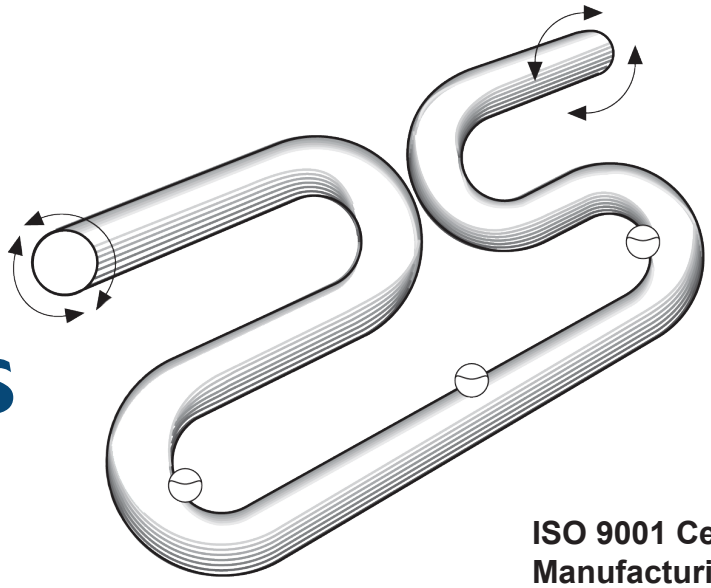
m100

Coriolis Mass Flowmeters

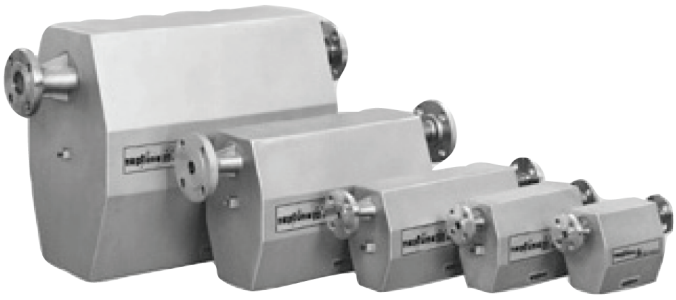


Flow rate 5.0 to 500 kg/min
(11 to 1100 lb/min)

ISO 9001 Certified
Manufacturing Facility

DESCRIPTION

The m® m100 provides accurate, continuous, direct measurement of mass, density, temperature and percent solids over the flow range 5-500 kg/min (11 to 1100 lbs/min).



DESIGN FEATURES
ACCURACY

Patented dual omega-shaped tubes provide outstanding sensitivity to Coriolis forces. m® mass flow accuracy is ±0.10% and the mass flow rate repeatability is ±0.10%. Its density accuracy is ±0.001 g/cc over its operating range.

LOW PRESSURE DROP AND 100:1 TURNDOWN

The m® 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 flowtubes 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
- 3A-Authorized version available

MATERIALS OF CONSTRUCTION

Wetted parts: 316L stainless steel
Sensor housing: 304L stainless steel

3A-Authorized version: Connection facing and flowtube surface finish is equivalent to 150 grit (Ra 32 or 0.80 µm) or better

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

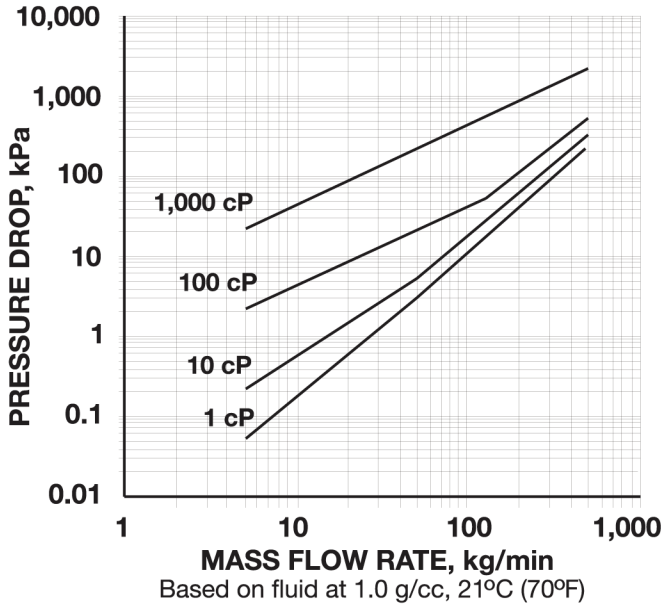
Agency	Components	Method	Class	Div/ zone	Group	Temp. Class	Ambient Temp.
CSA	Transducer	Intrinsic Safety	I, II, III	1, 2	C, D, E, F, G	T5	Note 1
	Datamate 2200	Non-incendive	I	2	A, B, C, D	T3C	Note 5
	NexGen	Explosion Proof	I, II, III	1	C, D, E, F, G	T6	Note 2
		Non-incendive	I	2	A, B, C, D	T4	Note 2
LCIE	Transducer	EX ia		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

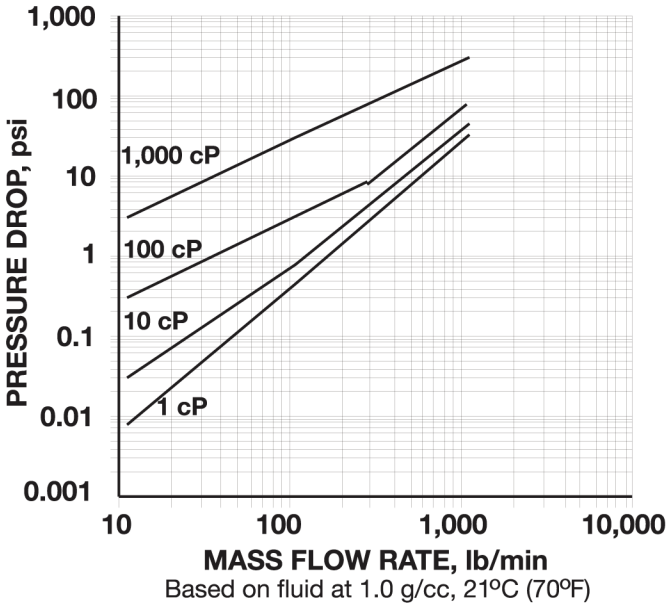
m100 OPERATING SPECIFICATIONS

METERING ELEMENT	
Connections: Connection type (Flanges)	 ANSI: 1”, 1 1/2”, 2”; 150#, 300#, Raised Faced DIN: PN40, DN50, DN80, DN100 3A-Authorized: 2 1/2” Tri-Clamp® Industrial Tri-Clamp®: 2” 2” 150lb Flat Faced[2]
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 25.4 mm (1.0”) 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 ±0.0246 kg/min (0.0543 lb/min) 100:1 0.4 to 3.0 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	 5.0 to 500 kg/min (11 to 1100 lb/min) 204°C (400°F) -45°C (-50°F) 83 bar (1200 psi); limited by flange/connection rating
ASSOCIATED INSTRUMENT	
Max. Length of signal cable Electrical connections Manufacturer Meter model number Instrument model number	300 m (1000 ft.) 8 core Belden 89892 shielded twisted pair Screw terminal RSM, Inc. m100-XXXXX Refer to electronics Technical Specification Form Datamate 2200: TS-612 NexGen SFT100: TS-620 NexGen SFT200: TS-621
[1]All calibration equipment traceable to N.I.S.T. [2]Mating Flange, for MT truck accessories	

PRESSURE DROP VERSUS FLOW RATE



Based on fluid at 1.0 g/cc, 21°C (70°F)



Based on fluid at 1.0 g/cc, 21°C (70°F)

DETERMINING PRESSURE DROP

1. Flow rate vs. pressure drop varies with viscosity. To approximate m100 pressure drop for fluids with viscosity approximating that of water, locate the point on the 1 -cP curve corresponding with your desired flow rate.
2. 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.
3. Divide the pressure drop indicated on the graph by the specific gravity (S) of the process fluid:

$$^{\Delta P}\text{actual} = {}^{\Delta P}\text{plotted} / \text{Sp. gr.}$$

CALCULATING ACTUAL ACCURACY

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

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

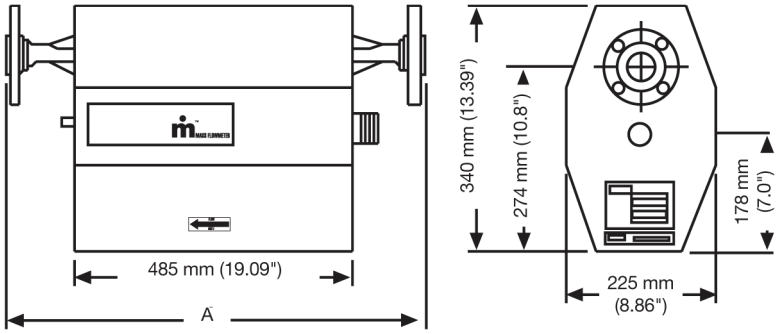
where:

m = mass flow rate, kg/min or lb/min

S_0 = mass zero stability, kg/min or lb/min for the m100 flowmeter

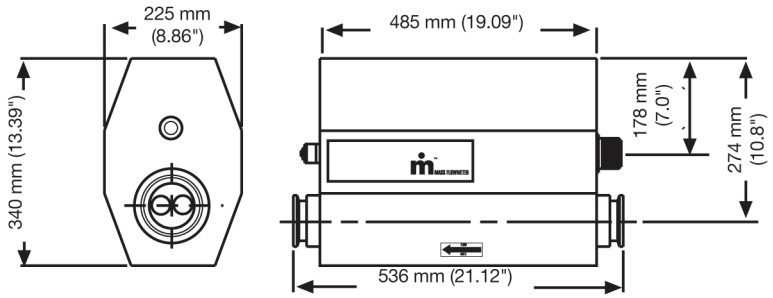
DIMENSIONAL DATA, mm (in.)

m100 Transducer



	Dimensions
Connection	A 316L SS Wetted Parts
1' 150# ANSI RF	688 (27.1)
1' 300# ANSI RF	706 (27.8)
$1^{1/2}$' 150# ANSI RF	696 (27.4)
$1^{1/2}$' 300# ANSI RF	714 (28.1)
2' 150# ANSI RF	704 (27.7)
2' 300# ANSI RF	719 (28.3)
DN40 PN40	689 (27.14)

m100 3A-Authorized Transducer



WEIGHTS OF COMPONENTS

Transducer:	approx. 26.4 kg (58 lbs)
Datamate 2200:	approx. 5.2 kg (11.5 lbs)
NexGen SFT 100:	
Blind	approx. 6.4 kg (14.1 lbs)
w/Display/keypad	approx. 7.1 kg (15.6 lbs)
NexGen SFT 200:	approx. 1.8 kg (4 lbs)

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RED SEAL MEASUREMENT