

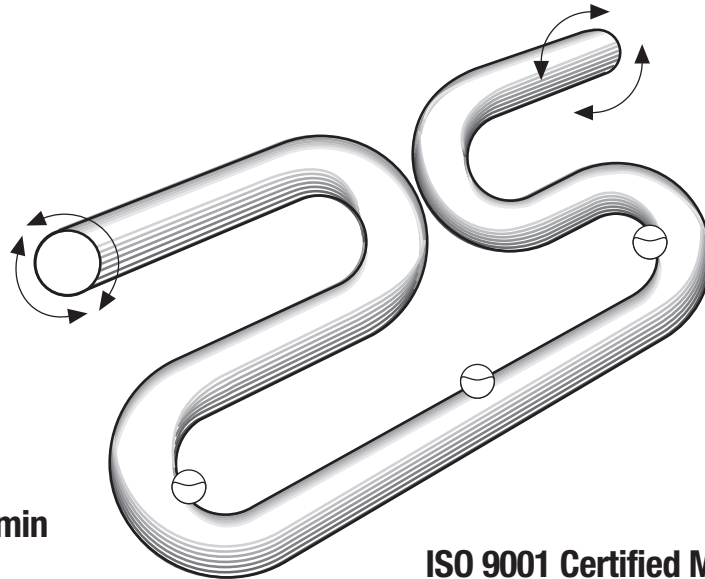
TS-607
Rev. H
Coriolis Mass Flowmeters
m300-XXXXXX



m300

Coriolis Mass Flowmeters

Flow rate 41 to 4,082 kg/min
(90 to 9,000 lb/min)



ISO 9001 Certified Manufacturing Facility

SPECIFICATIONS

DESCRIPTION

The **m**[®] m300 provides accurate, continuous, direct measurement of mass, density, temperature and percent solids over the flow range 41 to 4,082 kg/min (90 to 9,000 lb/min).

DESIGN FEATURES

ACCURACY

Patented dual omega-shaped tubes provide outstanding sensitivity to Coriolis forces. **m**[®] mass flow accuracy is $\pm 0.10\%$ and the mass flow rate repeatability is $\pm 0.10\%$. 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 achieve an acceptable pressure drop.

RELIABILITY

The smooth-bore, nonobtrusive 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 and 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
- 4,082 kg/min (9,000 lb/min) capacity
- Ideal for liquid sugar, viscous fluids, caustic liquors, lime slurries, desulfurization slurries, kiln feeds, lube oil blending, bulk loading/unloading

MATERIALS OF CONSTRUCTION

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

ELECTRONICS

DATAMATE 2200™ Mass Flow Computer:

(Complete information is available in Technical Specification Form 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 2 | |
| | 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 2 | |

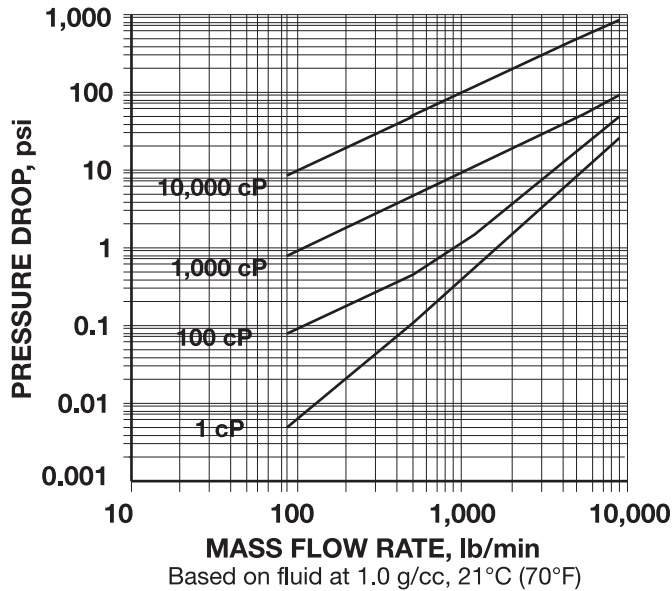
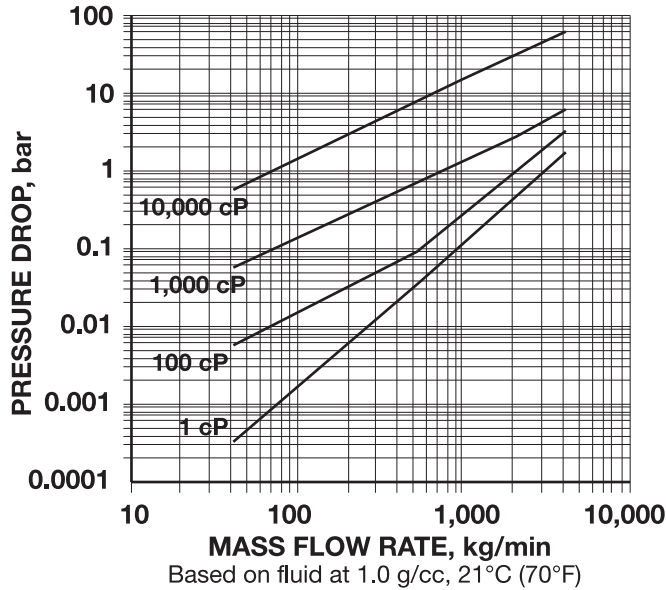
Note 1: -20°C to 40°C (-4 to 104°F)
 Note 2: -20°C to 65°C (-4 to 149°F)
 Note 3: T5 where ambient temperature is: -20°C to +40°C (-40F to 104°F)
 T4 where ambient temperature is: +40°C to +60°C (104°F to 140°F)
 T2 where ambient temperature is: +60°C to +200°C (140°F to 392°F)

m300 OPERATING SPECIFICATIONS

| METERING ELEMENT | |
|--|--|
| Connections: Connection type | ANSI: 3", 4", 6"; 150#, 300#, 600#, 900# RF DIN: DN80, DN100, DN150; PN40, PN100 |
| Meter: Tube material Tube shape Housing Hazardous area classification ¹ Mass accuracy ² Mass Repeatability Mass zero stability Density Range Density accuracy Density repeatability Temperature measurement Temperature accuracy Signal output | 316L SST Omega 304L SST Transducer is intrinsically safe when connected to an approved mass flow computer (See table above for approval ratings) ±0.10% of rate ± zero stability ±0.10% of rate 0.36 kg/m (0.8 lb/m) 0.4–2.0 g/cc ±0.001 g/cc ±0.0002 g/cc 100 ohm platinum resistance sensor 0.56°C (±1°F) 8-core shielded twisted pair |
| Fluid: Max. flow rate Max. temperature Min. temperature Max. operating pressure Max. pressure drop | 4,082 kg/min (9,000 lb/min) 204°C (400°F) -45°C (-50°F) 103 bar (1500 psi); limited by flange rating Less than 2.06 bar (30 psi) for water at 20°C (68°F) at 4,082 kg/min (9,000 lb/min) |
| ASSOCIATED INSTRUMENT | |
| Max. length of signal cable Manufacturer Meter model number Instrument model number | 300 m (1000 ft.) 8 core Belden 89892 shielded twisted pair Itron, Inc. m300-XXXXX (refer to Ordering Information, page 3) Refer to electronics Technical Specification Form Datamate 2200: TS-612 NexGen SFT100: TS-620 NexGen SFT200: TS-621 |
| ¹ Ambient Temperature Limits for Hazardous Locations: see chart above. | |
| ² All calibration equipment traceable to N.I.S.T. | |

Itron, Inc. pursues a policy of continuous development and product improvement. The specifications in this document may therefore be changed without notice.

PRESSURE DROP VERSUS FLOW RATE



CALCULATING ACTUAL ACCURACY

Use the following formula to calculate m³⁰⁰ accuracy for your selected flow rate:

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

where:

- m = mass flow rate, kg/min or lb/min
- S₀ = mass zero stability, kg/min or lb/min for the m300 flowmeter

DETERMINING PRESSURE DROP

- Flow rate vs. pressure drop varies with viscosity. To approximate m300 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:

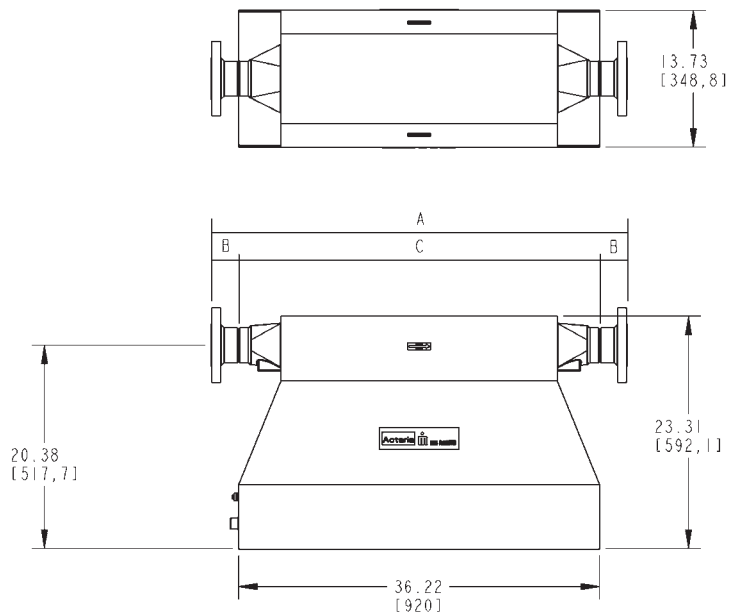
$$\Delta P_{\text{actual}} = \Delta P_{\text{plotted}} / \text{Sp. gr.}$$

m300 MASS FLOWMETER ORDERING INFORMATION

| MODEL NUMBER | | DESCRIPTION |
|--------------|---|---|
| M300 | X X X X X X X | |
| | 8 | TYPE Transducer 3" SST |
| | 862 863 872 873 882 887 8GE 8HE XXX | FLANGE 3" 150 LB ANSI RF 3" 300 LB ANSI RF 4" 150 LB ANSI RF 4" 300 LB ANSI RF 6" 150 LB ANSI RF 6" 900 LB ANSI RF DN80 PN40 SST DN100 PN40 SST Special - Contact Factory |
| | 0 2 | APPROVALS General Purpose CSA |
| | 0 W | W&M None Custody Transfer (Weights & Measures) |
| | 000 101 102 103 105 110 | CABLE No Cable ASM CBL Kit 10 Ft. ³ ASM CBL Kit 20 Ft. ³ ASM CBL Kit 30 Ft. ³ ASM CBL Kit 50 Ft. ³ ASM CBL Kit 100 Ft. ³ |
| | 0 02 03 | ELECTRONICS No Electronics For Use With Nexgen For Use With Datamate 2200 |

³ For a complete list of available cable lengths, consult your local Itron distributor.

DIMENSIONAL DATA, mm (in.)



Meters with "ANSI" Flange Connections

| A (in) | B (in) | C (in) | Flange Size |
|--------|--------|--------|-------------|
| 41.75 | 2.75 | 36.25 | 3" - 150# |
| 42.50 | 3.12 | 36.25 | 3" - 300# |
| 42.75 | 3.25 | 36.25 | 3" - 600# |
| 44.25 | 4.00 | 36.25 | 3" - 900# |
| 42.25 | 3.00 | 36.25 | 4" - 150# |
| 43.00 | 3.38 | 36.25 | 4" - 300# |
| 44.25 | 4.00 | 36.25 | 4" - 600# |
| 45.25 | 4.50 | 36.25 | 4" - 900# |
| 43.25 | 3.50 | 36.25 | 6" - 150# |
| 44.00 | 3.88 | 36.25 | 6" - 300# |
| 45.50 | 4.62 | 36.25 | 6" - 600# |
| 47.25 | 5.50 | 36.25 | 6" - 900# |

Meters with "DIN" Flange Connections

| A (mm) | B (mm) | C (mm) | FLANGE SIZE |
|--------|--------|--------|-------------|
| 1037 | 58 | 921 | PN40-DN80 |
| 1051 | 65 | 921 | PN40-DN100 |
| 1071 | 75 | 921 | PN40-DN150 |
| 1077 | 78 | 921 | PN100-DN80 |
| 1101 | 90 | 921 | PN100-DN100 |
| 1151 | 115 | 921 | PN100-DN150 |

WEIGHTS OF COMPONENTS

| | |
|------------------|---|
| Flowmeter: | approx. shipping wt. 95 kg (210 lb), depending on flanges |
| Datamate 2200: | approx. 5.2 kg (11.5 lbs.) |
| NexGen SFT100: | |
| Blind | approx. 6.4 kg (14.1 lbs) |
| w/Display | approx. 7.1 kg (15.6 lbs) |
| w/Display/keypad | approx. 7.1 kg (15.6 lbs) |
| NexGen SFT200: | approx. 1.8 kg (4 lbs) |