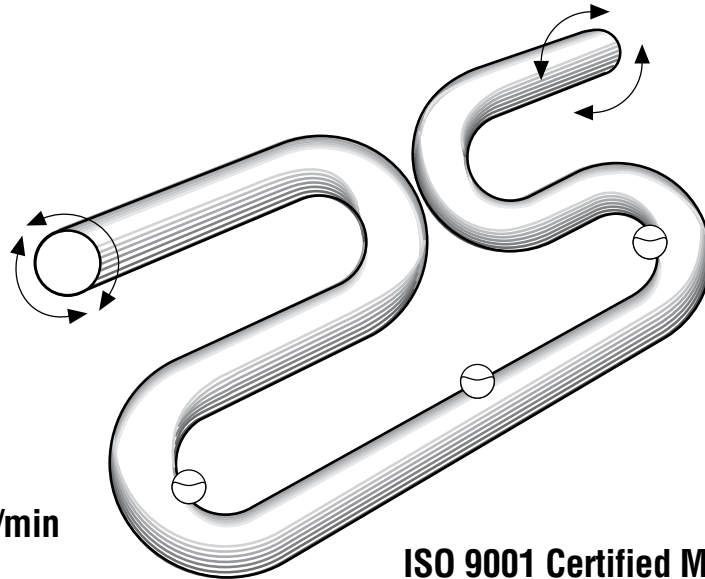


TS-607
Rev. E
Coriolis Mass Flowmeters
m300-XXXXXX



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 $\pm 0.10\%$ with the NexGen transmitter and $\pm 0.10\%$ with the Datamate 2200. The m300 **m**[®] 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.)

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	C,D	T4A	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
	Datamate	N/A	N/A	N/A	Safe Area		
	Nexgen	Ex id		1, 2	IIB	T6	Note 4

Note 1: -20°C to 40°C (-4 to 104°F)
 Note 2: -20°C to 65°C (-4 to 149°F)

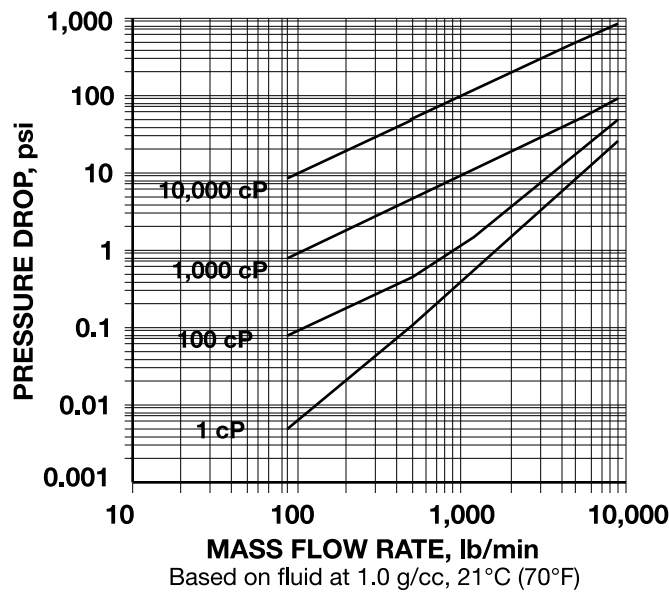
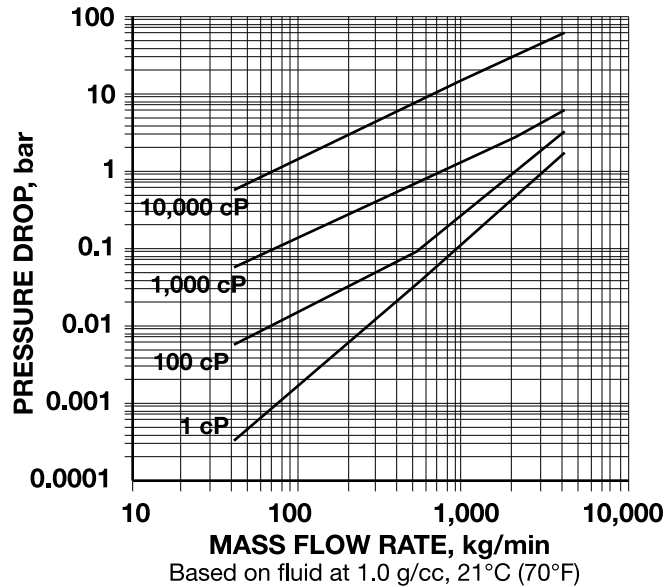
Note 3: T5 where ambient temperature is: -20°C to +40°C (-40F to 104°F)
 T4 where ambient temperature is: +40°C to +60°C (104°F to 140°F)
 T2 where ambient temperature is: +60°C to +200°C (140°F to 392°F)

Note 4: -20°C to 65°C (-4F to 149°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) Datamate 2200: ±0.10% of rate ± zero stability NexGen SFT100: ±0.10% of rate ± zero stability ±0.10% of rate Datamate 2200: 0.36 kg/m (0.8 lb/m) NexGen SFT100: 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	Datamate 2200: 300 m (1000 ft.) 8 core Belden 89892 shielded twisted pair NexGen SFT100: 300 m (1000 ft.) 8 core Belden 89892 shielded twisted pair Actaris Liquid Measurement, LLC. m300-XXXXX (refer to Ordering Information, page 3) Refer to electronics Technical Specification Form Datamate 2200: TS-612 NexGen SFT100: TS-620
¹ Ambient Temperature Limits for Hazardous Locations: see chart above. ² All calibration equipment traceable to N.I.S.T.	

PRESSURE DROP VERSUS FLOW RATE



CALCULATING ACTUAL ACCURACY

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

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

NexGen: % accuracy, ±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

Note that Actaris offers a free sizing program on three 3-1/2" diskettes to assist you in your selection.

DETERMINING PRESSURE DROP

1. 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.
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:

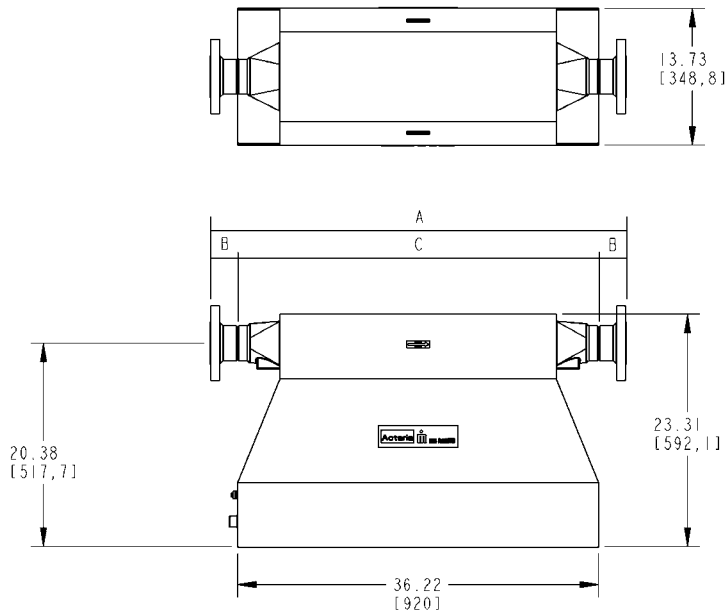
$$\Delta P_{\text{actual}} = \Delta P_{\text{plotted}} / \text{Sp. gr.}$$

m300 MASS FLOWMETER ORDERING INFORMATION

MODEL NUMBER		DESCRIPTION
M300	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 3	APPROVALS General Purpose CSA LCIE
	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 N	ELECTRONICS No Electronics For Use With NexGen

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

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:	approx. 5.2 kg (11.5 lbs.)
NexGen:	
Blind	approx. 6.4 kg (14.1 lb.)
w/Display	approx. 7.1 kg (15.6 lb.)
w/Display/keypad	approx. 7.1 kg (15.6 lb.)

U.S.A./International

1310 Emerald Road
Greenwood, SC 29648-9558
Tel.: Toll-Free (800) 833-3357
(864) 223-1212
Fax: (864) 223-0341

• m is a registered trademark of Actaris

© 2007 Actaris Liquid Measurement, LLC. 500 6/07

Specifications subject to change without prior notification.

