Neptune m100ST

Coriolis Mass Flowmeter

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 m100ST delivers outstanding mass flowmeter performance and accuracy in a compact package, providing 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 Tube shape Nominal tube bore Housing Mass accuracy Mass repeatability Mass zero stability Turndown ratio Density range Density accuracy Density repeatability Temperature measurement Temperature accuracy	 316L SST Omega 25.4 mm (1.0”) 304L SST ±0.10% of rate ± zero stability (with NexGen SFT200) ±0.10% of rate ±0.0246 kg/min (0.0543 lb/min) (with NexGen SFT200) 100:1 0.4 to 3.0 g/cc (with NexGen SFT200) ±0.001 g/cc ±0.0005 g/cc 100 ohm platinum resistance sensor 0.56°C (±1°F)
Fluid: Flow rate Max. temperature Min. temperature Max. operating pressure	 5.0 to 500 kg/min (11 to 1100 lb/min) with remotely mounted electronics 100°C (212°F) with integrally mounted electronics 60°C (140°F) -40°C (-40°F) 83 bar (1200 psi); limited by flange rating
ASSOCIATED INSTRUMENT	
Power/Data cables Max. length of signal cables Electrical connections Manufacturer Instrument model number	Power: 2 conductor shielded twisted pair Pulse Output: 2 conductor shielded twisted pair 485 Output : 2 conductor 300 m (1000 ft.) Screw terminal Red Seal Measurement NexGen SFT200

*Standards ASTM A213-316L (tubing); ASTM A351-CF3M (castings)

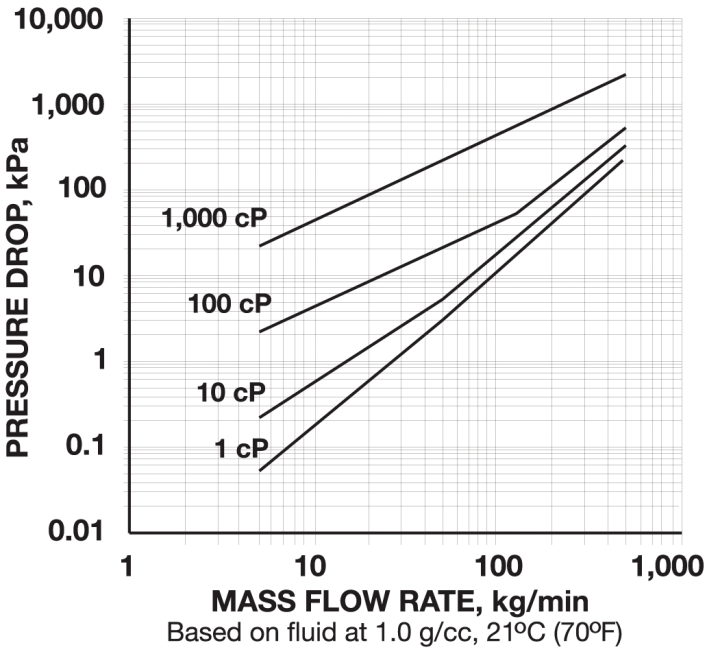
Electronics

NexGen® SFT200 Mass Flow Transmitter (See TS-621)

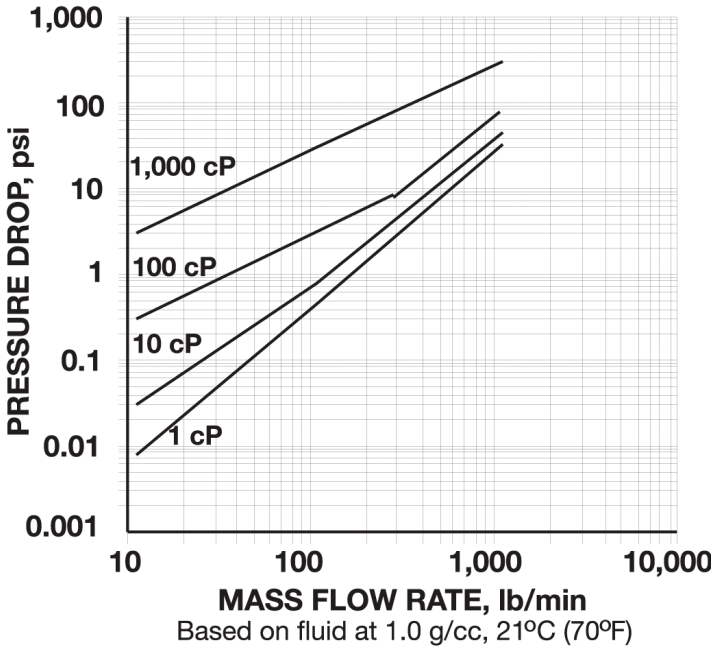
NexGen® SFT100 Mass Flow Transmitter (See TS-620)

DataMate 2200 Mass Flow Transmitter (See TS-612)

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

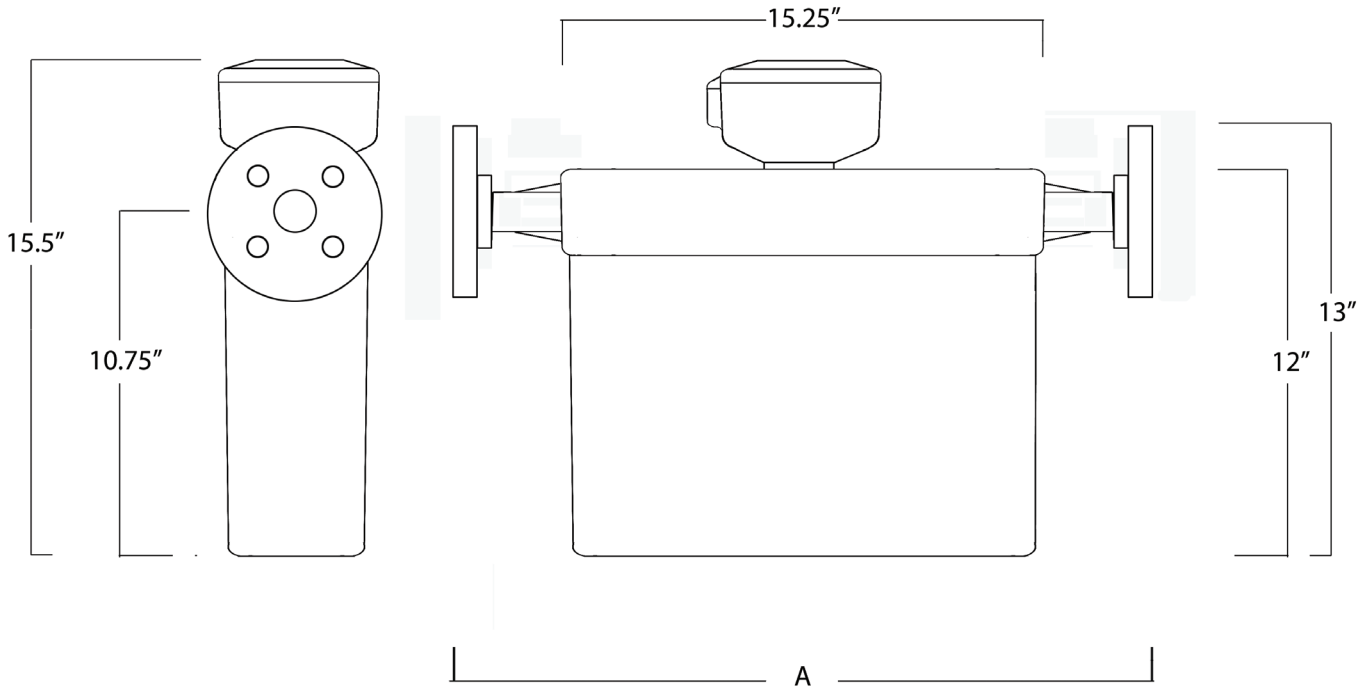
Use the following formula to calculate m® accuracy for your selected flow rate:

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

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: Red Seal Measurement offers a free sizing program to assist you in your selection.

Dimensions



Shown with 1” 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
Flanges: 7.50 lbs
Total weight: 34.2 lbs

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RED SEAL MEASUREMENT