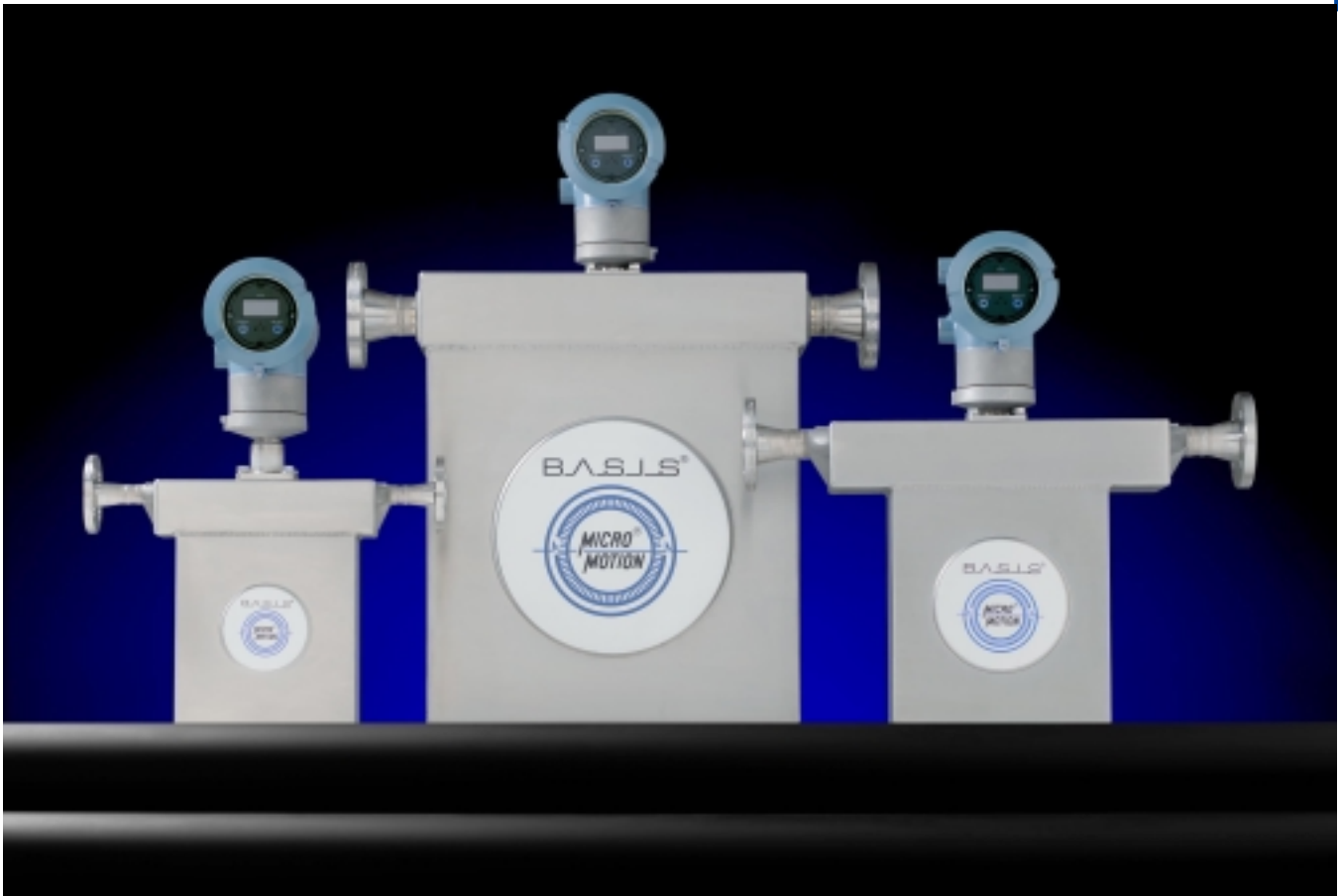


**Now available with
MVD™ Technology!**

F-Series Mass and Volume Flowmeters



MVD™ technology



Micro Motion

FISHER-ROSEMOUNT™

Micro Motion F-Series Meters

Micro Motion F-Series flowmeters offer all the benefits of Coriolis technology in applications where you need multi-variable capabilities, but you do not need the highest precision.

The four sizes of Micro Motion F-Series meters offer direct mass and volumetric flow, temperature, and density of liquids, gases, and slurries, without the need for additional equipment, manual calculations, or estimations.

Outstanding performance

Micro Motion F-Series flowmeters offer good accuracy over wide flow ranges and under varying fluid conditions. In fact, Micro Motion F-Series meters perform better than any volumetric meter, and give you multi-variable capabilities.

Micro Motion F-Series meters have no moving parts, and no special mounting or flow conditioning requirements. They feature a wide variety of process connection options to fit virtually any application, and like all our flowmeters, Micro Motion F-Series meters are easy to install and require no maintenance.

Choose any transmitter

You can use any of our transmitters to complement your Micro Motion F-Series meter. Choose models that can be installed integrally or remotely, in the control room or in the same hazardous area as the sensor. F-Series meters are able to communicate using the FOUNDATION™ fieldbus, Profibus PA, Modbus®, or HART® protocols.

Micro Motion is known worldwide for increasing plant efficiency, production, and profitability. More than 300,000 Micro Motion meters are installed and working in processes just like yours. Contact us, and discover why you should use Micro Motion F-Series flowmeters in your process.

Performance specifications

Liquid flow specifications		Mass		Volume	
Nominal flow range⁽¹⁾	F025	lb/min 0 to 40	kg/h 0 to 1090	gal/min 0 to 4.8	l/h 0 to 1090
	F050	0 to 125	0 to 3400	0 to 15	0 to 3400
	F100	0 to 500	0 to 13,600	0 to 60	0 to 13,600
	F200	0 to 1600	0 to 43,550	0 to 192	0 to 43,550
Maximum flow rate⁽²⁾	F025	lb/min 80	kg/h 2180	gal/min 9.6	l/h 2180
	F050	250	6800	30	6800
	F100	1000	27,200	120	27,200
	F200	3200	87,270	384	87,270
Accuracy⁽³⁾	Series 1000/2000 transmitters	±0.20% of rate ⁽⁴⁾			
	All other transmitters	±0.20% ± [(zero stability / flow rate) x 100]% of rate			
Repeatability⁽³⁾	Series 1000/2000 transmitters	±0.10% of rate ⁽⁴⁾			
	All other transmitters	±0.10% ± [½(zero stability / flow rate) x 100]% of rate			
Zero stability	F025	lb/min 0.0065	kg/h 0.1765	gal/min 0.0008	l/h 0.1765
	F050	0.020	0.544	0.002	0.544
	F100	0.080	2.177	0.010	2.177
	F200	0.256	6.965	0.031	6.965

Density — liquid only⁽⁵⁾

		g/cc	kg/m³
Accuracy	All models	±0.002	±2.0
Repeatability	All models	±0.001	±1.0
Range	All models	0 to 5	0 to 5000

Temperature⁽⁵⁾

Accuracy	All models	±1°C ± 0.5% of reading in °C
Repeatability	All models	±0.2°C
Range	All models	See <i>Temperature limits</i> , page 5

⁽¹⁾Micro Motion has adopted the terminology "nominal flow range." The upper limit of this range is the flow rate at which water at reference conditions causes approximately 15 psig (1 bar) of pressure drop for Micro Motion F-Series flowmeters.

⁽²⁾The maximum flow rate for volume measurement is based on a process fluid density of 1 g/cc. For fluids with density other than 1 g/cc, the maximum volume flow rate equals the maximum mass flow rate divided by the fluid's density.

⁽³⁾Flow accuracy includes the combined effects of repeatability, linearity, and hysteresis. All specifications for liquids are based on reference conditions of water at 68 to 77°F (20 to 25°C) and 15 to 30 psig (1 to 2 bar), unless otherwise noted.

⁽⁴⁾When flow rate is less than (zero stability/.002), accuracy equals ±[(zero stability/flow rate) x 100]% of rate and repeatability equals ±[½(zero stability/flow rate x 100)]% of rate.

⁽⁵⁾With an IFT9701 or Model 1700 transmitter, density and temperature measurement are available only via digital communications.

Performance specifications *continued*

Gas flow specifications		Standard Volume ⁽¹⁾	
		scfm ⁽³⁾	Nm ³ /h ⁽⁴⁾
Nominal flow range⁽²⁾	F025	0 to 190	0 to 330
	F050	0 to 605	0 to 1055
	F100	0 to 2385	0 to 4170
	F200	0 to 7775	0 to 13,620
Maximum flow rate	F025	390	663
	F050	1000	1699
	F100	4400	7476
	F200	13,400	22,767
Accuracy⁽⁵⁾	Series 1000/2000 transmitter	±0.70% of rate ⁽⁶⁾	
	All other transmitters	±0.70% of rate ± [(zero stability/flow rate) x 100]% of rate	
Repeatability⁽⁵⁾	Series 1000/2000 transmitter	±0.35% of rate ⁽⁶⁾	
	All other transmitters	±0.35% of rate ± [(zero stability/flow rate) x 100]% of rate	
Zero stability	F025	0.0864	0.1753
	F050	0.2660	0.5402
	F100	1.0638	2.1619
	F200	3.4043	6.9166

⁽¹⁾Air density at standard conditions, 14.73 psia (1.016 bara), 60°F (15.5°C), equals 0.077 lb/ft³ (1.200 kg/m³).

⁽²⁾Micro Motion has adopted the terminology "nominal flow range." The upper limit of this range is the flow rate at which air at 60°F (15.5°C) and 1000 psig (70 bar) causes approximately 15 psid (1 bar) of pressure drop for Micro Motion F-Series flowmeters.

⁽³⁾Air at 60°F and 1000 psi causes approximately 14.7 psi pressure drop.

⁽⁴⁾Air at 0°C and 70 bar causes approximately 1 bar pressure drop.

⁽⁵⁾Flow accuracy includes the combined effects of repeatability, linearity, and hysteresis. All specifications for liquids are based on air at 60°F (15.5°C) and 1000 psig (70 bar), unless otherwise noted.

⁽⁶⁾When flow rate is less than (zero stability/.007), accuracy equals ±[(zero stability/flow rate) x 100]% of rate and repeatability equals ±[zero stability/flow rate x 100]% of rate.

Performance specifications *continued*

Temperature limits

	<i>Transmitter remotely mounted from sensor</i>	<i>Transmitter integrally mounted to sensor</i>
Process fluid	All models -400 to 300°F (-240 to 150°C)	-40 to 257°F (-40 to 125°C)
Ambient temperature	All models No ambient temperature limits for sensor	Refer to transmitter specifications
Process fluid vs. ambient temperature	For sensors with an integrally mounted transmitter, process fluid temperature and ambient temperature restrict each other at their upper limits. For CENELEC-compliant sensors, the minimum process fluid and ambient temperature is -40°C. The CENELEC "T" rating and hazardous area classification depend on the maximum process fluid and ambient temperature. See page 8.	

Pressure

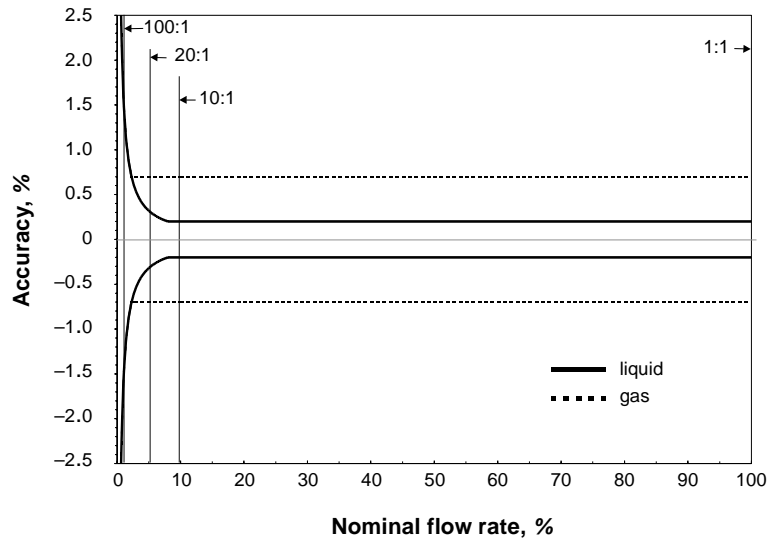
Flow tube rating⁽¹⁾	All models	1450 psi	100 bar
Housing rating	All models	<i>Housing is not rated for pressure containment.</i>	

⁽¹⁾Over entire temperature range, per ASME B31.3.

Performance specifications *continued*

Typical accuracy, turndown, and pressure drop with 1700/2700 transmitters

To determine accuracy, turndown, and pressure drop using your process variables, use the Micro Motion flowmeter selection guide. Download a free copy from our Web site at www.micromotion.com, or contact your local Micro Motion representative.



Turndown	100:1	20:1	10:1	1:1
Accuracy, ±%				
liquid	1.60	0.32	0.20	0.20
gas	1.60	0.70	0.70	0.70
Pressure drop				
liquid (psi)	<0.1	0.1	0.2	11.1
liquid (bar)	<0.005	0.007	0.014	0.766
gas (psi)	<0.1	<0.1	0.2	14.7
gas (bar)	<0.005	<0.005	0.014	1.014

Functional specifications

Environmental influences

Process temperature effect Process temperature effect is defined as the worst-case zero offset due to process fluid temperature change away from the zeroing temperature.

	Process temperature effect⁽¹⁾ % of nominal flow rate per °C
F025	±0.002
F050	±0.002
F100	±0.002
F200	±0.008

Pressure effect Pressure effect is defined as the change in sensor flow sensitivity due to process pressure change away from the calibration pressure. Pressure effect can be corrected.

	Pressure effect on flow accuracy		Pressure effect on density accuracy	
	% of rate per psi	% of rate per bar	g/cc per psi	kg/m³ per bar
F025	none	none	0.000007	0.10
F050	-0.0007	-0.010	0.000007	0.10
F100	-0.001	-0.015	0.000007	0.10
F200	-0.0005	-0.007	-0.000004	-0.05

Hazardous area classifications

Micro Motion F-Series sensors are intrinsically safe when properly connected to an approved transmitter. Approval agency on sensor approval tag must match agency on transmitter approval tag.

UL is a U.S.A. approvals agency, CSA is a Canadian approvals agency, and CENELEC is a European standards organization.

UL⁽²⁾ and CSA

When properly mounted integrally to an IFT9701 or Model 5300 transmitter, can be installed in the following hazardous areas:

- Class I, Div. 2, Groups A, B, C, and D
- Class II, Div. 2, Groups F and G

When properly connected to a core processor or integrally mounted Model 1700 or 2700 transmitter, the sensor can be installed in the following hazardous areas:

- Class I, Div. 1, Groups C and D
- Class I, Div. 2, Groups A, B, C, and D
- Class II, Div. 1, Groups E, F, and G

When properly connected remotely to a Micro Motion transmitter via the junction box supplied with the sensor, the sensor can be installed in the following hazardous areas:

- Class I, Div. 1, Groups C and D
- Class I, Div. 2, Groups A, B, C, and D
- Class II, Div. 1, Groups E, F, and G

⁽¹⁾Nominal flow rate is the upper limit of the nominal flow range.

⁽²⁾At time of printing, UL approval for Micro Motion F-Series meters with Model 1700 and 2700 transmitters is pending.

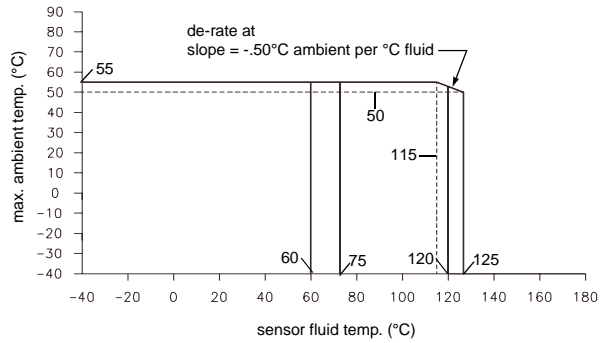
Functional specifications *continued*

CENELEC

flowmeters with integral IFT9701 or 5300 transmitters

F025, F050, F100
EEx ib IIC T1-T6

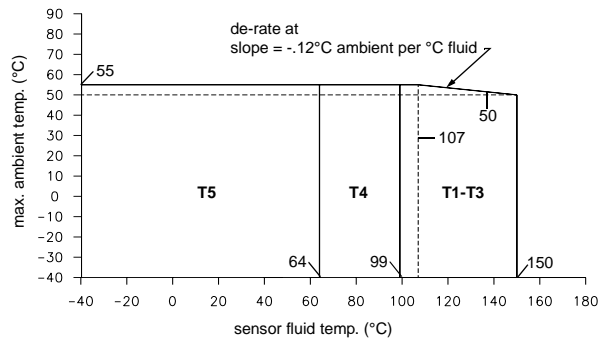
F200
EEx ib IIB T1-T6



flowmeters with core processor

F025, F050, F100
EEx ib IIC T1-T5

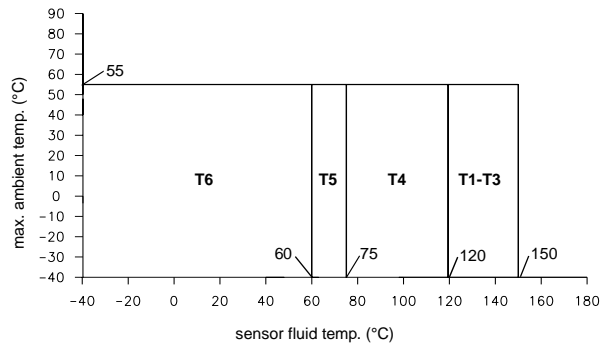
F200
EEx ib IIB T1-T5



flowmeters with j-box

F025, F050, F100
EEx ib IIC T1-T6

F200
EEx ib IIB T1-T6



Physical specifications

Material of construction

Wetted parts⁽¹⁾	316L stainless steel
Sensor housing	304L stainless steel
Core processor	CF-3M stainless steel
Transmitter housing	Epoxy polyester painted cast aluminum
Junction box	Epoxy polyester painted cast aluminum

Weight⁽²⁾

		lb	kg
Sensor with j-box	F025	14	7
	F050	15	7
	F100	26	12
	F200	62	28
Sensor with local core processor	F025	17	8
	F050	17	8
	F100	28	13
	F200	64	29
Sensor with integrated IFT9701/5300 transmitter	F025	18	8
	F050	19	9
	F100	30	14
	F200	66	30
Sensor with integrated 1700/2700 transmitter	F025	26	12
	F050	27	13
	F100	38	18
	F200	60	27

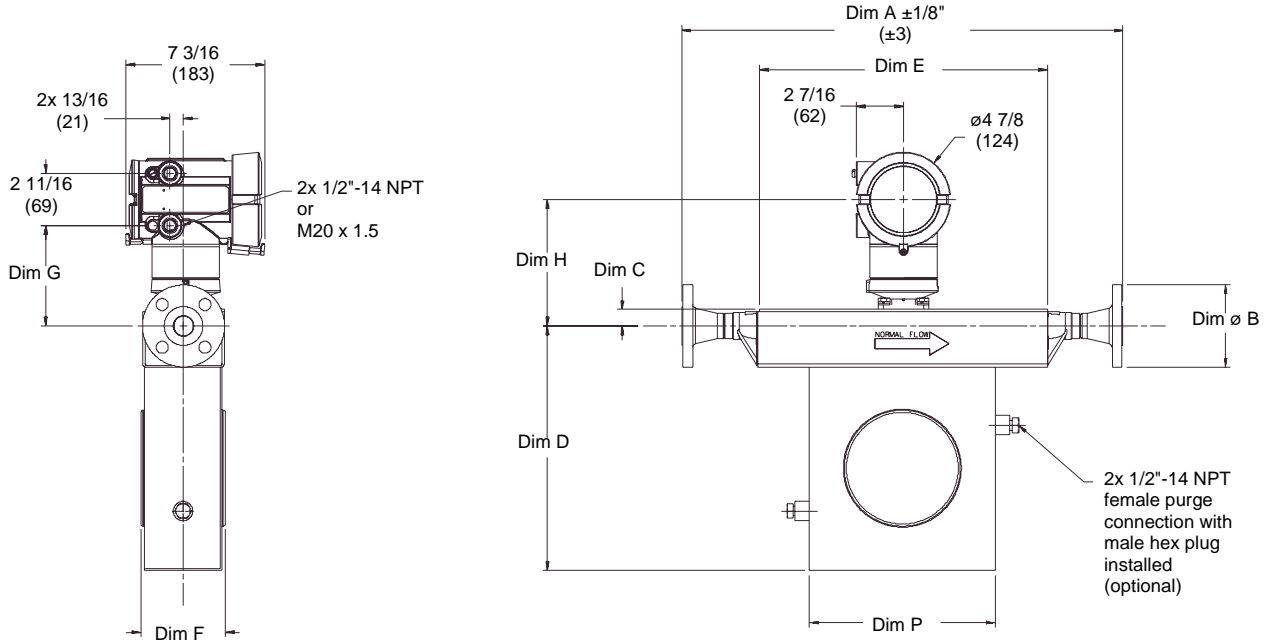
⁽¹⁾General corrosion guides do not account for cyclical stress, and therefore should not be relied upon when choosing a wetted material for your Micro Motion flowmeter. Please refer to Micro Motion's corrosion guide for material compatibility information.

⁽²⁾Weight of flowmeter with 150 lb weld neck raised face flanges.

Physical specifications *continued*

Dimensions — F-Series sensors with integrally mounted 1700/2700 transmitter

Dimensions in inches
(mm)



Dimensions⁽¹⁾

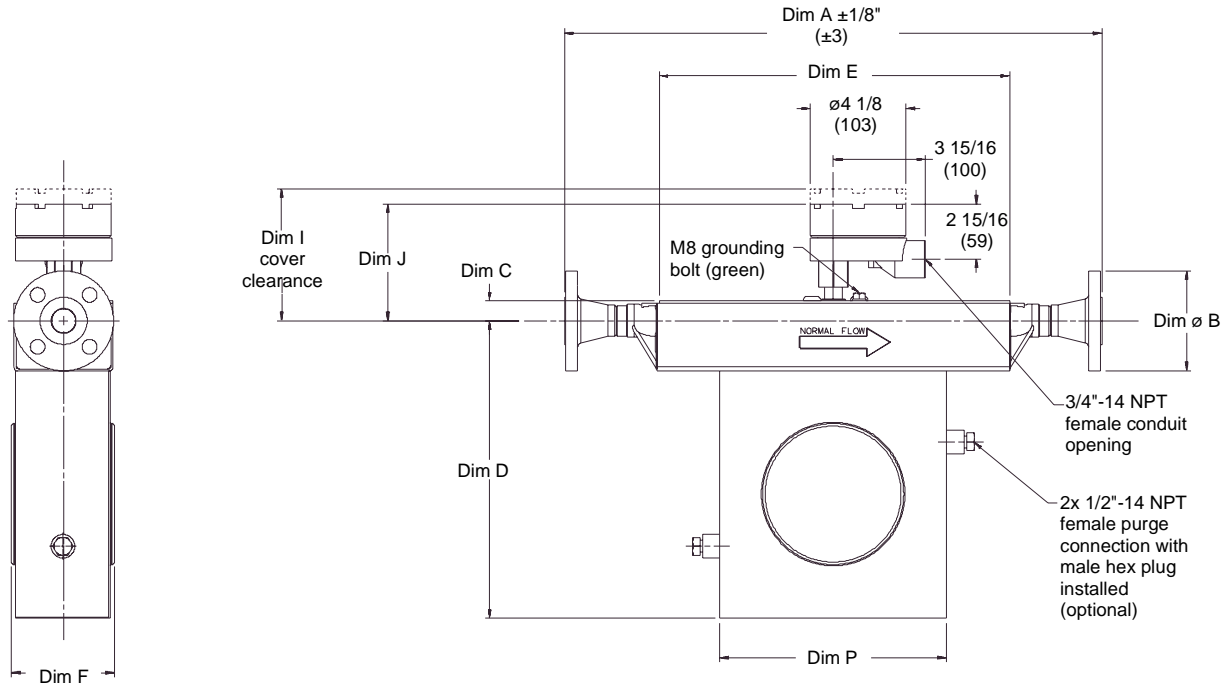
Model		C	D	E	F	G	H	P
F025	inches (mm)	5/8 (15)	10 3/8 (264)	9 3/4 (247)	3 3/16 (80)	6 3/8 (161)	7 11/16 (196)	8 (203)
F050	inches (mm)	5/8 (15)	10 3/8 (264)	11 7/8 (301)	3 3/16 (80)	4 15/16 (126)	8 3/4 (222)	8 (203)
F100	inches (mm)	7/8 (22)	12 5/8 (321)	14 7/8 (378)	4 3/8 (111)	5 3/16 (132)	6 9/16 (166)	9 5/8 (244)
F200	inches (mm)	1 3/4 (44)	19 1/4 (489)	17 7/8 (454)	5 9/16 (141)	6 1/16 (155)	7 7/16 (189)	17 1/4 (438)

⁽¹⁾For dimensions A and B, see process fittings table, page 14.

Physical specifications *continued*

Dimensions — F-Series sensor with j-box

Dimensions in *inches*
(mm)



Dimensions⁽¹⁾

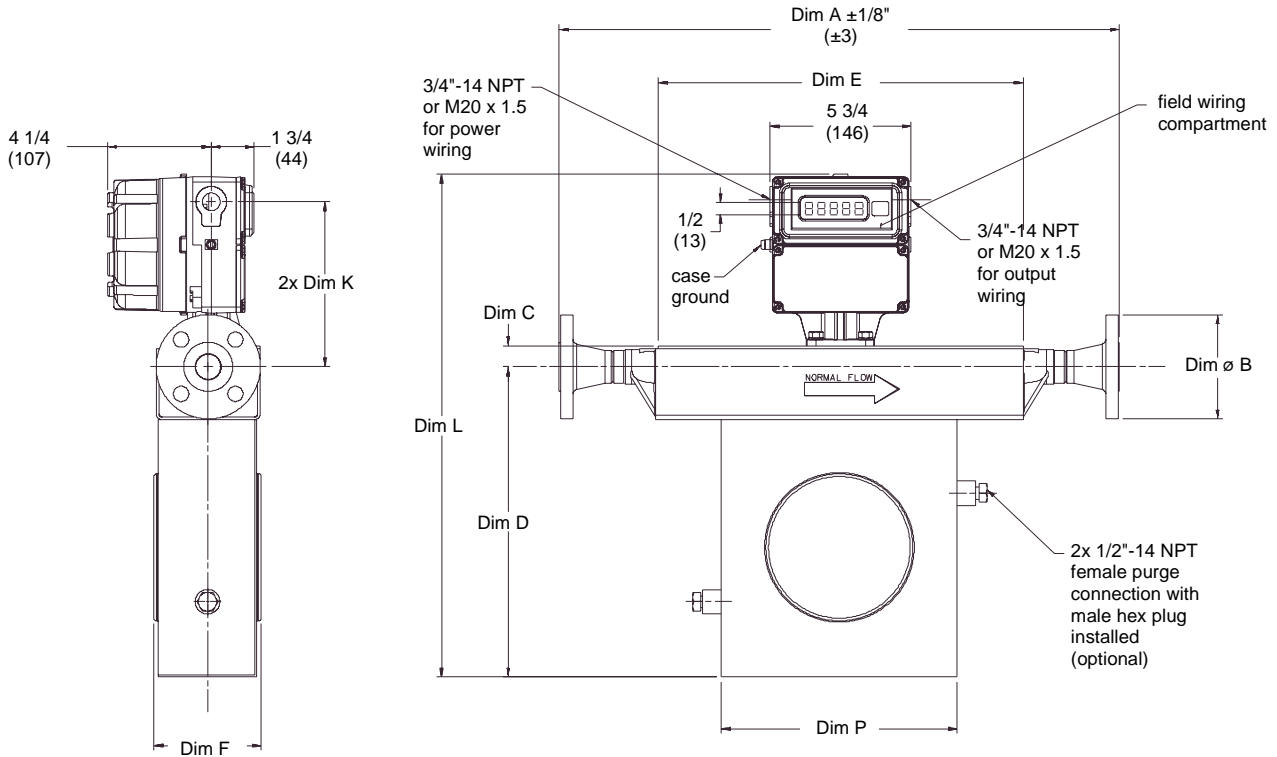
Model		C	D	E	F	I	J	P
F025	<i>inches</i>	5/8	10 3/8	9 3/4	3 3/16	5 5/16	4 5/8	8
	<i>(mm)</i>	(15)	(264)	(247)	(80)	(134)	(118)	(203)
F050	<i>inches</i>	5/8	10 3/8	11 7/8	3 3/16	5 1/4	4 9/16	8
	<i>(mm)</i>	(15)	(264)	(301)	(80)	(133)	(116)	(203)
F100	<i>inches</i>	7/8	12 5/8	14 7/8	4 3/8	5 5/8	4 15/16	9 5/8
	<i>(mm)</i>	(22)	(321)	(378)	(111)	(143)	(126)	(244)
F200	<i>inches</i>	1 3/4	19 1/4	17 7/8	5 9/16	6 7/16	5 3/4	17 1/4
	<i>(mm)</i>	(44)	(489)	(454)	(141)	(163)	(146)	(438)

⁽¹⁾For dimensions A and B, see process fittings table, page 14.

Physical specifications *continued*

Dimensions — F-Series sensor with integrally mounted IFT9701 or 5300 transmitter

Dimensions in inches (mm)



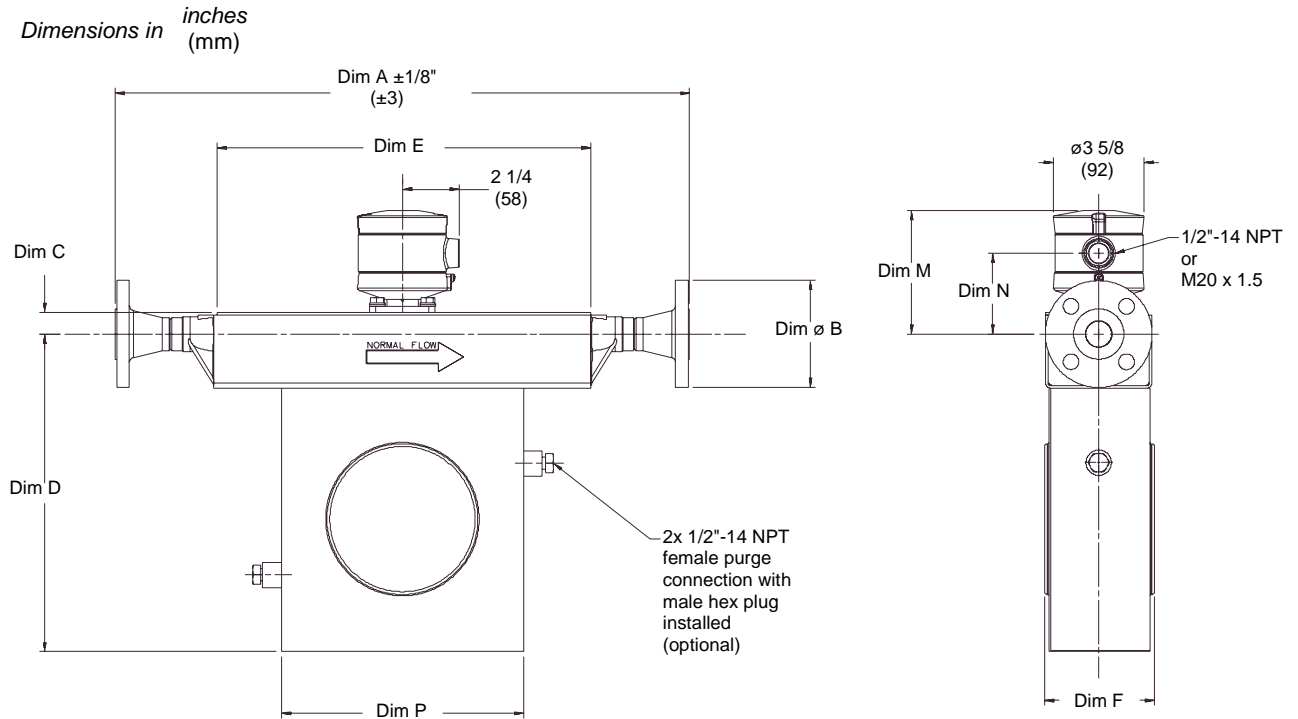
Dimensions⁽¹⁾

Model		C	D	E	F	K	L	P
F025	<i>inches</i>	5/8	10 3/8	9 3/4	3 3/16	6 1/2	18	8
	<i>(mm)</i>	(15)	(264)	(247)	(80)	(165)	(457)	(203)
F050	<i>inches</i>	5/8	10 3/8	11 7/8	3 3/16	6 1/2	18	8
	<i>(mm)</i>	(15)	(264)	(301)	(80)	(165)	(457)	(203)
F100	<i>inches</i>	7/8	12 5/8	14 7/8	4 3/8	6 3/4	20 1/2	9 5/8
	<i>(mm)</i>	(22)	(321)	(378)	(111)	(171)	(521)	(244)
F200	<i>inches</i>	1 3/4	19 1/4	17 7/8	5 9/16	7 5/8	28	17 1/4
	<i>(mm)</i>	(44)	(489)	(454)	(141)	(194)	(711)	(438)

⁽¹⁾For dimensions A and B, see process fittings table, page 14.

Physical specifications *continued*

Dimensions — F-Series sensor with local core processor



Dimensions⁽¹⁾

Model		C	D	E	F	M	N	P
F025	inches	5/8	10 3/8	9 3/4	3 3/16	6 1/6	4 3/8	8
	(mm)	(15)	(264)	(247)	(80)	(154)	(111)	(203)
F050	inches	5/8	10 3/8	11 7/8	3 3/16	4 5/8	2 15/16	8
	(mm)	(15)	(264)	(301)	(80)	(118)	(75)	(203)
F100	inches	7/8	12 5/8	14 7/8	4 3/8	4 7/8	3 3/16	9 5/8
	(mm)	(22)	(321)	(378)	(111)	(125)	(82)	(244)
F200	inches	1 3/4	19 1/4	17 7/8	5 9/16	5 13/16	4 1/8	17 1/4
	(mm)	(44)	(489)	(454)	(141)	(147)	(104)	(438)

⁽¹⁾For dimensions A and B, see process fittings table, page 14.

Physical specifications *continued*

	Fitting code	Dim. A face-to-face inches (mm)	Dim. B outside diameter inches (mm)
F025 fitting options⁽¹⁾			
1/2-inch 150 lb ANSI weld neck raised face flange	113	16 1/16 (408)	3 1/2 (89)
1/2-inch 300 lb ANSI weld neck raised face flange	114	16 7/16 (418)	3 3/4 (95)
1/2-inch 600 lb ANSI weld neck raised face flange	115	16 15/16 (430)	3 3/4 (95)
1/2-inch NPT female CAJON size 8 VCO fitting	319	14 1/16 (358)	---
1/2-inch sanitary fitting (Tri-Clamp compatible)	121	14 1/16 (358)	1 (25)
15 mm DIN PN40 weld neck, DIN 2635, type C face	116	15 5/16 (389)	3 3/4 (95)
15 mm JIS 10K weld neck raised face flange	216	14 7/8 (377)	3 3/4 (95)

F050 fitting options⁽¹⁾			
1/2-inch 150 lb ANSI weld neck raised face flange	113	18 3/16 (462)	3 1/2 (89)
1/2-inch 300 lb ANSI weld neck raised face flange	114	18 9/16 (471)	3 3/4 (95)
1/2-inch 600 lb ANSI weld neck raised face flange	115	19 1/16 (484)	3 3/4 (95)
3/4-inch NPT CAJON size 12 VCO fitting	239	16 7/16 (418)	---
3/4-inch sanitary fitting (Tri-Clamp compatible)	322	15 15/16 (405)	1 (25)
15 mm DIN PN40 weld neck, DIN 2635, type C face	116	17 7/16 (443)	3 3/4 (95)
25 mm DIN PN40 weld neck, DIN 2635, type C face	131	17 9/16 (446)	4 1/2 (115)
15 mm JIS 10K weld neck raised face flange	216	17 (431)	3 3/4 (95)

F100 fitting options⁽¹⁾			
1" ANSI 150 lb weld neck raised face flange	128	23 3/4 (578)	4 1/4 (108)
1" ANSI 300 lb weld neck raised face flange	129	23 1/4 (591)	4 7/8 (124)
1" ANSI 600 lb weld neck raised face flange	130	23 3/4 (603)	4 7/8 (124)
1" sanitary fitting (Tri-Clamp compatible)	138	21 3/8 (543)	2 (50)
25 mm DIN PN40 weld neck, DIN 2635, type C face	131	21 1/2 (546)	4 1/2 (115)
25 mm JIS 10K weld neck raised face flange	212	21 1/8 (536)	4 15/16 (125)

F200 fitting options⁽¹⁾			
1 1/2" ANSI 150 lb weld neck raised face flange	341	24 13/16 (630)	5 (127)
1 1/2" ANSI 300 lb weld neck raised face flange	342	25 5/16 (642)	6 1/8 (155)
1 1/2" ANSI 600 lb weld neck raised face flange	343	25 13/16 (655)	6 1/8 (155)
2" ANSI 150 lb weld neck raised face flange	418	24 15/16 (633)	6 (152)
2" ANSI 300 lb weld neck raised face flange	419	25 7/16 (645)	6 1/2 (165)
2" ANSI 600 lb weld neck raised face flange	420	26 3/16 (665)	6 1/2 (165)
1 1/2" sanitary fitting (Tri-Clamp compatible)	351	23 5/16 (592)	2 (50)
2" sanitary fitting (Tri-Clamp compatible)	352	22 15/16 (582)	2 1/2 (64)
40 mm DIN PN40 weld neck, DIN 2635, type C face	381	23 9/16 (599)	5 15/16 (150)
50 mm DIN PN40 weld neck, DIN 2635, type C face	382	23 11/16 (601)	6 1/2 (165)
40 mm JIS 10K weld neck raised face flange	385	23 7/16 (596)	5 1/2 (140)
50 mm JIS 10K weld neck raised face flange	386	23 7/16 (596)	6 1/8 (155)

⁽¹⁾Fittings listed here are standard options. Other types of fittings are available. Contact your local Micro Motion representative.

Ordering Information

Micro Motion F-Series sensor model number matrix

Model	Product Description
F025S	Micro Motion Coriolis F-Series sensor; 1/4-inch; 316L stainless steel
F050S	Micro Motion Coriolis F-Series sensor; 1/2-inch; 316L stainless steel
F100S	Micro Motion Coriolis F-Series sensor; 1-inch; 316L stainless steel
F200S	Micro Motion Coriolis F-Series sensor; 2-inch; 316L stainless steel
Code	Process Connections
###	See fittings table on page 14
Code	Case Options
S	Standard case
P	Purge fittings (two 1/2-inch NPT female)
X	CEQ case option
Code	Electronics Interface
A	Local core processor for remote mount Series 1000/2000 transmitters
C	For integral mount 1700/2700 transmitter
I	Integral IFT9701
R	9-wire J-box
Code	Conduit Connections
	Electronics Interface Code 'A' (Local core Processor)
B	1/2-inch NPT - no gland
C	1/2-inch NPT with brass nickel cable gland (cable diameter 0.335 to 0.394 inches)
D	1/2-inch NPT with stainless steel cable gland (cable diameter 0.335 to 0.394 inches)
E	M20 - no gland
F	M20 with brass nickel cable gland (cable diameter 8.5 to 10 mm)
G	M20 with stainless steel cable gland (cable diameter 8.5 to 10 mm)
	Electronics Interface Code 'C' : (Integral mount 1700/2700 - no conduit connections)
A	No gland
	Electronics Interface Code 'R' : (9-wire J-box)
A	3/4-inch NPT - no gland
H	3/4-inch NPT with brass nickel cable gland
J	3/4-inch NPT with stainless steel cable gland
Code	Approvals
M	Micro Motion Standard (no approval)
U	UL
C	CSA (Canada only)
A	CSA (US and Canada)
Z	CENELEC
Code	Language
A	Danish Quick Reference Guide and English Manual
D	Dutch Quick Reference Guide and English Manual
E	English Quick Reference Guide and English Manual
F	French Quick Reference Guide and French Manual
G	German Quick Reference Guide and German Manual
H	Finnish Quick Reference Guide and English Manual
I	Italian Quick Reference Guide and English Manual
J	Japanese Quick Reference Guide and English Manual
M	Chinese Quick Reference Guide and English Manual
N	Norwegian Quick Reference Guide and English Manual
O	Polish Quick Reference Guide and English Manual
P	Portuguese Quick Reference Guide and English Manual
R	Russian Quick Reference Guide and English Manual
S	Spanish Quick Reference Guide and English Manual
W	Swedish Quick Reference Guide and English Manual
Code	Future Options
ZZZ	Reserved for future use
Code	Factory Options
Z	Standard product
X	CEQ product
Typical Model Number: F025S 113 S A B U E ZZZ Z	

For the latest Micro Motion product specifications, view the
PRODUCTS section of our Web site at www.micromotion.com

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