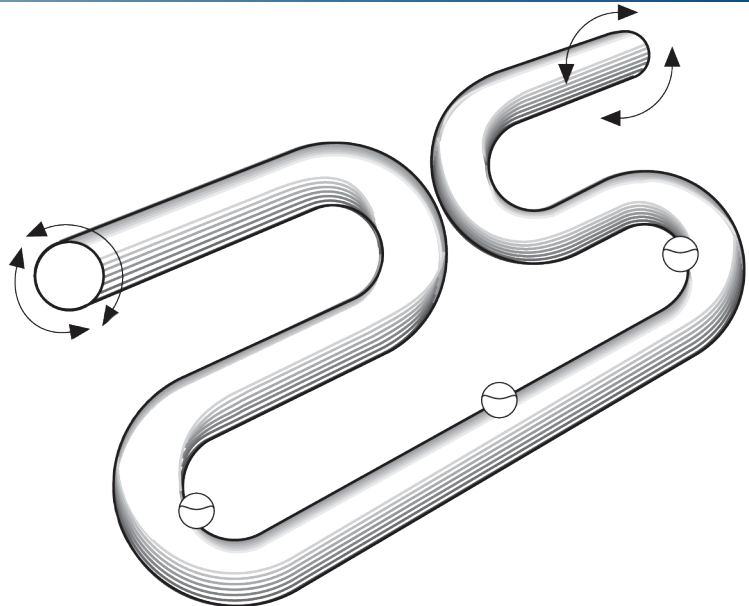




**m200**

# Coriolis Mass Flowmeters

**Flow rate 14.5 to 1450 kg/min  
(32 to 3200 lb/min)**



**ISO 9001 Certified Manufacturing Facility**

## DESCRIPTION

The **m**<sup>®</sup> m200 provides accurate, continuous, direct measurement of mass, density, temperature and percent solids over the flow range 14.5 to 1450 kg/min (32 to 3200 lb/min).

## DESIGN FEATURES

### ACCURACY

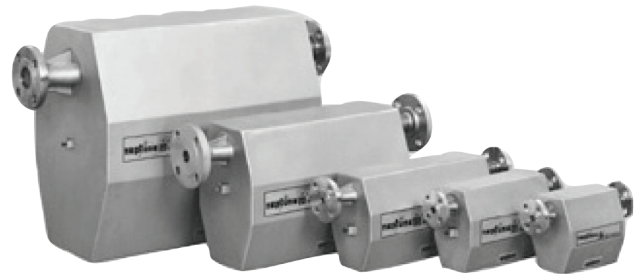
Patented dual omega-shaped tubes provide outstanding sensitivity to Coriolis forces. **m**<sup>®</sup> Mass flow accuracy is  $\pm 0.10\%$  and the mass flow rate repeatability is  $\pm 0.10\%$ . Its density accuracy is  $\pm 0.001$  g/cc over its operating range.

### LOW PRESSURE DROP AND 100:1 TURNDOWN

The **m**<sup>®</sup> transducer is more sensitive to Coriolis forces than conventional mass flowmeters, providing a greater mechanical gain. Fluid velocity requirements are much lower to produce a given signal. This results in a lower pressure drop and unequaled 100:1 turndown. Therefore, accuracy never has to be compromised to obtain an acceptable pressure drop.

### RELIABILITY

The smooth-bore, non-obtrusive flow path is free from moving parts, seals and bellows. The omega shapes produce torsional loading instead of bending loading for improved reliability.



- **Direct mass, density and temperature measurement**
- **Weights & Measures approved for Custody Transfer applications**
- **Patented omega-shaped flow tubes provide unequaled sensitivity to Coriolis force**
- **Wide 100:1 turndown**
- **Lowest pressure drop**
- **Smooth-bore, non-obtrusive flow path free from moving parts**
- **316L stainless steel**

## MATERIALS OF CONSTRUCTION

Whetted parts: 316L stainless steel

Sensor housing: 304L stainless steel

## ELECTRONICS

### DATAMATE 2200™ Mass Flow Computer:

(Complete information is available in Technical Specification No. TS-612.)

### NexGen® SFT100 Mass Flow Transmitter:

(Complete information is available in Technical Specification No. TS-620.)

### NexGen® SFT200 Mass Flow Transmitter:

(Complete information is available in Technical Specification No. TS-621.)

## HAZARDOUS AREA CLASSIFICATION TABLE

Agency	Components	Method	Class	Div. Zone	Group	Temp. Class	Ambient Temp.
CSA	Transducer	Intrinsic Safety	I, II, III	1,2	C,D,E,F,G	T5	Note 1
	Datamate	Non-incendive	I	2	A,B,C,D	T3C	Note 5
	Nexgen	Explosion Proof	I, II, III	1	C,D,E,F,G	T6	Note 2
		Non-Incendive	I	2	A,B,C,D	T4	Note 2
LCIE	Transducer	Ex id		0,1,2	IIB	T5, T4, T2	Note 3
	Nexgen	Ex id		1,2	IIB	T6	Note 4

Note 1: -20°C to 40°C (-4°F to 104°F)

Note 2: -20°C to 65°C (-4°F to 149°F)

Note 3: T5 where ambient temperature is: -20°C 40°C (-4°F to 104°F)

T4 where ambient temperature is: +40°C to +60°C (104°F to 140°F)

T2 where ambient temperature is: +60°C to +200°C (140°F to 392°F)

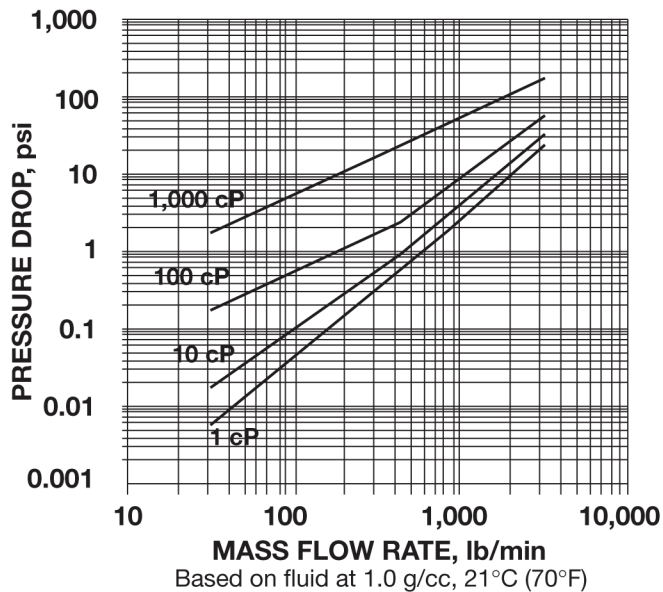
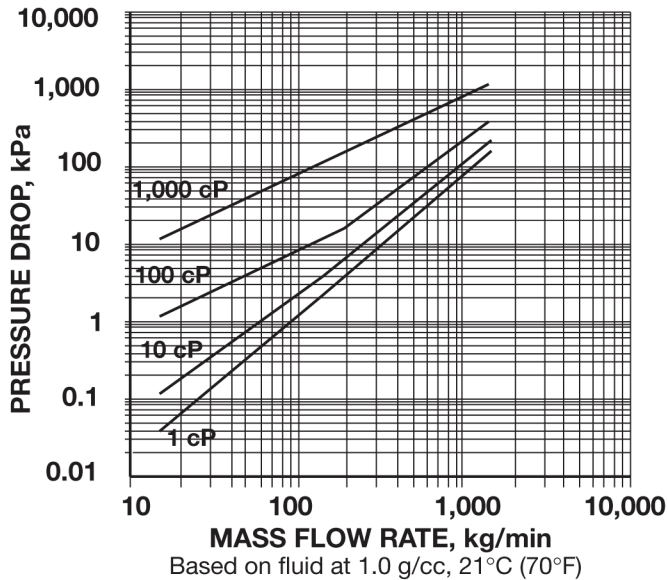
Note 4: -20°C to 65°C (-4°F to 149°F)

Note 5: +65°C ambient

## m200 OPERATING SPECIFICATIONS

METERING ELEMENT	
Connections: Connection type (Flange)	ANSI: 2", 3", 4"; 150#, 300#, Raised Face DIN: PN40, DN50, DN80, DN100 Industrial Tri-Clamp®: 4" 2" 150lb Flat Faced <sup>1</sup>
Meter: Tube material Tube shape Nominal tube bore Housing Hazardous area classification  Mass accuracy 1 Mass Repeatability Mass zero stability Turndown ratio Density range Density accuracy Density repeatability Temperature measurement Temperature accuracy Signal output	316L SST Omega 51mm (2.0") 304L SST Transducer is intrinsically safe when connected to an approved mass flow computer (See table above for approval rating.) ±0.10% of rate ± zero stability ±0.10% of rate ±0.0557 kg/min (0.1228 lb/min) 100:1 0.4 to 2.0 g/cc ±0.001 g/cc ±0.0005 g/cc 100 ohm platinum resistance sensor 0.56°C (±1°F) 8-core shielded twisted pair
Fluid: Flow rate Max. Temperature Min. Temperature Max operating pressure	14.5 to 1450 kg/min (32 to 3200 lb/min) 204°C (400°F) -45°C (-50°F) 68 bar (1000 psi); limited by flange rating
ASSOCIATED INSTRUMENT	
Max Length of signal cable Electrical connections Manufacturer Meter Model number Instrument model number	300m (1000ft.) 8 core Belden 89892 shielded twisted pair Screw terminal Red Seal Measurement Inc. M200 XXXXXX Refer to electronics Technical Specification Form Datamate 2200: TS-612 NexGen SFT100: TS-620 NexGen SFT200: TS-621

## PRESSURE DROP VERSUS FLOW RATE



## DETERMINING PRESSURE DROP

- Flow rate vs. pressure drop varies with viscosity. To approximate m200 pressure drop for fluids with viscosity approximating that of water, locate the point on the 1-cP curve corresponding with your desired flow rate.
- From that point, locate the nearest horizontal line and follow it to the vertical scale on the left, which indicates pressure drop for the flow rate you selected.
- Divide the pressure drop indicated on the graph by the specific gravity (S) of the process fluid:

$$P_{\text{actual}} = P_{\text{plotted}} / \text{Sp. gr.}$$

## CALCULATING ACTUAL ACCURACY

Use the following formula to calculate accuracy for your selected flow rate:

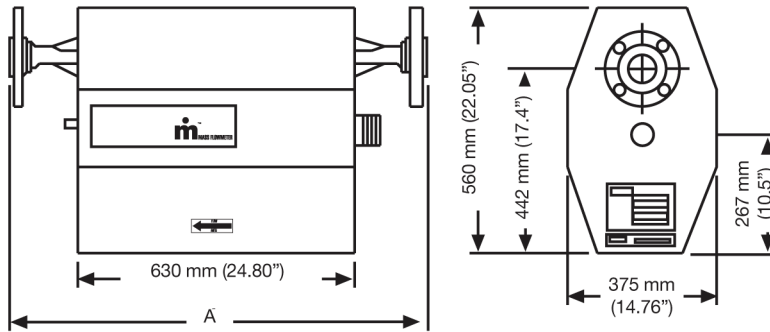
$$\% \text{accuracy, } B1_{\text{actual}} = \{[(0.0010m) + S_0] / m\} \times 100\%$$

where:

- m = mass flow rate, kg/min or lb/min  
 S<sub>0</sub> = mass zero stability, kg/min or lb/min for the m200 flowmeter

# DIMENSIONAL DATA, mm (in.)

m200 Transducer



DIMENSIONS	
CONNECTION	A 316LSS Wetted Parts
2" 150# ANSI RF	866 (34.1)
2" 300# ANSI RF	881 (34.7)
3" 150# ANSI RF	876 (34.5)
3" 300# ANSI RF	901 (35.48)
4" 150# ANSI RF	881 (34.7)
4" 300# ANSI RF	912 (35.9)
DN50 PN40	861 (33.90)
DN80 PN40	861 (33.90)
DN100 PN40	860 (33.90)

## WEIGHTS OF COMPONENTS

- Transducer: approx. 58.9 kg (130 lbs)
- Transducer: approx. 5.2 kg (11.5 lbs)
- Datamate 2200: approx. 5.2 kg (11.5 lbs)
- NexGen SFT100:
  - Blind approx. 6.4 kg (14.1 lbs)
  - w/Display/keypad approx. 7.1 kg (15.6 lbs)
- NexGen SFT200: approx. 1.8 kg (4 lbs)

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