

P800 Series

Metal Tube Variable Area Flow Meter

The P800 Series Metal Tube Variable Area flow meter is a simple yet highly accurate compact flow meter conforming to the latest industry standards.

The meter comes standard with 316L stainless steel wetted materials making it suitable for process environments.

The industry standard 250 mm face-to-face dimension on the P800 simplifies piping design, resulting in engineering and installation space savings as well as retrofit capability for other manufacturers.



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Product Features:

- Standardized face-to-face dimensions for all sizes from 1/2" to 6", enables system design efficiencies
- Suitable for the measurement of liquids, gases and steam in a variety of demanding industrial applications
- For electronics, intrinsically safe design is available
- Local indication included as standard
- Other options include:
 - 4-20 mA output
 - HART communication
 - Alarm contacts
- Scales can be produced in any volume unit or mass flow units
- Intrinsically Safe Exi (ATEX, FM)



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Specifications

Performance

Flow Rate Scale Ranges	
Water¹	
Minimum	0.2 - 8 Gal/min (0.7 - 31 L/hr)
Maximum	220 - 440 Gal/min (833 - 1667 L/min)
Air²	
Minimum	42 - 1589 ft ³ /h (1.2 - 45 m ³ /h) (nor)
Maximum	13773 - 21189 ft ³ /h (390 - 600 m ³ /h) (nor)
Turndown	10:1
Accuracy	±1.5% F.S.
Approx. Weight	5.5 - 40 lbs. (2.5 - 18 kg)
Indicator Construction	IP 65 equivalent to NEMA 12/13
Output Signals	1 Point Reed Switch Alarm, 4-20 mA and HART
Operating Conditions	
Max. Operating Pressure	
• At ambient temperature	595 psig (41 barg)
• At 248°F (120°C)	479 psig (33 barg)
Oper. Fluid Temp. Range	
Local Indication Model	-4°F - +572°F (-20°C - +300°C)
Transmitter Model	-4°F - +391°F (-20°C - +200°C)
Oper. Ambient Temp. Range	
Local Indication Model	-58°F - +212°F (-50°C - +100°C)

¹ Liquid equivalent to water density 1.0g/cm³, viscosity 1.0cp

² Gases equivalent to Air @ 0°C 1 atm

Connection Size Table

Availability of Connection Size Against Meter Size					
Meter Size		Connection Rating	1 Size Smaller than Meter	Same Size as Meter	1 Size Larger than Meter
(inch)	(mm)				
1/2	15	10K	No	Yes	Yes
		20K	No	Yes	Yes
		150Lb	No	Yes	Yes
		300Lb	No	Yes	**
1	25	10K	No	Yes	Yes
		20K	No	Yes	Yes
		150Lb	No	Yes	Yes
		300Lb	No	Yes	**
1-1/2	40	10K	No	Yes	Yes
		20K	No	Yes	Yes
		150Lb	No	Yes	Yes
		300Lb	No	Yes	**
2	50	10K	No	Yes	Yes
		20K	No	Yes	Yes
		150Lb	No	Yes	Yes
		300Lb	No	Yes	**
3	80	10K	No	Yes	**
		20K	No	Yes	**
		150Lb	No	Yes	**
		300Lb	No	Yes	No
4	100	10K	No	Yes	**
		20K	No	Yes	**
		150Lb	No	Yes	**
		300Lb	No	Yes	No

** Consult Factory

Materials of Construction

Flange	316L Stainless Steel
Tapered Tube	316L Stainless Steel
Float Guide	316L Stainless Steel
Float	316L Stainless Steel
Housing Support	316 Stainless Steel
Stop Ring	316L Stainless Steel
Indicator	12 Aluminum Die Cast

Dampener

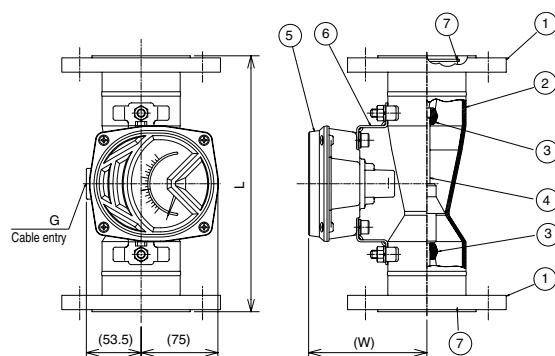
All units for gas measurement are equipped with dampeners as a standard. A dampener can be added to products for liquid applications with pulsation.

The dampener should not be used for such measuring substances such as chlorine gas, which tend to form chemical compounds, and fluids that contain rust, debris and oil.

The dampener replaces the upper float guide.



Dimensional Drawing



In gas or steam specification, an upper float guide is replaced with a dampener and other specifications where a dampener may be required

The lower float guide for the 15 mm and 100 mm meter are not removable.

Parts/Materials

No.	Parts	Material
1	Flange	316L 316
2	Tapered Tube	316L 316
3	Float Guide	316L 316
4	Float	316L 316
5	Indicator	ADC 12
6	Housing Support	316L 316
7	Stop Rings	316L 316

Proper material to be selected according to the specification.

Size

Meter Size (mm)	Connection Size JIS A Size (inch)	Dimensions (mm) and (in)		Approx. Mass ¹ (kg) (lb)
		L	W	
15	15 (1/2)	250 (9.84)	115.5 (4.55)	2.5 (5.5)
25	25 (1)	250 (9.84)	115.5 (4.55)	4.0 (8.8)
40	40 (1-1/2)	250 (9.84)	115.5 (4.55)	4.5 (9.9)
50	50 (2)	250 (9.84)	115.5 (4.55)	7.0 (15.4)
80	80 (3)	250 (9.84)	115.5 (4.55)	13.0 (28.7)
100	100 (4)	250 (9.84)	135.5 (5.33)	18.0 (39.7)

¹Approximate weights are shown for a meter with ANSI 150# flange

Flow Capacities

Flow Rate Table – Water

Meter Size		Water ¹		Max. Pressure Drop (Water)	
(in)	(mm)	(Gal/min)	(L/min)	(psi)	(bar)
1/2	15	0.2 - 8.1	0.7 - 31	2.5	0.17
1	25	6.6 - 24	25 - 90	4.4	0.3
		24 - 26	90 - 100		
1-1/2	40	22 - 46	83 - 175	1.5	0.1
2	50	40 - 74	150 - 280	1.2	0.08
		74 - 95	280 - 358	1.5	0.1
3	80	88 - 176	333 - 667	1.9	0.13
		176 - 220	667 - 833		
4	100	220 - 440	833 - 1667	N/A	N/A

¹ Liquid equivalent to water density 1.0 g/cm³, viscosity 1.0 cP

Flow Rate Table – Air

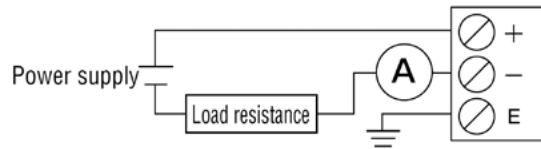
Meter Size		Air ²		Max. Pressure Drop (Water)	
(in)	(mm)	ft ³ /h	m ³ /h (nor)	(psi)	(bar)
1/2	15	42 - 1589	1.2 - 45	2.5	0.17
1	25	1589 - 4767	45 - 135	4.4	0.3
1-1/2	40	4591 - 8122	130 - 230	1.5	0.1
2	50	7769 - 10594	220 - 300	1.2	0.08
		10594 - 14126*	300 - 400*	1.5	0.1
3	80	13773 - 21189	390 - 600*	1.9	0.13
4	100	N/A	N/A	N/A	N/A

² Gases equivalent to Air @ 0°C 1 atm

*Minimum alarm setting at 20% of full scale

Accessories

Terminal Schematics



4-20mA Output Specification

Power Supply	11–35 V DC (voltage between transmitter terminals)
Output Accuracy	±1.0% F.S. (against scale plate)
Allowable Load Resistance	0–600Ω (at 24 V DC)
Power Supply Variation Influence	0.2% F.S. or less
Load Resistance Influence	0.2% F.S. or less
Insulation Resistance	100 MΩ or more (500 V DC)
Withstand Voltage	500 V AC (Holding time: 1 min)

Reed Switch Specification

Contact Type	1 Point Reed Switch
Max Voltage	125 VAC or 100 VDC
Operating Current Capacity	10 μA to 0.5 A
Maximum Switching Capacity	10 VA or 10 W
Suitable Wiring	0.2 to 2.5 mm ² / 24 to 12 AWG (Single wire or stranded wire)
Insulation Resistance	100 MΩ or more (500 V DC)
Withstand Voltage	1500 VAC (holding time 1 min)
Setting Accuracy	±2% F.S.

Application Information

Fluid Name:
Operating Density or Specific Gravity:
Viscosity:
Flow Rate
Maximum:
Operating or Normal:
Scale Range:
Pressure
Maximum:
Operating or Normal:
Temperature
Maximum:
Operating or Normal:

Use this Application Information form in conjunction with the Ordering Information.

Ordering Information

Use the following guide to determine the specific product number you require.

The following example describes a P800 Series DN15 1/2" flow meter with 316L stainless steel wetted material, ANSI Flange 150# RF connection, code 1 meter size/flow rate, no dampener, local indicator, no conduit cable entry, no intrinsically safe & explosion proof construction and no certification, cleaning or inspection or accessories.

Example: P800A1AAA1A1

Model Number, Example and Options										Description
P80	0	A	1	A	A	A	1	A	1	
Connection Size / Wetted Material	0									DN15 (1/2"), 316L SS
	1									DN20 (3/4"), 316L SS
	2									DN25 (1"), 316L SS
	3									DN40 (1-1/2"), 316L SS
	4									DN50 (2"), 316L SS
	5									DN65 (2-1/2"), 316L SS
	6									DN80 (3"), 316L SS
	7									DN100 (4"), 316L SS
	8									DN125 (5"), 316L SS
	9									DN150 (6"), 316L SS
	Z									Special
Connection Rating/Type	A									ANSI Flange 150# RF
	B									ANSI Flange 300# RF Note: 5" & 6" are not available for this connection rating
	Z									Special
Internal Meter Size										Flow Rate Table
										Meter Size
										Water²
										Air¹
										Inch mm Gal/min L/min ft³/min ft³/hr m³/hr
	1									1/2 15 0.2 - 8.1 0.7 - 31 0.75 - 26.4 45 - 1589 1.3 - 45
	2									1 25 6.6 - 26 25 - 100 26.4 - 79.4 1589 - 4767 45 - 135
	3									1 1/2 40 22 - 46 83 - 175 76.5 - 135.3 4591 - 8122 130 - 230
	4									2 50 40 - 94 150 - 358 129.4 - 235.4 7769 - 14126 220 - 400
	5									3 80 88 - 220 333 - 833 229.5 - 353.1 13773 - 21189 390 - 600
	6									4 100 220 - 440 833 - 1667 N/A
	Z									Special
Dampener	A									No Dampener (Typical for liquid applications)
	D									Dampener required (Typical for gas applications)
Indicator Type & Alarm Output / Transmitter Functions	A									Local Indicator
	B									Reed Switch - Contact closes (becomes ON) when value is more than set point
	C									Reed Switch - Contact opens (becomes OFF) when value is more than set point
	D									Reed Switch - Contact closes (becomes ON) when value is less than set point
	E									Reed Switch - Contact opens (becomes OFF) when value is less than set point
	F									2-Wire, 4-20 mA DC output Type 1, Non-Explosion proof circuit
	H									2-Wire 4-20 mA DC output HART Communication Type 1, Non-Explosion proof circuit
	Z									Special
Conduit Cable Entry	A									None
	B									NPT 1/2" (F)
	C									M20 X 1.5 (F)
	Z									Special
Certifications	1									None
	Z									Special
Cleaning and Inspection	A									None
	B									Degreased Treatment
	C									Non-Water Treatment
	D									Acid Pickling
	E									Gas Leakage Test
	Z									Special
Accessories	1									None
	2									Amplifier for Alarm
	3									Tags
	Z									Special

Note: Dampener recommended for gas service and steam applications.

¹Gases equivalent to Air @ 0°C 1 atmos (normal)

²Liquid equivalent to water density 1.0 g/cm³, viscosity 1.0cp

⚠ WARNING – USER RESPONSIBILITY

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