF400P have nickel alloy C22 (N06022) tubes and stainless steel fittings.

(3) ETO H2 meter is 316L stainless steel material with standard helium leakage test procedure.

(4) When the Sample Conditioning System is selected with a pressure regulator, the inlet pressure can be greater, up to 1450 psig (100 barg) on some options.