Neptune m100 ST
Coriolis Mass Flowmeter

Refined Fuels neptune Industrial Liquids

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

Direct Mass, Density and Temperature Measurement • No Moving Parts
Patented Omega Flowtubes • Smooth-bore, Non-obtrusive Flow Path
Wide 100:1 Turndown • Lowest Pressure Drop

The Neptune m100 ST mass flowmeter provides continuous direct measurement of mass, density, temperature, and percent solids over the flow range of 5.0 to 500 kg/min (11 to 1100 lbs/min).

Patented dual omega-shaped tubes provide outstanding sensitivity to Coriolis forces. Mass flow accuracy is +/- 0.10% with the NexGen SFT200 mass flow transmitters. The mass flow repeatability is +/- 0.10% and the density accuracy is +/- 0.001 g/cc over its operating range.

The 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. Accuracy never has to be compromised to obtain an acceptable pressure drop.

The smooth-bore, non-obtrusive flow path is free from moving parts, seals, and bellows. The omega shape reduces stress on the tubes for improved durability.

m100 ST Operating Specifications

METERING ELEMENT	Meter model number: M100 XXXXXXXXXXX (refer to Ordering Information, page 3)
Connections: Connection type	ANSI: 1", 1-1/2", 2"; 150#, 300#, 600# RF Industrial Tri-Clamp®: 2"
Meter:	
Tube material	316L SST
Tube shape	Omega
Nominal tube bore	25.4 mm (1.0")
Housing	304L SST
Mass accuracy	±0.10% of rate ± zero stability (with NexGen SFT200)
Mass repeatability	±0.10% of rate
Mass zero stability	±0.246 kg/min (0.0543 lb/min) (with NexGen SFT200)
Turndown ratio	100:1
Density range	0.4 to 3.0 g/cc (with NexGen SFT200)
Density accuracy	±0.001 g/cc
Density repeatability	±0.0005 g/cc
Temperature measurement	100 ohm platinum resistance sensor
Temperature accuracy	0.56°C (±1°F)
Fluid:	
Flow rate	5.0 to 500 kg/min (11 to 1100 lb/min)
Max. temperature	204°C (400°F)
Min. temperature	-45°C (-50°F)
Max. operating pressure	83 bar (1200 psi); limited by flange rating
ASSOCIATED INSTRUMENT	
Power/Data cables	Power: 2 conducter shielded twisted pair Pulse Output: 2 conducter shielded twisted pair 485 Output : 2 Conducter
Max. length of signal cables	300 m (1000 ft.)
Electrical connections	Screw terminal
Manufacturer	Itron, Inc.
Instrument model number	NexGen SFT200

Electronics

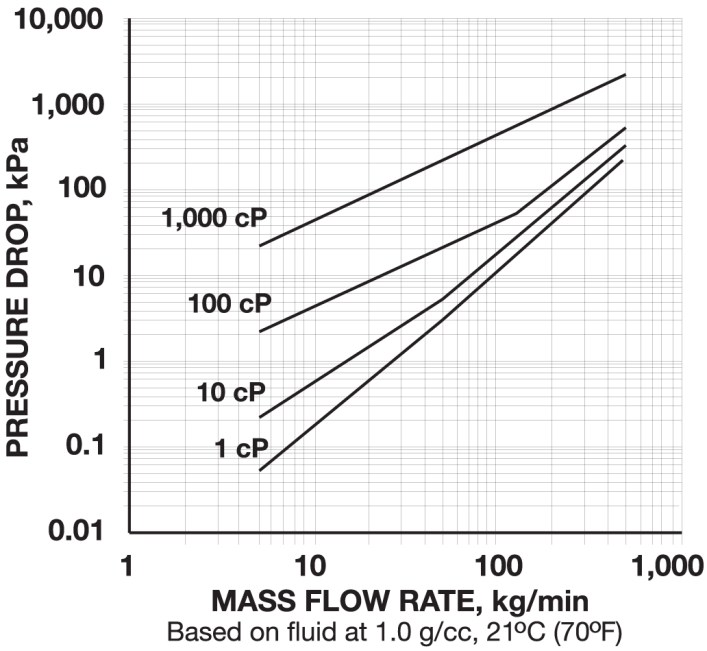
NexGen® SFT200 Mass Flow Transmitter (Complete information is available in TS-621.)

Ordering Information

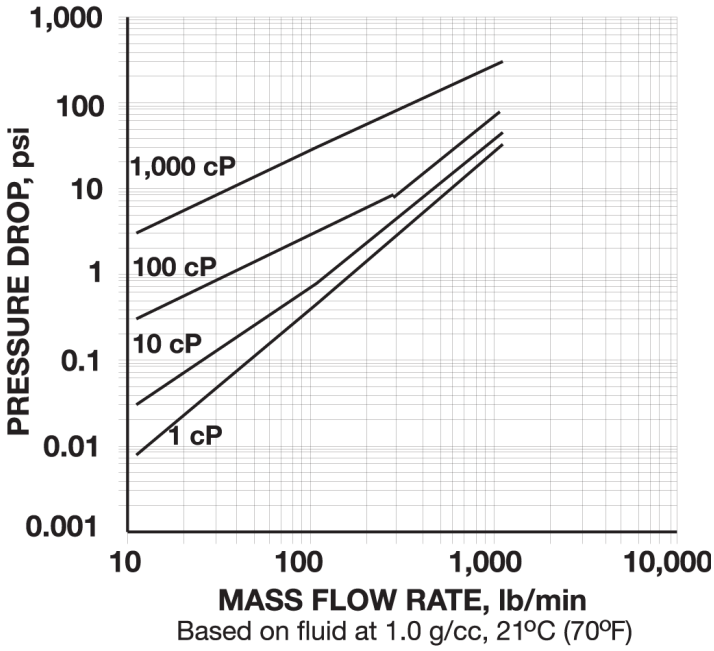
MODEL NUMBER		DESCRIPTION
M100 ST	**XXXXXXXXXXX**	
	7	**Type** Transducer 1" SST[1]
	832 833 842 852 853 856	**Flange** 1" 150lb. ANSI RF SST 1" 300lb. ANSI RF SST 1-1/2" 150lb. ANSI RF SST 2" 150lb. ANSI RF SST 2" 300lb. ANSI RF SST 2" SST Industrial Tri Clamp[2]
	0	**Approvals** General Purpose
	0	**W & M** None
	000	**Cable** No Cable
	R1	**Electronics** For Use With NexGen SFT200

[1]Note: Wetted materials and connection materials must be the same.
[2]Note: The 2" industrial connection is available in 316L SS wetted material only.

Pressure Drop Versus Flow Rate



Based on fluid at 1.0 g/cc, 21ºC (70ºF)



Based on fluid at 1.0 g/cc, 21ºC (70ºF)

Determining Pressure Drop

1. Flow rate vs. pressure drop varies with viscosity. To approximate m100ST 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:

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

Calculating Actual Accuracy

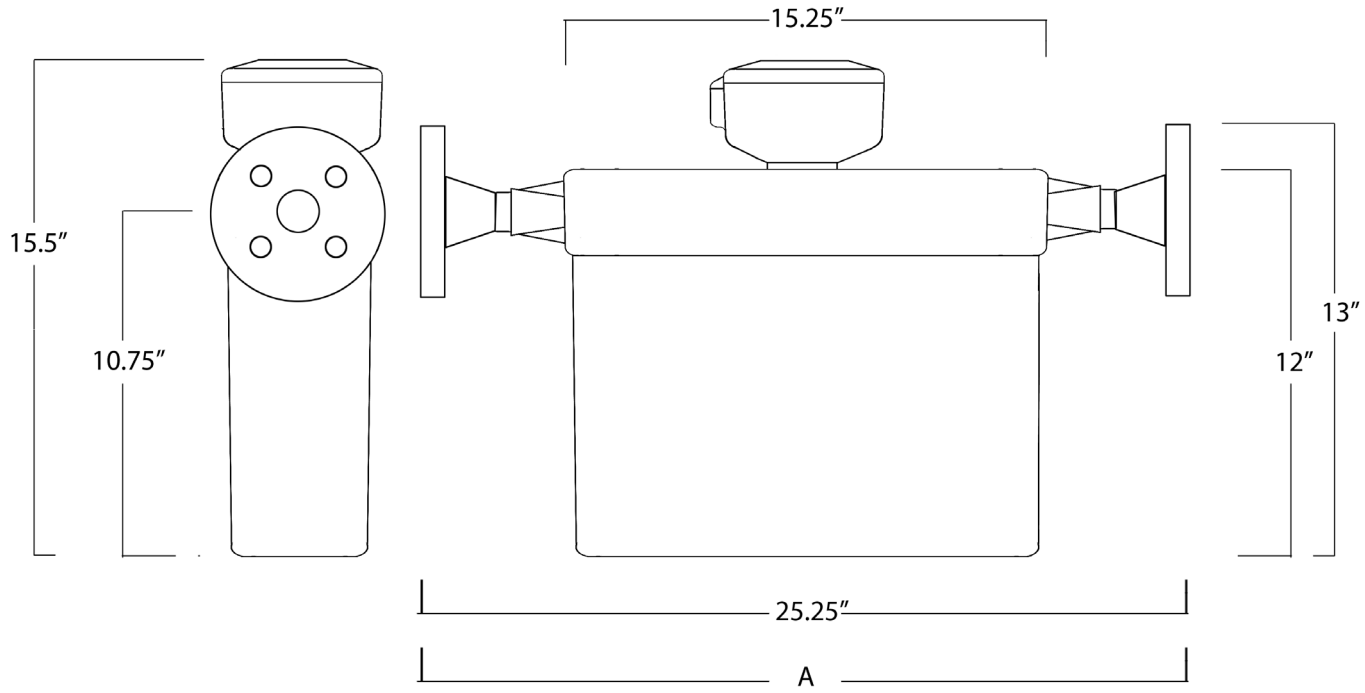
Use the following formula to calculate ṁ® accuracy for your selected flow rate:

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

where:
m = mass flow rate, kg/min or lb/min
S_0 = mass zero stability, kg/min or lb/min for the m100 flowmeter

Note: Itron offers a free sizing program CD to assist you in your selection.

Dimensions



Shown with 1” 300# weld-neck flanges and NexGen SFT200 Mass Flow Transmitter

Length With Other Available Flanges	
Flange	**Dimension A**
1” 150# ANSI RF	533mm (21 in)
1” 300# ANSI RF	551mm (21.7in)
1-1/2” 150# ANSI RF	542mm (21.32in)
1-1/2” 300# ANSI RF	559mm (22.02in)
2” 150# ANSI RF	549mm (21.62in)
2” 300# ANSI RF	564mm (22.22in)

Weight (as shown)

m100 ST: 23.3 lbs
NexGen SFT200: 3.4 lbs
2 - 1” 300# weld-neck flanges: 7.50 lbs
Total weight: 34.2 lbs

Itron
1310 Emerald Road
Greenwood, SC 29646
USA
Phone: 1.800.833.3357
Fax: 1.864.223.0341

07/11