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Model D and DT

Mass Flow and Density Sensors



MVDTM technology



CE

Micro Motion

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EMERSON
Process Management

Model D and DT sensors

Micro Motion® Model D sensors set the standard for Coriolis flowmeters nearly a quarter century ago. Today, they continue to provide the same outstanding measurement performance that made them so popular.

Working with any of our Coriolis transmitters, Model D and DT sensors provide flow measurement for liquids, gases and slurries — simply and directly. Multivariable capability provides mass flow, volume flow, density, and temperature measurement — all in real time, without the need for additional equipment.

A wide variety of models includes standard process connections for virtually any fluid process. Select from models with features that include:

Sizes for every need

Model D sensors are available in sizes ranging from 1/4- to 6-inch (6 to 150 mm).

High-pressure sensors

Several sensors are available in high-pressure models, for pressure flows up to 5600 psi (386 bar). Two of these, the DH25 and DH38, are designed for measuring compressed natural gas (CNG) for legal trade.

High-temperature sensors

Three models of DT sensors measure process fluids at high temperatures up to 800°F (426°C), without the need for purge connections.

High-flow sensor

The D600, our largest sensor, is able to measure flows up to 25,000 lb/min (680,400 kg/h), making it ideal for ship loading and unloading, pipeline transfers, platform production, and LACT applications.

Housing options

Most Model D sensors are available with optional purge connections, and some feature purge connections and/or rupture disks.

Wetted-part materials for your fluid

All Model D and DT sensors come standard with 316L stainless steel wetted parts. Most models are also available in nickel alloy, and two models feature stainless steel flow tubes that are lined with a Tefzel® coating.

Micro Motion D and DT meters are now available with MVD™ Technology — a new, innovative, multivariable digital processing capability. A 9-wire connection from the junction box to a Micro Motion Series 1000 or Series 2000 transmitter improves ease of use, reduces downtime, and lowers your flowmetering costs.⁽¹⁾ Meters with MVD Technology provide cleaner, noise-free digital signals. Digital signal processing means faster response times, enhanced diagnostic capabilities, higher accuracy, and better repeatability.

System Integration

Micro Motion offers a variety of microprocessor-based transmitters. Depending on the transmitter model, features include milliampere and frequency/pulse outputs, transmitter and process control functions in a single device, and API outputs for crude oil and other hydrocarbon fluids.

Other options include transmitters that can be installed in instrument racks or panels, or housed in NEMA-compliant or explosion-proof enclosures. Sensors and explosion-proof transmitters can be installed in the same hazardous area.

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 learn more about Model D and DT sensors.

⁽¹⁾ Model D600 offers 4-wire connection to a Series 1000 or Series 2000 transmitter.

Model D and DT features comparison

	Typical line size	Standard model	High-pressure model	High-temperature model	Purge fittings available	Rupture disk available
D150 Tefzel	1 to 1-1/2 inch (25 to 38 mm)				◆	◆
D300	1-1/2 to 3 inch (38 to 75 mm)	◆			◆	◆
D600	3 to 6 inch (75 to 150 mm)	◆				
High-pressure models						
DH25	1/8 to 1/2 inch (3 to 13 mm)		◆		◆	◆
DH38	1/8 to 1/2 inch (3 to 6 mm)		◆		◆	◆
DH100	1/2 to 1 inch (13 to 25 mm)		◆			
DH150	1 to 1-1/2 inch (25 to 38 mm)		◆			
DH300	1-1/2 to 3 inch (38 to 75 mm)		◆			
High-temperature models						
DT65	1/4 to 1/2 inch (6 to 13 mm)			◆		
DT100	1/2 to 1 inch (13 to 25 mm)			◆		
DT150	1 to 1-1/2 inch (25 to 38 mm)			◆		

Performance specifications

Flow specifications — standard sensors

		Mass		Volume
Nominal flow range⁽¹⁾		lb/min	kg/h	gal/min
D150 Tefzel	0 to 1400	0 to 38,100	0 to 168	0 to 38,100
D300	0 to 7000	0 to 190,500	0 to 839	0 to 190,500
D600	0 to 25,000	0 to 680,400	0 to 2998	0 to 680,400
Maximum flow rate⁽²⁾		lb/min	kg/h	gal/min
D150 Tefzel	2800	76,200	336	76,200
D300	7000	190,500	839	190,500
D600	25,000	680,400	2998	680,400
Accuracy⁽³⁾	1700/2700 transmitter	liquid gas — except D300	$\pm 0.15\%^{(4)}$ $\pm 0.65\%^{(5)}$	
	All other transmitters	liquid gas — except D300	$\pm 0.15\% \pm [(\text{zero stability} / \text{flow rate}) \times 100]\%$ of rate $\pm 0.65\% \pm [(\text{zero stability} / \text{flow rate}) \times 100]\%$ of rate	
Repeatability⁽³⁾	1700/2700 transmitter	liquid gas — except D300	$\pm 0.05\%^{(4)}$ $\pm 0.30\%^{(5)}$	
	All other transmitters	liquid gas — except D300	$\pm 0.05\% \pm [\frac{1}{2}(\text{zero stability} / \text{flow rate}) \times 100]\%$ of rate $\pm 0.30\% \pm [(\text{zero stability} / \text{flow rate}) \times 100]\%$ of rate	
Zero stability		lb/min	kg/h	gal/min
D150 Tefzel	0.30	9.0	0.036	9.0
D300	0.70	19.2	0.084	19.2
D600	2.5	66.0	0.300	66.0

⁽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 psid (1 bar) of pressure drop for D and DT sensors.

⁽²⁾ When measuring gases, the velocity limit is 200 ft/s (61 m/sec).

⁽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 / 0.0015), accuracy equals $\pm [(\text{zero stability} / \text{flow rate}) \times 100]\%$ of rate and repeatability is $\pm \frac{1}{2}[(\text{zero stability} / \text{flow rate}) \times 100]\%$ of rate.

⁽⁵⁾ When flow rate is less than (zero stability / 0.0065), accuracy equals $\pm [(\text{zero stability} / \text{flow rate}) \times 100]\%$ of rate and repeatability is $\pm \frac{1}{2}[(\text{zero stability} / \text{flow rate}) \times 100]\%$ of rate.

Performance specifications *continued*

Flow specifications — high-pressure sensors

		Mass	Volume		
		lb/min	kg/h	gal/min	l/h
Nominal flow range⁽¹⁾	DH25	0 to 25	0 to 680	0 to 3	0 to 680
	DH38	0 to 25	0 to 680	0 to 3	0 to 680
	DH100	0 to 400	0 to 10,890	0 to 48	0 to 10,890
	DH150	0 to 1400	0 to 38,100	0 to 168	0 to 38,100
	DH300	0 to 7000	0 to 190,500	0 to 839	0 to 190,500
Maximum flow rate⁽²⁾	DH25	25	680	3	680
	DH38	50	1360	6	1360
	DH100	800	21,780	96	21,780
	DH150	2800	76,200	336	76,200
	DH300	7000	190,500	839	190,500
Accuracy⁽³⁾	1700/2700 transmitter	liquid	±0.15% ⁽⁴⁾		
		gas — except DH38, DH300	±0.65% ⁽⁵⁾		
		gas — DH38	±0.50% ⁽⁶⁾		
	All other transmitters	liquid	±0.15% ± [(zero stability / flow rate) x 100]%	of rate	
		gas — except DH38, DH300	±0.65% ± [(zero stability / flow rate) x 100]%	of rate	
		gas — DH38	±0.50% ± [(zero stability / flow rate) x 100]%	of rate	
Repeatability⁽³⁾	1700/2700 transmitter	liquid	±0.05% ⁽⁴⁾		
		gas — except DH38, DH300	±0.30% ⁽⁵⁾		
		gas — DH38	±0.25% ⁽⁶⁾		
	All other transmitters	liquid	±0.05% ± [½(zero stability / flow rate) x 100]%	of rate	
		gas — except DH38, DH300	±0.30% ± [(zero stability / flow rate) x 100]%	of rate	
		gas — DH38	±0.25% ± [(zero stability / flow rate) x 100]%	of rate	
Zero stability		lb/min	kg/h	gal/min	l/h
	DH25	0.006	0.18	0.0007	0.18
	DH38	0.025	0.68	0.003	0.68
	DH100	0.30	9.0	0.036	9.0
	DH150	1.2	32.6	0.144	32.6
	DH300	4.0	108.0	0.480	108.0

⁽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 psid (1 bar) of pressure drop for D and DT sensors.

⁽²⁾ When measuring gases, the velocity limit is 200 ft/s (61 m/sec).

⁽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 / 0.0015), accuracy equals ± [(zero stability / flow rate) x 100]% of rate and repeatability is ± ½[(zero stability / flow rate) x 100]% of rate.

⁽⁵⁾ When flow rate is less than (zero stability / 0.0065), accuracy equals ± [(zero stability / flow rate) x 100]% of rate and repeatability is ± ½[(zero stability / flow rate) x 100]% of rate.

⁽⁶⁾ When flow rate is less than (zero stability / 0.005), accuracy equals ± [(zero stability / flow rate) x 100]% of rate and repeatability is ± ½[(zero stability / flow rate) x 100]% of rate.

Performance specifications *continued*

Flow specifications —

high-temperature sensors

		Mass		Volume
Nominal flow range⁽¹⁾		lb/min	kg/h	gal/min
	DT65	0 to 150	0 to 4080	0 to 18
	DT100	0 to 400	0 to 10,890	0 to 48
	DT150	0 to 700	0 to 19,500	0 to 84
Maximum flow rate⁽²⁾		lb/min	kg/h	gal/min
	DT65	300	8160	36
	DT100	800	21,780	96
	DT150	1400	38,100	168
Accuracy⁽³⁾	1700/2700 transmitter	liquid gas	$\pm 0.15\%^{(4)}$ $\pm 0.65\%^{(5)}$	
	All other transmitters	liquid gas	$\pm 0.15\% \pm [(zero\ stability\ / flow\ rate) \times 100]\%$ of rate $\pm 0.65\% \pm [(zero\ stability\ / flow\ rate) \times 100]\%$ of rate	
Repeatability⁽³⁾	1700/2700 transmitter	liquid gas	$\pm 0.05\%^{(4)}$ $\pm 0.30\%^{(5)}$	
	All other transmitters	liquid gas	$\pm 0.05\% \pm [1/2(zero\ stability\ / flow\ rate) \times 100]\%$ of rate $\pm 0.30\% \pm [(zero\ stability\ / flow\ rate) \times 100]\%$ of rate	
Zero stability		lb/min	kg/h	gal/min
	DT65	0.03	0.84	0.004
	DT100	0.08	2.16	0.010
	DT150	0.14	3.84	0.017
				l/h
				0.84
				2.16
				3.84

⁽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 psid (1 bar) of pressure drop for D and DT sensors.

⁽²⁾ When measuring gases, the velocity limit is 200 ft/s (61 m/sec).

⁽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 / 0.0015), accuracy equals $\pm [(zero\ stability\ / flow\ rate) \times 100]\%$ of rate and repeatability is $\pm 1/2[(zero\ stability\ / flow\ rate) \times 100]\%$ of rate.

⁽⁵⁾ When flow rate is less than (zero stability / 0.0065), accuracy equals $\pm [(zero\ stability\ / flow\ rate) \times 100]\%$ of rate and repeatability is $\pm 1/2[(zero\ stability\ / flow\ rate) \times 100]\%$ of rate.

Performance specifications *continued*

Density specifications — liquid only	with Model 1700, 2700, 3500, 3700, RFT9739, Model 5300, or RFT9709 transmitter		with IFT9701 transmitter⁽¹⁾	
	g/cc	kg/m³	g/cc	kg/m³
Accuracy				
D150 Tefzel ⁽²⁾	±0.002	±2.0	±0.002	±2.0
D300	±0.0005	±0.5	±0.002	±2.0
D300 Tefzel ⁽²⁾	±0.001	±1.0	±0.002	±2.0
D600	±0.0005	±0.5	n/a	n/a
DH25	±0.004	±4.0	±0.004	±4.0
DH38	±0.004	±4.0	±0.004	±4.0
DH100	±0.002	±2.0	±0.002	±2.0
DH150	±0.002	±2.0	±0.002	±2.0
DH300	±0.001	±1.0	±0.002	±2.0
DT65	±0.001	±1.0	n/a	n/a
DT100	±0.001	±1.0	n/a	n/a
DT150	±0.001	±1.0	n/a	n/a
Repeatability	g/cc	kg/m³	g/cc	kg/m³
D150 Tefzel ⁽²⁾	±0.001	±1.0	±0.001	±1.0
D300	±0.0002	±0.2	±0.001	±1.0
D300 Tefzel ⁽²⁾	±0.0005	±0.5	±0.001	±1.0
D600	±0.0002	±0.2	n/a	n/a
DH25	±0.002	±2.0	±0.002	±2.0
DH38	±0.002	±2.0	±0.002	±2.0
DH100	±0.001	±1.0	±0.001	±1.0
DH150	±0.001	±1.0	±0.001	±1.0
DH300	±0.0005	±0.5	±0.001	±1.0
DT65	±0.0005	±0.5	n/a	n/a
DT100	±0.0005	±0.5	n/a	n/a
DT150	±0.0005	±0.5	n/a	n/a
Range	g/cc	kg/m³	g/cc	kg/m³
All models	0 to 5	0 to 5000	0 to 5	0 to 5000

⁽¹⁾ Model D600 and DT sensors cannot be used with IFT9701 transmitters.

⁽²⁾ Flow tubes are 316L stainless steel with Tefzel lining.

Performance specifications *continued*

Temperature specifications

Accuracy	All models	$\pm 1^\circ\text{C} \pm 0.5\%$ of reading in $^\circ\text{C}$			
Repeatability	All models	$\pm 0.2^\circ\text{C}$			
Range⁽¹⁾		process fluid		ambient temperature	
		$^\circ\text{F}$	$^\circ\text{C}$	$^\circ\text{F}$	$^\circ\text{C}$
D150 Tefzel ⁽²⁾		32 to 250	0 to 121	—	—
D300		-400 to 400	-240 to 204	—	—
D300 Tefzel ⁽²⁾		32 to 250	0 to 121	—	—
D600 with integral booster amp ⁽³⁾		-58 to 140	-50 to 60	—	—
D600 with remote booster amp ⁽³⁾		-400 to 400	-240 to 204	—	—
remote booster amplifier for D600		—	—	-40 to 140	-40 to 60
DH25		-400 to 350	-240 to 177	—	—
DH38		-400 to 350	-240 to 177	—	—
DH100		-400 to 400	-240 to 204	—	—
DH150		-400 to 400	-240 to 204	—	—
DH300		-400 to 400	-240 to 204	—	—
DT65		32 to 800	0 to 426	—	—
DT100		32 to 800	0 to 426	—	—
DT150		32 to 800	0 to 426	—	—

⁽¹⁾ For CENELEC-compliant sensors, ambient temperature limits are -20°C and 55°C . If the process fluid remains at or above 0°C , the ambient temperature may be below -20°C . Use of the sensor at ambient temperature above 55°C is acceptable, provided the ambient temperature does not exceed the maximum process fluid temperature or the CENELEC "T" rating listed on page 14.

⁽²⁾ Flow tubes are 316L stainless steel with Tefzel lining. Maximum allowable rate of sensor temperature change for Tefzel meters is $30^\circ\text{F}/\text{hr}$ ($17^\circ\text{C}/\text{hr}$).

⁽³⁾ Temperature limits for approved D600 models are:

	Fluid	Ambient
CENELEC (integral booster amp)	-4 to 140°F (-20 to 60°C)	-4 to 140°F (-20 to 60°C)
CENELEC (remote booster amp)	-4 to 189°F (-20 to 87°C)	-4 to 140°F (-20 to 60°C)
CSA (integral booster amp)	-58 to 140°F (-50 to 60°C)	-58 to 140°F (-50 to 60°C)
CSA (remote booster amp)	-58 to 212°F (-50 to 100°C)	-58 to 140°F (-50 to 60°C)
UL (integral booster amp)	-22 to 140°F (-30 to 60°C)	-22 to 140°F (-30 to 60°C)
UL (remote booster amp)	-22 to 212°F (-30 to 100°C)	-22 to 140°F (-30 to 60°C)

Performance specifications *continued*

Pressure ratings

Flow tube rating ⁽¹⁾	<i>psi</i>	bar
D150 Tefzel ⁽²⁾	1000	69
D300	740	51
D300 Tefzel ⁽²⁾	740	51
D600	625	43
DH25	4000	276
DH38	5200	358
DH100	5600	386
DH150	5400	372
DH300	4000	276
DT65 ⁽³⁾	900	62
DT100 ⁽³⁾	900	62
DT150 ⁽³⁾	600	41

PED approved	Sensors comply to council directive 97/23/EC of 29 May 1997 on Pressure Equipment.	
Housing	All models	Housing is not rated for pressure containment.

⁽¹⁾ Flow tube pressure rating at 77°F (25°C), according to ASME B31.3. For higher operating temperatures, tube pressure needs to be derated as follows:

- Stainless steel sensors 7.2% derating from 301 to 400°F (149 to 204°C)
- Nickel alloy sensors 2% derating from 201 to 300°F (94 to 148°C)
- 9.2% derating from 301 to 400°F (149 to 204°C)

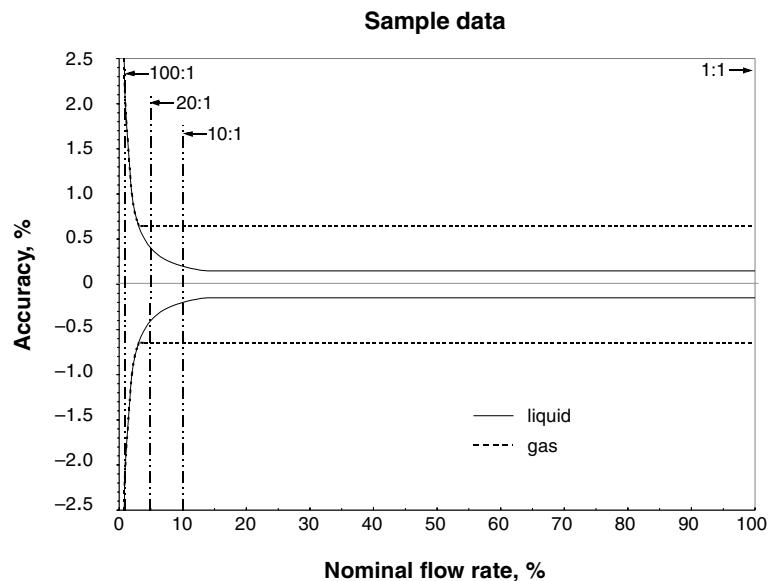
⁽²⁾ Flow tubes are 316L stainless steel with Tefzel lining.

⁽³⁾ Pressure rating at 800°F (426°C).

Performance specifications *continued*

Typical accuracy, turndown, and pressure drop—standard sensors with Series 1000/2000 transmitters

To determine accuracy, turndown, and pressure drop using your process variables contact your local Micro Motion representative.



Accuracy, ±%

	100:1 turndown		20:1 turndown		10:1 turndown		1:1 turndown	
	liquid	gas	liquid	gas	liquid	gas	liquid	gas
D150 Tefzel	2.14	2.14	0.43	0.65	0.21	0.65	0.15	0.65
D300	1.0	N/A	0.2	N/A	0.15	N/A	0.15	N/A
D600	1.15	1.65	0.35	0.85	0.25	0.75	0.15	0.65

Pressure drop, psi (bar)⁽¹⁾

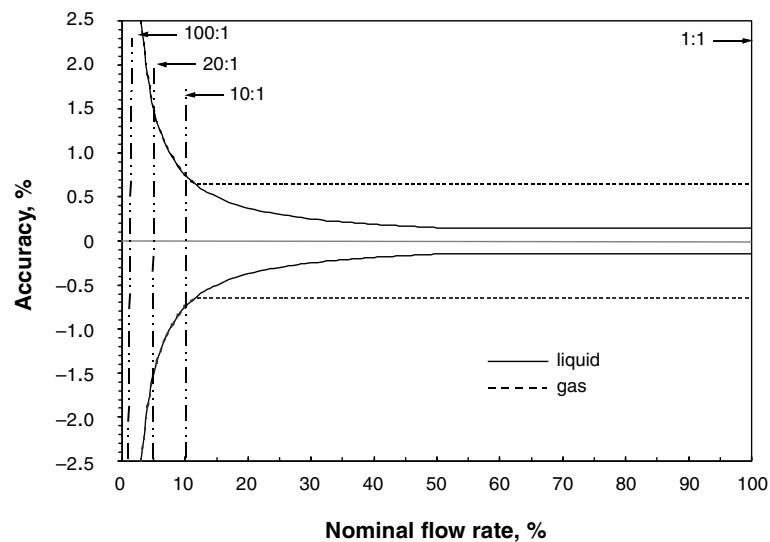
	100:1 turndown		20:1 turndown		10:1 turndown		1:1 turndown	
	liquid	gas	liquid	gas	liquid	gas	liquid	gas
D150 Tefzel	~0	0	0.1 (0.01)	0.8 (0.05)	0.2 (0.01)	3.3 (0.22)	15.8 (1.09)	N/A
D300	~0	N/A	0.1 (0.01)	N/A	0.2 (0.01)	N/A	15.1 (1.04)	N/A
D600	~0	0	0.1 (0.01)	0.4 (0.03)	0.1 (0.01)	1.6 (0.11)	7.3 (0.50)	N/A

⁽¹⁾ Pressure drop for gas was determined at 500 psi (34 bar) operating pressure and 75°F (24°C).

Performance specifications *continued*

Typical accuracy, turndown, and pressure drop — high pressure sensors with Series 1000/2000 transmitters

To determine accuracy, turndown, and pressure drop using your process variables contact your local Micro Motion representative.



Accuracy, ±%

	100:1 turndown		20:1 turndown		10:1 turndown		1:1 turndown	
	liquid	gas	liquid	gas	liquid	gas	liquid	gas
DH25	2.4	2.40	0.48	0.65	0.24	0.65	0.15	0.65
DH38	10.0	10.0	2.0	2.0	1.0	1.0	0.15	0.50
DH100	7.5	7.5	1.5	1.5	0.75	0.75	0.15	0.65
DH150	8.57	8.57	1.71	1.71	0.21	0.65	0.15	0.65
DH300	5.71	N/A	1.14	N/A	0.57	N/A	0.15	N/A

Pressure drop, psi (bar)⁽¹⁾

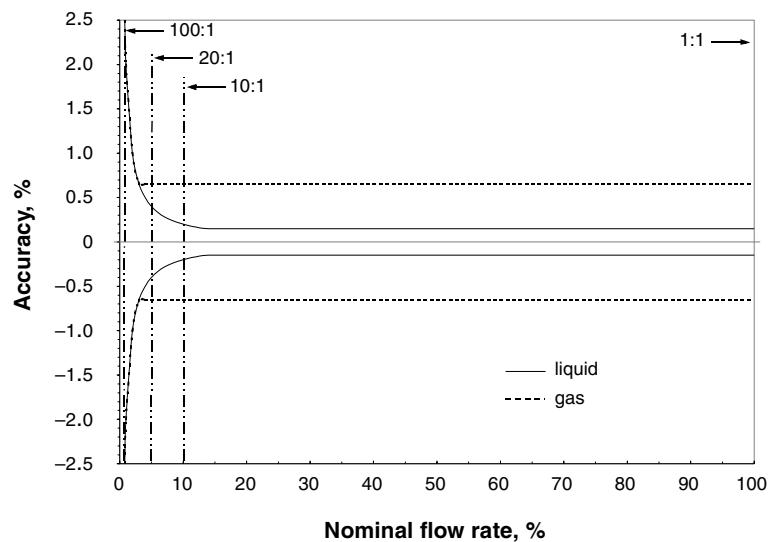
	100:1 turndown		20:1 turndown		10:1 turndown		1:1 turndown	
	liquid	gas	liquid	gas	liquid	gas	liquid	gas
DH25	~0	0.1 (0.01)	0.1 (0.01)	1.1 (0.07)	0.4 (0.03)	4.2 (0.29)	22.3 (1.5)	N/A
DH38	~0	0	0.1 (0.01)	0.6 (0.04)	0.2 (0.01)	2.2 (0.15)	12.0 (0.83)	N/A
DH100	~0	0	0.1 (0.01)	0.6 (0.04)	0.2 (0.01)	2.5 (0.17)	12.4 (0.84)	N/A
DH150	~0	0	0.1 (0.01)	0.8 (0.05)	0.2 (0.01)	3.1 (0.21)	15.0 (1.0)	N/A
DH300	~0	N/A	0.1 (0.01)	N/A	0.3 (0.02)	N/A	21 (1.4)	N/A

⁽¹⁾ Pressure drop for gas was determined at 500 psi (34 bar) operating pressure and 75°F (24°C).

Performance specifications *continued*

Typical accuracy, turndown, and pressure drop — high-temperature sensors with Series 1000/2000 transmitters

To determine accuracy, turndown, and pressure drop using your process variables contact your local Micro Motion representative.



Accuracy, ±%

	100:1 turndown		20:1 turndown		10:1 turndown		1:1 turndown	
	liquid	gas	liquid	gas	liquid	gas	liquid	gas
DT65	2.0	2.0	0.40	0.65	0.20	0.65	0.15	0.65
DT100	2.0	2.0	0.40	0.65	0.20	0.65	0.15	0.65
DT150	2.0	2.0	0.40	0.65	0.20	0.65	0.15	0.65

Pressure drop, psi (bar)⁽¹⁾

	100:1 turndown		20:1 turndown		10:1 turndown		1:1 turndown	
	liquid	gas	liquid	gas	liquid	gas	liquid	gas
DT65	~0	0	0.1 (0.01)	0.2 (0.01)	0.2 (0.01)	0.9 (0.06)	13.2 (0.91)	N/A
DT100	~0	0	0.1 (0.01)	0.2 (0.01)	0.2 (0.01)	0.9 (0.06)	16.2 (1.12)	N/A
DT150	~0	0	0.1 (0.01)	0.2 (0.01)	0.1 (0.01)	0.9 (0.06)	4.6 (0.32)	N/A

⁽¹⁾ Pressure drop for gas was determined at 500 psi (34 bar) operating pressure and 75°F (24°C).

Functional specifications

Environmental influences

Temperature effect on zero	Process temperature effect on zero is defined as the worst-case zero offset due to process fluid temperature change away from the zeroing temperature.
	Effect on zero⁽¹⁾
	% of nominal flow rate per °C
D150 Tefzel ⁽²⁾	±0.002
D300	±0.004
D300 Tefzel ⁽²⁾	±0.004
D600	±0.004
DH sensors	±0.01
DT sensors	±0.002
Temperature offset	The long-term temperature offset causes a shift in sensor calibration, which is attributed to a long-term change in the elasticity modulus as a result of sensor operation at elevated temperatures. The calibration shift is always negative and causes the flowmeter to read lower than the actual flow rate. The effects of this shift can be minimized with periodic calibration. Only Model DT sensors are affected.
	Offset
DT sensors	Above 600°F (315°C), -0.092% of rate per °C in addition to process temperature effect (above)
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. Only the sensors listed below are affected.
	Effect on flow accuracy
	% of rate per psi
	% of rate per bar
D300	-0.009
D300 Tefzel ⁽²⁾	-0.009
D600	-0.005
	Effect on density accuracy
	g/cc per psi
	kg/m³ per bar
	-0.00001
	-0.00001
	-0.0000031
	-0.0175
	-0.0175
	-0.045

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

⁽²⁾ Flow tubes are 316L stainless steel with Tefzel lining.

Functional specifications *continued*

Power supply options

A power supply is required for the D600 booster amplifier.

Integral mount booster amplifier	85–250 VAC, 50/60 Hz
Remote mount booster amplifier	85–250 VAC, 50/60 Hz

Hazardous area classifications

Intrinsically safe when properly connected to an approved transmitter.

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

UL	D, DH sensors	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
	DT sensors	Class I, Div. 1, Groups C and D Class I, Div. 2, Groups A, B, C, and D
CSA	D, DH sensors	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
	DT sensors	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

			Maximum fluid temperature, °C					
			T1	T2	T3	T4	T5	T6
	DH25	EEx ib IIC T1...T6	177	177	177	120	85	70
	DH38	EEx ib IIC T1...T6	177	177	177	120	85	70
	DH100	EEx ib IIB T1...T6	204	204	185	120	85	70
	D150 Tefzel ⁽²⁾ , DH150	EEx ib IIB T1...T6	204	204	185	120	85	70
	D300, DH300	EEx ib IIB T1...T6	204	204	162	97	62	47
CENELEC⁽¹⁾	D600 with integral booster amplifier							
	and core processor	EEx [ib] de IIB T1...T5	60	60	60	60	27	
	and junction box	EEx [ib] de IIB T1...T6	60	60	60	60	27	12
	D600 with remote booster amplifier							
	and core processor	EEx [ib] de IIB T1...T6	87	87	87	62	27	12
	and junction box	EEx [ib] de IIB T1...T6	87	87	87	62	27	12
	DT sensors	EEx ib IIB T1...T6	409	259	164	99	64	49
SAA	D25, DH25	Ex ib IIB T4						
	DH38	Ex ib IIB T4						
	D40	Ex ib IIB T4						
	D100, DH100	Ex ib IIB T4						
	D150, DH150	Ex ib IIB T6						
	D150 Tefzel ⁽²⁾	Ex ib IIB T6						
	D300, DH300	Ex ib IIB T4						
	D300 Tefzel ⁽²⁾	Ex ib IIB T4						
	DT sensors	Ex ib IIB T6						

⁽¹⁾ The CENELEC "T" rating is defined as the maximum surface temperature of the flowmeter. The "T" rating and the ambient temperature restrict the maximum allowable temperature of the process fluid (listed above). Ambient temperature limits for CENELEC-compliant sensors are listed on page 8.

⁽²⁾ Flow tubes are 316L stainless steel with Tefzel lining.

Physical specifications

Materials of construction

Standard materials of construction are as follows:

SS = 316L stainless steel (SS) flow tubes and flanges, CF-3M SS manifolds

Ni = Hastelloy® C-22 nickel alloy (Ni) flow tubes and glands with Hastelloy CW-2M Ni manifolds

Ni/SS = Hastelloy C-22 Ni flow tubes with 316L SS manifolds and flanges

Lined = 316L stainless steel flow tubes with Tefzel® lining

Wetted parts⁽¹⁾

	SS	Ni	Ni/SS	Lined
D150 Tefzel	✓	✓		✓
D300	✓	✓		✓
D600	✓			
DH25	✓			
DH38	✓			
DH100	✓			
DH150	✓			
DH300	✓			
DT65				✓
DT100				✓
DT150				✓

Housing 304 stainless steel

Core processor 316L stainless steel

Junction box Epoxy-coated aluminum

Booster amplifier Epoxy-coated aluminum

Sensor weight

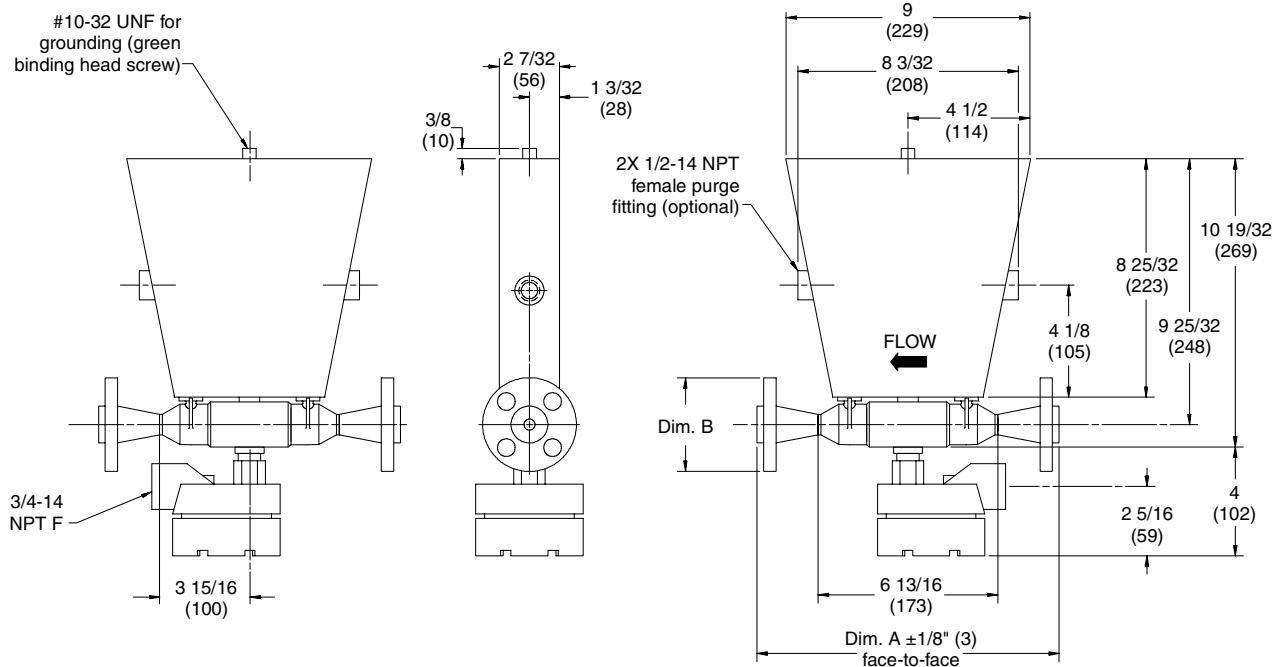
Approximate weight of sensors with noted process fittings.

	with process connection type	lb	kg
D150 Tefzel	1 1/2" ANSI 150 lb WNRF flanges	46	20.9
D300	3" ANSI 150 lb WNRF flanges	113	60.4
D600 with integral booster amp	6" ANSI 150 lb WNRF flanges	884	401
D600 with remote booster amp	6" ANSI 150 lb WNRF flanges	889	403
DH38	3/8" NPT union fittings	8	3.6
DH100	1 1/2" high-pressure, clamp-type flanges	80	36.4
DH150	1 1/2" high-pressure, clamp-type flanges	80	36.4
DH300	4" high-pressure, clamp-type flanges	218	99.1
DT65	1/2" ANSI 300 lb WNRF flanges	52	24
DT100	1" ANSI 300 lb WNRF flanges	105	48
DT150	1 1/2" ANSI 300 lb WNRF flanges	155	70

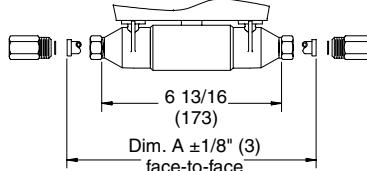
⁽¹⁾ General corrosion guides do not account for cyclical stress, and therefore should not be relied upon when choosing a wetted material for your Micro Motion sensor. Please refer to Micro Motion's corrosion guide for material compatibility information.

DH25 dimensions and process fittings

Dimensions in *inches*
(mm)



Union fitting
detail



Fittings⁽¹⁾

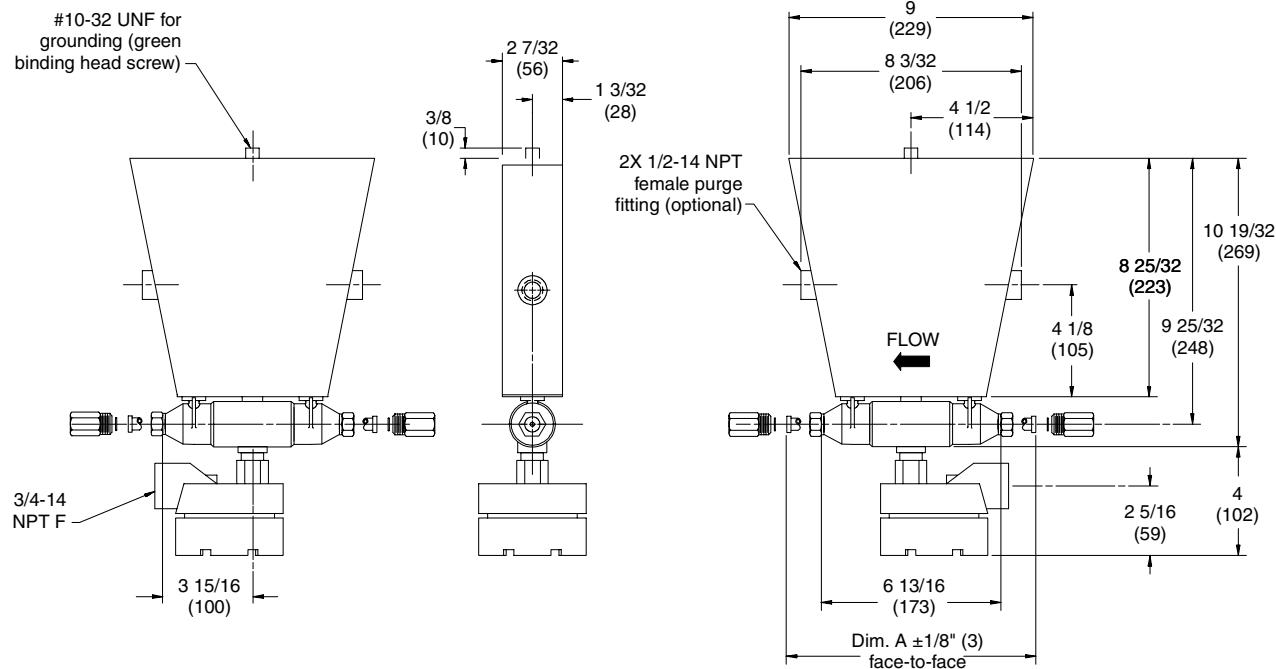
	Fitting code	Dim. A Face-to-face <i>inches</i> (mm)	Dim. B Outside diameter <i>inches</i> (mm)
1-inch high-pressure clamp-type flange ⁽²⁾	225	10 1/4 (260)	2 (51)
1/2-inch 900/1500 lb weld neck raised face flange	903	11 31/32 (304)	5 1/4 (133)
1/2-inch 2500 lb weld neck raised face flange	905	12 31/32 (329)	4 1/4 (108)
3/8-inch NPT female union fitting	119	8 1/8 (206)	---
15mm DIN PN160 weld neck flange, DIN 2638, type E face	901	11 31/32 (304)	4 1/8 (105)
15mm DIN PN250 weld neck flange, DIN2628, type E face	902	11 31/32 (304)	5 1/8 (130)

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

⁽²⁾ Oteco hub size: 1 OC4. Mating connectors (not included): Grayloc hub size 1 GR4, seal ring size 4; clamp size 1, stainless steel.

DH38 dimensions and process fittings

Dimensions in *inches*
(mm)

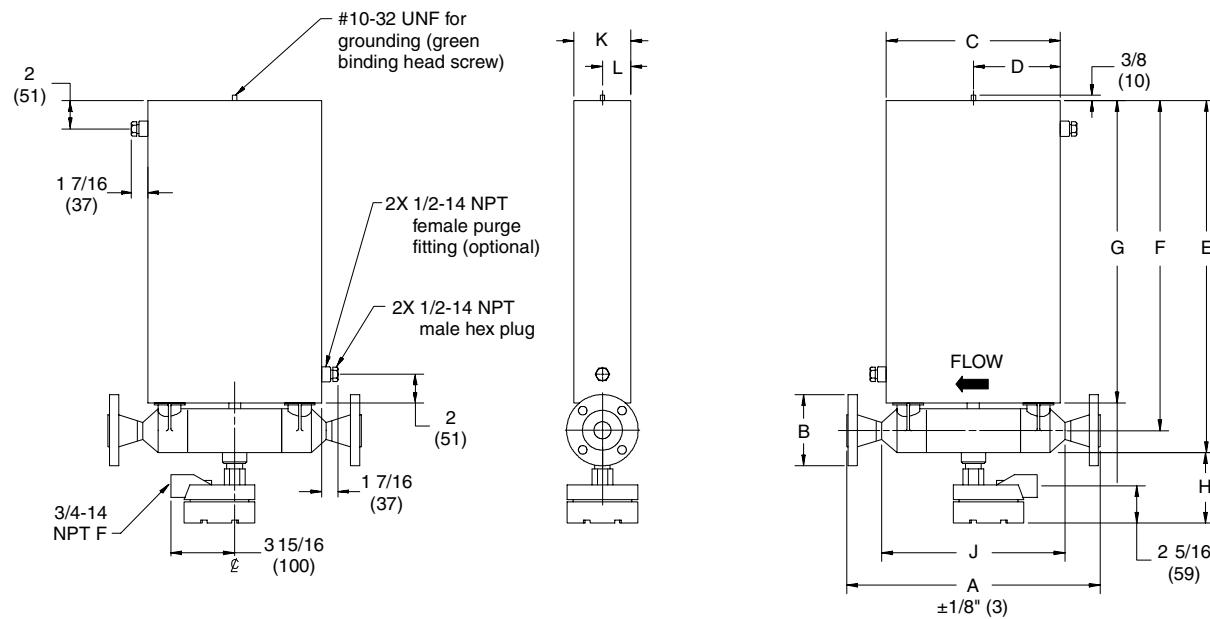


Fittings ⁽¹⁾	Fitting code	Dim. A, Face-to-face <i>inches</i> (mm)
3/8-inch NPT female union fitting	119	8 1/8 (206)

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

D150, DH100, DH150 dimensions

Dimensions in *inches*
(mm)



Standard-pressure sensors	Dimensions ⁽¹⁾									
	C	D	E	F	G	H	J	K	L	
D150 Tefzel inches (mm)	12 1/4 (311)	6 1/8 (156)	24 3/4 (629)	23 5/16 (592)	21 9/32 (541)	4 (102)	12 7/8 (327)	4 (102)	2 (51)	

High-pressure sensors

DH100	inches (mm)	12 1/4 (311)	6 1/8 (156)	24 27/32 (631)	23 13/32 (595)	21 3/8 (543)	4 (102)	12 7/8 (327)	4 (102)	2 (51)
DH150	inches (mm)	12 3/4 (324)	6 3/8 (162)	28 11/32 (720)	26 29/32 (683)	24 29/32 (633)	4 (102)	12 7/8 (327)	4 1/2 (114)	2 1/4 (57)

⁽¹⁾For dimensions A and B, see process fittings tables, pages 19–20.

DH100 process fittings

Fittings	Fitting code	Dim. A Face-to-face inches (mm)	Dim. B Outside diameter inches (mm)
1 1/2-inch high-pressure clamp-type flange ⁽¹⁾	140	17 1/2 (445)	3 1/8 (79)
1-inch ANSI 900/1500 lb weld neck raised face flange	925	19 1/16 (484)	5 7/8 (149)
1-inch ANSI 2500 lb weld neck raised face flange	927	20 9/32 (515)	6 1/4 (159)
25 mm DIN PN250 weld face flange, DIN 2628, type E face	922	17 29/32 (455)	5 29/32 (150)
25 mm DIN PN320 weld face flange, DIN 2629, type E face	923	18 15/16 (481)	6 15/16 (160)
25 mm DIN PN400 weld face flange, DIN 2627, type E face	924	19 7/8 (505)	7 1/16 (179)

D150, DH150 process fittings

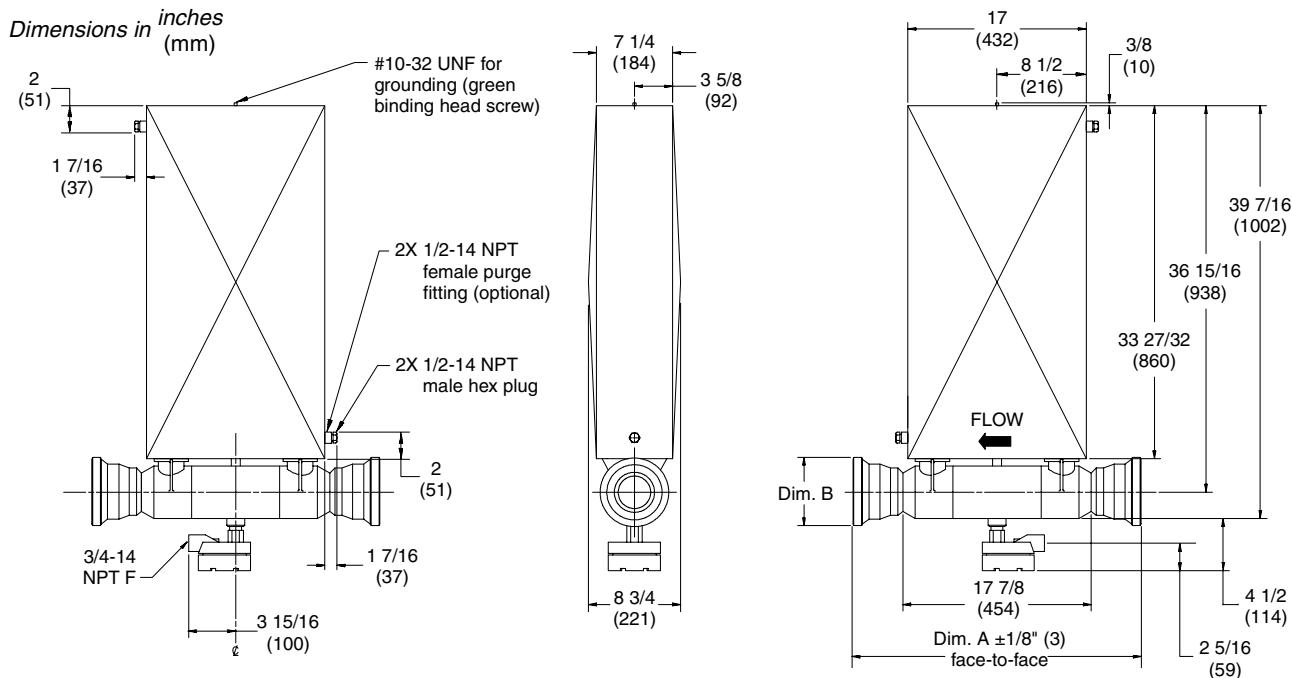
Fittings for standard-pressure, Tefzel lined sensors	Fitting code	Dim. A Face-to-face inches (mm)	Dim. B Outside diameter inches (mm)
1 1/2-inch ANSI 150 lb weld neck raised face flange	141	17 5/8 (448)	5 (127)
1 1/2-inch ANSI 300 lb weld neck raised face flange	142	18 1/8 (460)	6 1/8 (156)
1 1/2-inch ANSI 600 lb weld neck raised face flange	143	18 3/4 (476)	6 1/8 (156)
2-inch ANSI 150 lb weld neck raised face flange	218	17 25/32 (452)	6 (152)
40 mm DIN PN40, DIN 2635, type C face	144	16 5/16 (414)	5 29/32 (150)

Fittings for high-pressure, stainless steel sensors	Fitting code	Dim. A Face-to-face inches (mm)	Dim. B Outside diameter inches (mm)
1 1/2-inch high-pressure clamp-type flange ⁽²⁾	154	17 1/2 (445)	3 1/8 (79)
1 1/2-inch ANSI 900/1500 lb weld neck raised face flange	936	19 25/32 (502)	7 (178)
1 1/2-inch ANSI 2500 lb weld neck raised face flange	938	22 1/32 (560)	8 (203)
40 mm DIN PN160 weld neck flange, DIN 2638, type E face	932	17 13/16 (452)	6 11/16 (170)
40 mm DIN PN250 weld neck raised face flange, DIN 2628 type E face	933	19 1/16 (484)	7 9/32 (185)
40 mm DIN PN320 weld neck raised face flange, DIN 2629, type E face	934	19 23/32 (501)	7 11/16 (195)
40 mm DIN PN400 weld neck raised face flange, DIN 2627, type E face	935	21 7/16 (545)	8 21/32 (220)

⁽¹⁾ Oteco hub size: 1 1/2 OC11. Mating connectors (not included): Grayloc hub size 1 1/2 GR11, seal ring size 11; clamp size 1 1/2, stainless steel.

⁽²⁾ Oteco hub size: 1 1/2 OC14. Mating connectors (not included): Grayloc hub size 1 1/2 GR14, seal ring size 14; clamp size 1 1/2, stainless steel.

D300, high-pressure DH300 dimensions, process fittings



Fittings for standard-pressure, stainless steel sensors⁽¹⁾

	Fitting code	Dim. A Face-to-face inches (mm)	Dim. B Outside diameter inches (mm)
3-inch ANSI 150 lb weld neck raised face flange	155	23 1/4 (591)	7 1/2 (191)
3-inch ANSI 300 lb weld neck raised face flange	156	24 (610)	8 1/4 (210)
3-inch ANSI 600 lb weld neck raised face flange ⁽²⁾	157	24 3/4 (629)	8 1/4 (210)
3-inch sanitary fitting ⁽²⁾	161	21 3/8 (543)	3 19/32 (91)
80 mm DIN PN40, DIN 2635, type C face	158	22 5/16 (567)	7 7/8 (200)
80 mm DIN PN64 weld neck flange, DIN 2636, type E face	941	23 17/32 (598)	8 15/32 (215)
80 mm JIS 10K weld neck raised face flange ⁽²⁾	159	21 11/16 (551)	7 9/32 (185)
80 mm JIS 20K weld neck raised face flange ⁽²⁾	160	22 5/16 (567)	7 7/8 (200)

Fittings for standard-pressure, nickel alloy sensors⁽¹⁾

3-inch ANSI 150 lb lap joint flange	203	25 5/8 (651)	7 1/2 (191)
3-inch ANSI 300 lb lap joint flange	204	25 5/8 (651)	8 1/4 (210)
3-inch ANSI 600 lb lap joint flange	949	25 5/8 (651)	8 1/4(210)
80 mm DIN PN40 lap joint flange, DIN 2656	211	25 5/8 (651)	7 7/8 (200)
80 mm JIS 10K lap joint flange	210	25 5/8 (651)	7 9/32 (185)

Fittings for high-pressure, stainless steel sensors⁽¹⁾

4-inch high-pressure clamp-type flange ⁽³⁾	164	25 1/16 (637)	6 (151)
3-inch ANSI 300 lb weld neck raised face flange	156	24 (610)	8 1/4 (210)
3-inch ANSI 600 lb weld neck raised face flange	157	24 3/4 (629)	8 1/4 (210)
3-inch ANSI 900 lb weld neck raised face flange	246	26 5/16 (668)	9 1/2 (241)
3-inch ANSI 1500 lb weld neck raised face flange	946	27 5/8 (702)	10 1/2 (267)
3-inch ANSI 2500 lb weld neck raised face flange	947	31 5/8 (803)	12 (305)
80 mm DIN PN100 weld neck flange, DIN 2637, type E face	942	24 1/32 (610)	9 1/16 (230)
80 mm DIN PN160 weld neck flange, DIN 2638, type E face	943	24 21/32 (626)	9 1/16 (230)
80 mm DIN PN250 weld neck raised face flange, DIN 2628, type E face	944	25 29/32 (658)	10 1/32 (255)

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

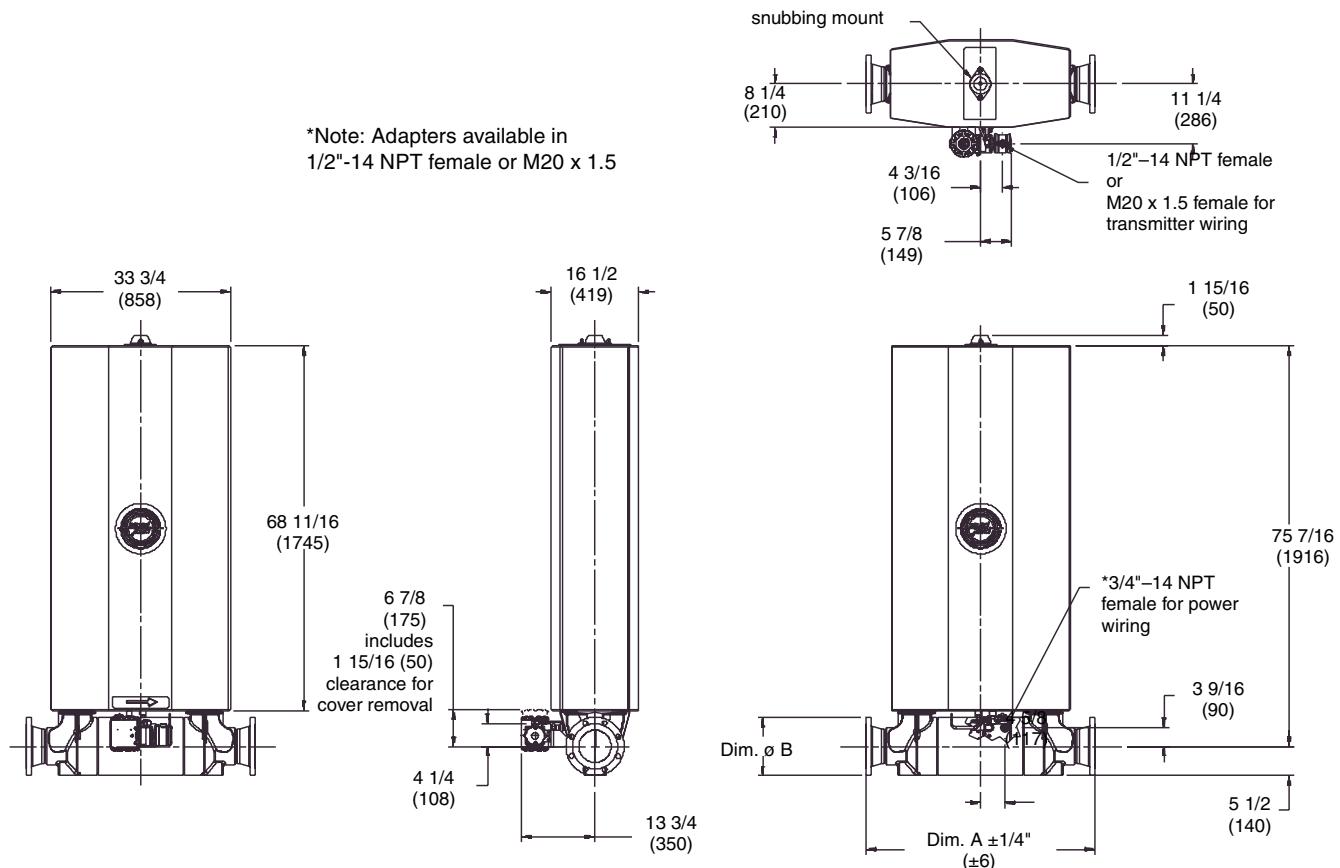
⁽²⁾ Not available with Tefzel sensors.

⁽³⁾ Oteco hub size: 4 OC27. Mating connectors (not included): Grayloc hub size 4 GR27, seal ring size 27; clamp size 4, stainless steel.

D600 dimensions

D600 with integrally mounted booster amplifier and core processor

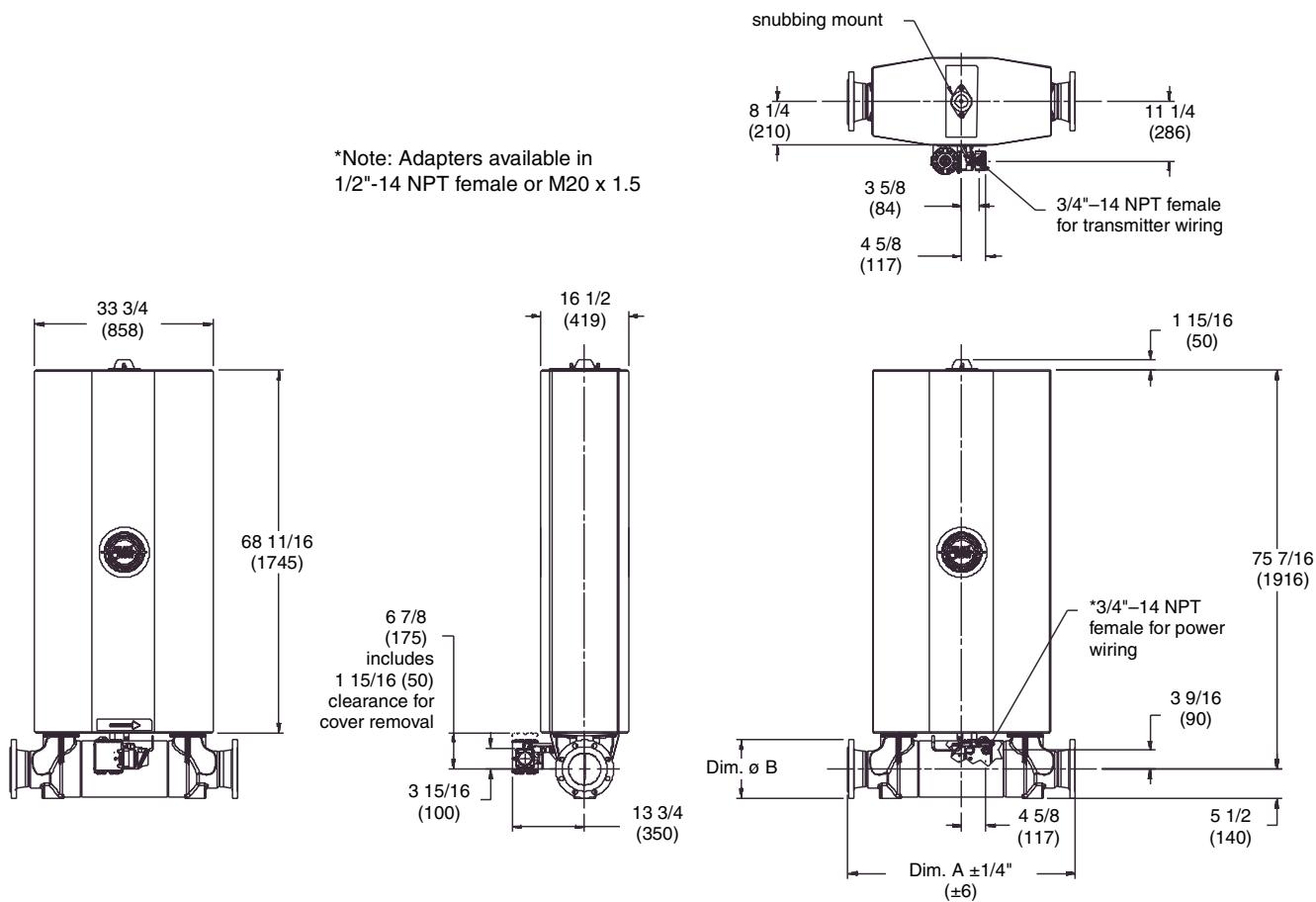
Dimensions in *inches*
(mm)



D600 dimensions *continued*

D600 with integrally mounted booster amplifier and junction box

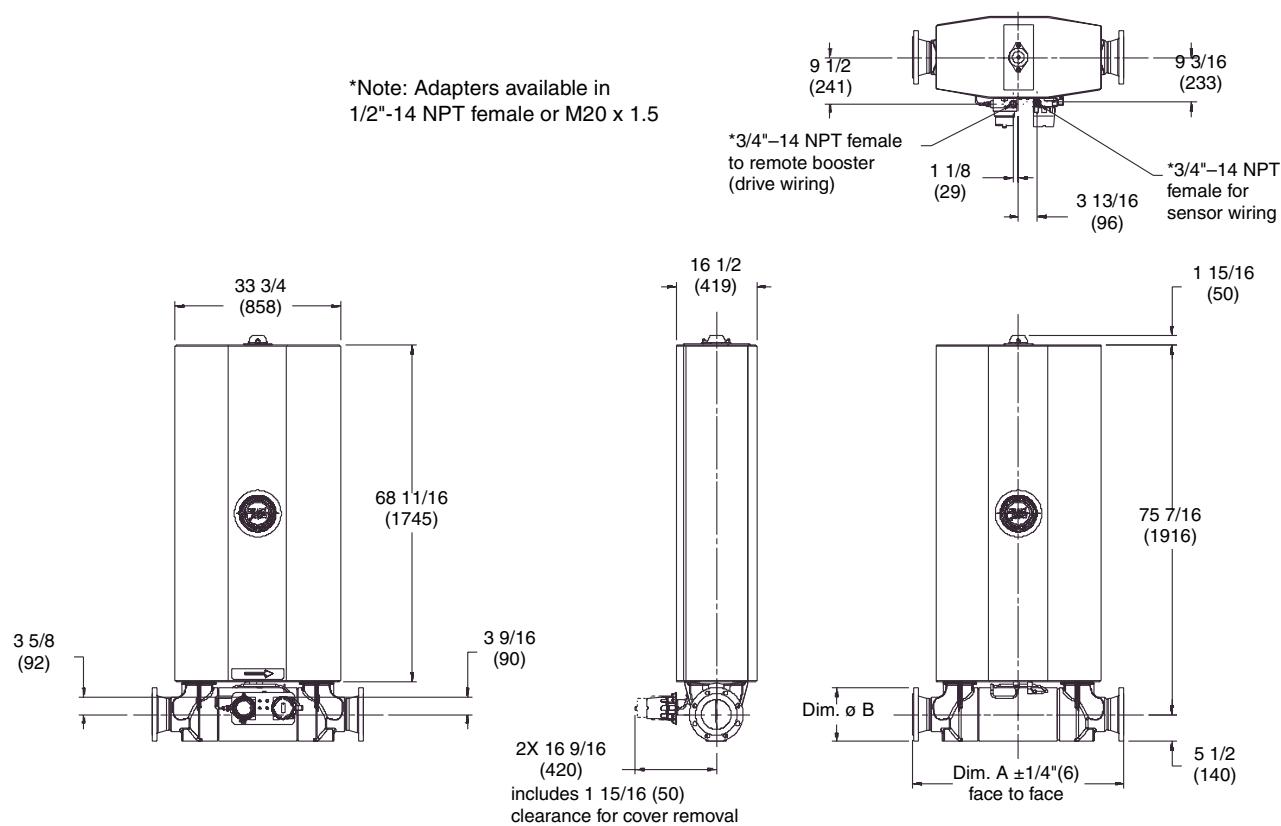
Dimensions in *inches*
(mm)



D600 dimensions and process fittings *continued*

D600 for remotely mounted booster amplifier

Dimensions in *inches*
(mm)



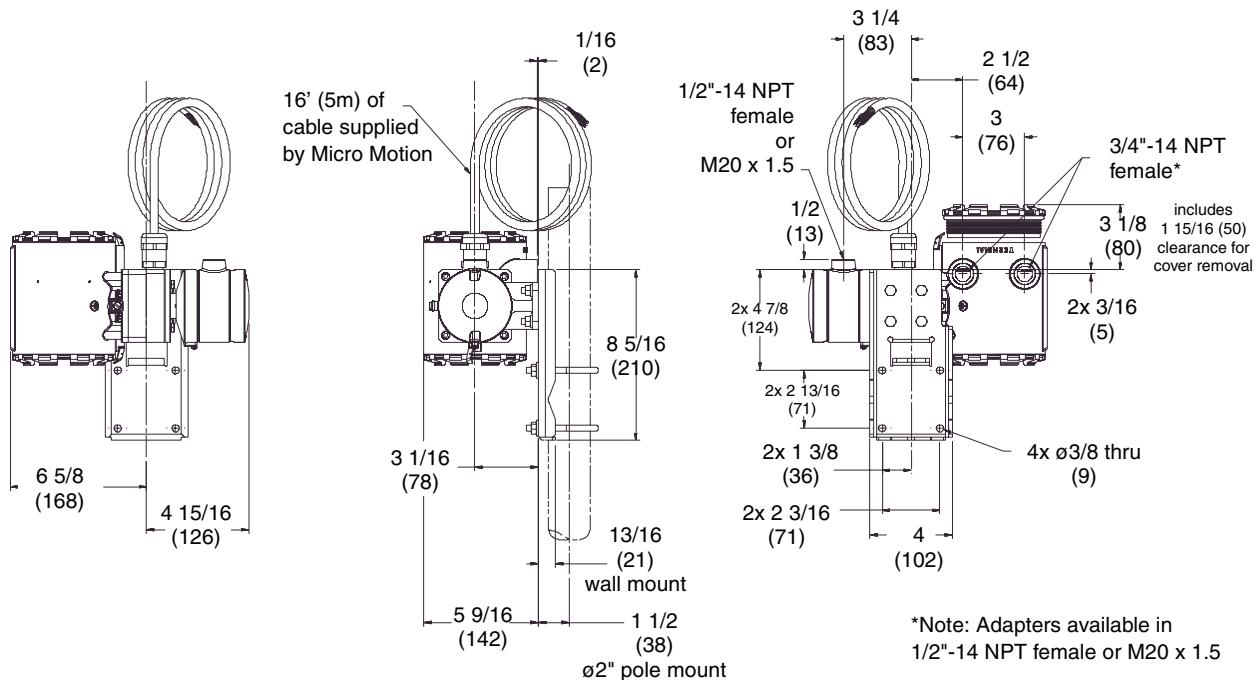
Fittings ⁽¹⁾	Fitting code	Dim. A Face-to-face <i>inches</i> (mm)	Dim. B Outside diameter <i>inches</i> (mm)
6-inch ANSI 150 lb weld neck raised face flange	165	43 (1092)	11 (279)
6-inch ANSI 300 lb weld neck raised face flange	166	43 3/4 (1111)	12 1/2 (317)
150 mm DIN PN40 weld neck, DIN 2635, type C face	167	42 1/16 (1068)	11 55/64 (301)
150 mm JIS 10K weld neck raised face flange	168	40 15/32 (1028)	11 1/16 (281)
150 mm JIS 20K weld neck raised face flange	169	42 1/16 (1068)	12 1/16 (306)

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

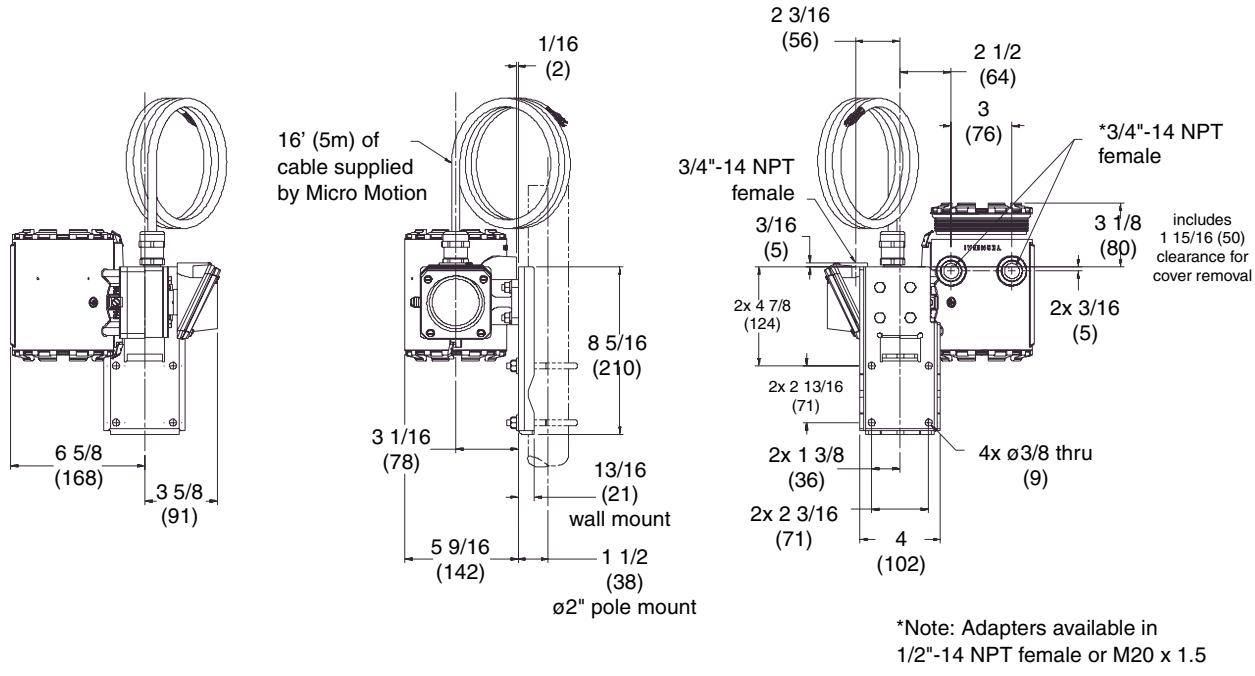
D600 dimensions and process fittings *continued*

Dimensions in *inches*
(mm)

Remote mount booster amplifier with core processor

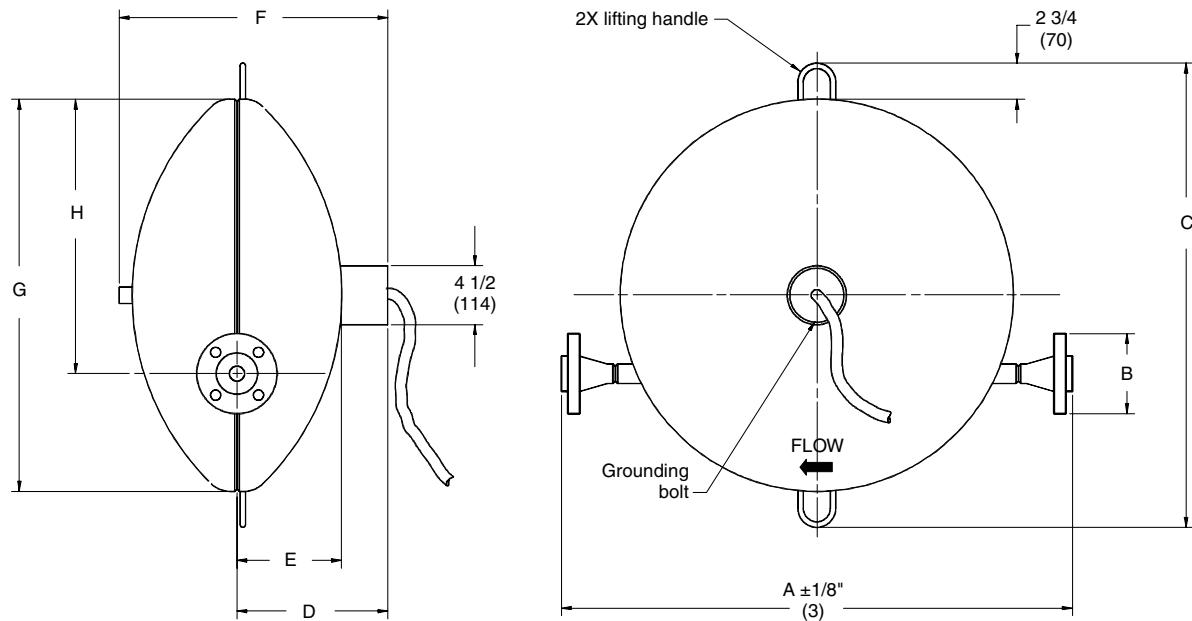


Remote mount booster amplifier with junction box



DT sensor dimensions and process fittings

Dimensions in *inches*
(mm)



Dimensions					
High-temperature sensors		C	D	E	F
DT65	inches (mm)	25 1/2 (648)	9 (229)	5 1/2 (140)	15 1/2 (394)
DT100	inches (mm)	29 1/2 (749)	10 (254)	6 1/2 (165)	17 1/2 (444)
DT150	inches (mm)	35 1/2 (902)	11 1/2 (292)	8 (203)	20 1/2 (521)

Fittings for DT65 sensors ⁽¹⁾	Fitting code	Dim. A Face-to-face <i>inches</i> (mm)	Dim. B Outside diameter <i>inches</i> (mm)
1/2-inch ANSI 300 lb weld neck raised face flange	114	23 7/8 (606)	3 3/4 (95)
1/2-inch ANSI 600 lb weld neck raised face flange	115	23 7/8 (606)	3 3/4 (95)
15 mm DIN PN40 weld neck, DIN 2635, type C face	116	22 1/4 (565)	3 3/4 (95)
15 mm JIS 20K weld neck raised face flange	118	22 1/4 (565)	3 3/4 (95)

Fittings for DT100 sensors ⁽¹⁾	Fitting code	Dim. A Face-to-face <i>inches</i> (mm)	Dim. B Outside diameter <i>inches</i> (mm)
1-inch ANSI 300 lb weld neck raised face flange	129	29 23/32 (755)	4 7/8 (124)
1-inch ANSI 600 lb weld neck raised face flange	130	30 7/32 (768)	4 7/8 (124)
25 mm DIN PN40 weld neck, DIN 2635, type C face	131	28 (711)	4 17/32 (115)
25 mm JIS 20K weld neck raised face flange	133	28 (711)	4 59/64 (125)

Fittings for DT150 sensors ⁽¹⁾	Fitting code	Dim. A Face-to-face <i>inches</i> (mm)	Dim. B Outside diameter <i>inches</i> (mm)
1 1/2-inch ANSI 300 lb weld neck raised face flange	142	39 1/32 (992)	6 1/8 (156)
1 1/2-inch ANSI 600 lb weld neck raised face flange	143	39 43/64 (1008)	6 1/8 (156)
40 mm DIN PN40 weld neck, DIN 2635, type C face	144	37 13/64 (945)	5 29/32 (150)
40 mm JIS 20K weld neck raised face flange	146	37 13/64 (945)	5 33/64 (140)

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

Ordering Information

Model D, standard-pressure sensors (except D600) model number matrix

Code	Sensor model
DS150	D150 1 1/2-inch sensor, standard pressure
DS300	D300 3-inch sensor, standard pressure
Code	Wetted material
S	316L stainless steel — DS300 only
H	Hastelloy® C-22 nickel alloy — DS300 only
Z	316L stainless steel with Tefzel® lining
Code	Process connections
###	See fittings tables on pages 19-20
Code	Case options
S	Standard pressure containment
P	Purge fittings — (2) 1/2" NPT female
D	Metal rupture disk
R	Purge fittings and rupture disk — DS300 only
Code	Approvals
M	Micro Motion standard — no approvals
U	UL intrinsically safe — U.S.A. approvals agency
C	CSA — Canadian approvals agency
B	CENELEC — European approvals agency
S	SAA — Australian approvals agency
Example DS300 S 155 S U	

Ordering Information *continued*

Model D600

Code	Sensor model
DS600S	Micro Motion Coriolis D-Series sensor; 6-inch; standard pressure; 316L stainless steel
Code	Process connections
###	See fittings table on page 23.
Code	Case options
S	Standard case
Code	Electronics interface
K L ⁽¹⁾ M N O ⁽¹⁾ P	Integral booster amp with local core processor to remote mount Series 1000/2000 transmitters Integral booster amp with core processor for direct host connection (MVDSolo, for OEM's) Integral booster amp with 9-wire j-box Remote booster amp with local core processor to remote mount Series 1000/2000 transmitters Remote booster amp with core processor for direct host connection (MVDSolo, for OEM's) Remote booster amp w/ 9 wire j-Box
Code	Conduit connections
B C D E F G A H J	Electronics interface code 'K,' 'L,' 'N,' 'O' (local core processor) 1/2-inch NPT – no gland 1/2-inch NPT with brass nickel cable gland (cable diameter 0.335 to 0.394 inches) 1/2-inch NPT with stainless steel cable gland (cable diameter 0.335 to 0.394 inches) M20 – no gland M20 with brass nickel cable gland (cable diameter 8.5 to 10.0mm) M20 with stainless steel cable gland (cable diameter 8.5 to 10.0mm) Electronics interface code 'M,' 'P' (9-wire j-box) 3/4-inch NPT – no gland 3/4-inch NPT with brass nickel gland 3/4-inch NPT with stainless steel gland
Code	Approvals
M U C A Z F	Micro Motion Standard (no approval) UL CSA (Canada only) CSA (US and Canada) CENELEC - Increased Safety CENELEC- Flameproof
Code	Language
E	English Quick Reference Guide and English Manual

continued on next page

Ordering Information *continued*

Model D600 *(continued)*

Code Connection to Booster Amp	
A	3/4-inch NPT conduit opening
B ⁽²⁾	M20 brass nickel adapter
C ⁽²⁾	M20 stainless steel adapter
D ⁽²⁾	1/2-inch NPT brass nickel adapter
E ⁽²⁾	1/2-inch NPT stainless steel adapter
Code Measurement Application Software	
Z	none
A ⁽³⁾	API
Code Future Options	
Z	Reserved for future use
Code Factory Options	
Z	Standard product
X	CEQ product
Example DS600 S M A U E A Z Z Z	

⁽¹⁾ Available with Micro Motion approval code M only.

⁽²⁾ CENELEC and CSA approval only.

⁽³⁾ Available with electronics interface codes L and O. For electronic interface codes K, M, N, and P select API software option on 2700 transmitter.

Ordering Information *continued*

Model DH, high-pressure sensors, model number matrix

Code	Sensor model
DH025	1/4-inch sensor, high pressure
DH038	3/8-inch sensor, high pressure
DH100	1-inch sensor, high pressure
DH150	1 1/2-inch sensor, high pressure
DH300	3-inch sensor, high pressure
Code	Wetted material
S	316L stainless steel
Code	Process connections
###	See fittings tables on pages 16-20
Code	Case options
S	Standard pressure containment
P	Purge fittings — (2) 1/2" NPT female, not available with DH100, DH150, or DH300
D	Metal rupture disk — not available with DH100, DH150, or DH300
Code	Approvals
M	Micro Motion standard — no approvals
U	UL intrinsically safe — U.S.A. approvals agency
C	CSA — Canadian approvals agency
B	CENELEC — European approvals agency
S	SAA — Australian approvals agency
Example* DH038 S 119 S U	

Ordering Information *continued*

Model DT, high-temperature sensors, model number matrix

Code	Sensor model
DT065	DT65 1/2-inch sensor, standard pressure, high temperature
DT100	DT100 1-inch sensor, standard pressure, high temperature
DT150	DT150 1 1/2-inch sensor, standard pressure, high temperature
Code	Wetted material
H	Hastelloy® C-22 nickel alloy
Code	Process connections
###	See fittings tables on page 25
Code	Case options
G	Standard high-temperature case
Code	Approvals
M	Micro Motion standard — no approvals
U	UL intrinsically safe — U.S.A. approvals agency
C	CSA — Canadian approvals agency
B	CENELEC — European approvals agency
Example DT100 H 129 G U	

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Micro Motion

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PS-00388 (2/02)


EMERSON
Process Management