

Technical Data Sheet

F-2000 Series - Digital Paddlewheel Flowmeter with Saddle & Tee Fittings

F-2000 Features:

- Easy to read 8 digit LCD, up to 4 decimal positions.
- Flow rate and Total flow display.
- AC/DC transformer or battery operated (RT models only). 4 AA batteries.
- Factory programmed with calibration certificate.
- Field programmable via front panel touch pad.
- Front panel security lockout.
- Total reset function can be disabled.
- Weather resistant ABS enclosure

Note: LCD is not recommended for direct sunlight applications.

- Panel mounting option available.
- Custom calibration units available. Contact the factory.

FOUR MODEL VARIATIONS:

- RT** = Rate and Totalizer. Transformer or battery operated.
- AO** = 4-20mA, 0-10 VDC analog output, flow rate & totalizer. Transformer operated.
- PC** = Batch processing, flow rate alarm, proportional chemical metering, flow rate and totalizer. Transformer operated.
- AP** = Analog output, batch processing, flow rate alarm, proportional chemical metering, flow rate and totalizer. Transformer operated.

F-2000 Specifications:

- Max. Working Pressure 300 psig (20 bar) @ 70° F (21° C)
- Max. Fluid Temperature 200° F (93° C) @ 0 PSI (PVDF saddles and SS Tee fittings)
140° F (60° C) @ 0 PSI (PVC saddles and PVC Tee fittings)

Note: Temperature rating of F-2000 only. Actual pipe rating may vary.

- Full scale accuracy +/- 1%
- Saddle material..... PVDF (1-1/2", 2", 3", 50mm, 63mm, 90mm) PVC (other sizes)
- Sensor/Paddle/Axle material . PVDF
- O-ring seals: Viton
- Max. pressure drop: 0 psi (no significant pressure drop)
- Approximate shipping weight. 4 lb. (1.8 kg)



Saddle Mount
RTSB20K8GM1

316 Stainless Steel Tee
AOS110STGM1

PVC Tee
RTSB20ATGM1



Panel Mount Option
316 Stainless Steel Tee
AOP110STGM1

Models for Saddle mounting on U.S. IPS Pipe (ASTM 1785)

SCHEDULE 40 MODELS

SCHEDULE 80 MODELS

Pipe Size	GPM Flow Range	RT MODELS Model Number	AO MODELS Model Number	PC MODELS Model Number	RT MODELS Model Number	AO MODELS Model Number	PC MODELS Model Number
1-1/2"	15 to 150	RTS115K4GM1	AOS115K4GM1	PCS115K4GM1	RTS115K8GM1	AOS115K8GM1	PCS115K8GM1
2"	30 to 300	RTS120K4GM1	AOS120K4GM1	PCS120K4GM1	RTS120K8GM1	AOS120K8GM1	PCS120K8GM1
3"	60 to 600	RTS130K4GM1	AOS130K4GM1	PCS130K4GM1	RTS130K8GM1	AOS130K8GM1	PCS130K8GM1
4"	100 to 1000	RTS140A4GM1	AOS140A4GM1	PCS140A4GM1	RTS140A8GM1	AOS140A8GM1	PCS140A8GM1
6"	250 to 2500	RTS160A4GM1	AOS160A4GM1	PCS160A4GM1	RTS160A8GM1	AOS160A8GM1	PCS160A8GM1
8"	400 to 4000	RTS180A4GM1	AOS180A4GM1	PCS180A4GM1	RTS180A8GM1	AOS180A8GM1	PCS180A8GM1
10"	600 to 6000	RTS1100A4GM1	AOS1100A4GM1	PCS1100A4GM1	RTS1100A8GM1	AOS1100A8GM1	PCS1100A8GM1
12"	800 to 8000	RTS1120A4GM1	AOS1120A4GM1	PCS1120A4GM1	RTS120A8GM1	AOS1120A8GM1	PCS1120A8GM1

Models for mounting on Solvent Weld PVC TEE

GPM MODELS

LPM MODELS

Pipe Size	GPM Flow Range	RT MODELS Model Number	AO MODELS Model Number	PC MODELS Model Number	LPM Flow Range	RT MODELS Model Number	AO MODELS Model Number	PC MODELS Model Number
1"	6 to 60	RTS110ATGM1	AOS110ATGM1	PCS110ATGM1	25 to 250	RTS110ATLM1	AOS110ATLM1	PCS110ATLM1
1-1/2"	15 to 150	RTS115ATGM1	AOS115ATGM1	PCS115ATGM1	60 to 600	RTS115ATLM1	AOS115ATLM1	PCS115ATLM1
2"	30 to 300	RTS120ATGM1	AOS120ATGM1	PCS120ATGM1	100 to 1000	RTS120ATLM1	AOS120ATLM1	PCS120ATLM1

Models for mounting on F/NPT 316 Stainless Steel TEE

GPM MODELS

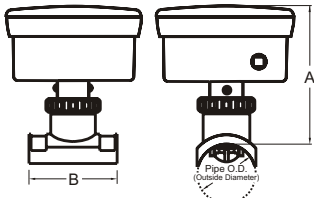
LPM MODELS

Pipe Size	GPM Flow Range	RT MODELS Model Number	AO MODELS Model Number	PC MODELS Model Number	LPM Flow Range	RT MODELS Model Number	AO MODELS Model Number	PC MODELS Model Number
1"	6 to 60	RTS110STGM1	AOS110STGM1	PCS110STGM1	25 to 250	RTS110STLM1	AOS110STLM1	PCS110STLM1
1-1/2"	15 to 150	RTS115STGM1	AOS115STGM1	PCS115STGM1	60 to 600	RTS115STLM1	AOS115STLM1	PCS115STLM1
2"	30 to 300	RTS120STGM1	AOS120STGM1	PCS120STGM1	100 to 1000	RTS120STLM1	AOS120STLM1	PCS120STLM1

Models listed above are with 115V AC/DC transformer. RT models only can be battery operated. Replace the "RTS1" in the model number with "RTSB". All models are available with the display "Panel Mounted" remotely from the sensor. Replace the "S" in the model number with the letter "P".

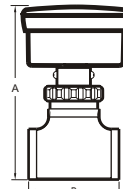
Saddle Dim.

PIPE SIZE IN. (MM)	A	B
150(050)	4-1/2"	3-3/16"
200(063)	4-1/2"	3-3/16"
300(090)	4-1/2"	3-3/16"
400(110)	4-1/2"	3-3/16"
600(160)	4-3/8"	3-3/16"
800(200)	4-3/8"	3-3/16"
1000(250)	4-1/2"	4-1/2"
1200(315)	4-1/2"	4-1/2"



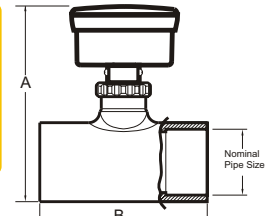
316 SS Tee Dimensions

PIPE SIZE	A	B
1"	5-1/2"	3"
1-1/2"	6-1/4"	3-13/16"
2"	6-3/4"	4-7/16"



PVC Tee Dimensions

PIPE SIZE	A	B
1"	6"	4"
1-1/2"	6-5/8"	4-1/2"
2"	7-1/8"	4-3/4"



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Installation Guidelines

F-2000 Series - Digital Paddlewheel Flowmeter with Saddle & Tee Fittings

Fluid Flow Stream Requirements

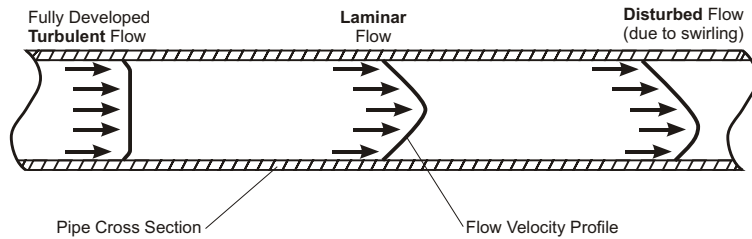
Measuring accuracy requires a fully developed **turbulent** flow profile. Pulsating, swirling and other disruptions in the flow stream will effect accuracy. Flow conditions with a **Reynolds Number** greater than 4000 will result in a fully developed **turbulent** flow. A Reynolds Number less than 2000 is **laminar** flow and may result in inaccurate readings.

REYNOLDS NUMBER EQUATION:

$$\text{REYNOLDS NUMBER} = \frac{3160 \times Q \times G}{D \times V}$$

Where:

Flow rate of the fluid in GPM = Q
 Specific gravity of the fluid = G
 Pipe inside diameter in inches = D
 Fluid viscosity in centepoise = V



Minimum Straight Pipe Length Requirements

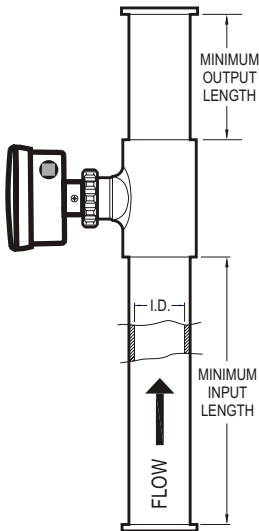
The meter's accuracy is affected by disturbances such as pumps, elbows, tees, valves, etc., in the flow stream. Install the meter in a straight run of pipe **as far as possible** from any disturbances. The distance required for accuracy will depend on the type of disturbance.

Type Of Disturbance	Minimum Inlet Pipe Length	Minimum Outlet Pipe Length
Flange	10 X Pipe Inside Diameter	5 X Pipe Inside Diameter
Reducer	15 X Pipe Inside Diameter	5 X Pipe Inside Diameter
90° Elbow	20 X Pipe Inside Diameter	5 X Pipe Inside Diameter
Two 90° Elbows -1 Direction	25 X Pipe Inside Diameter	5 X Pipe Inside Diameter
Two 90° Elbows -2 Directions	40 X Pipe Inside Diameter	5 X Pipe Inside Diameter
Pump Or Gate Valves	50 X Pipe Inside Diameter	5 X Pipe Inside Diameter

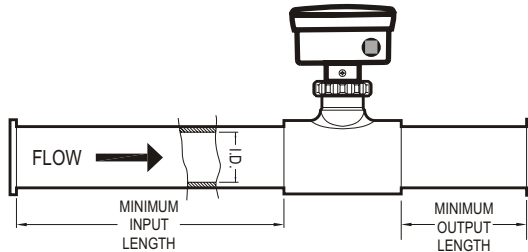
Mounting location and pressure/temperature requirements

- The meter is designed to withstand outdoor conditions. A cool, dry location, where the unit can be easily serviced is recommended.
- The meter can be mounted on horizontal or vertical runs of pipe. Mounting at the vertical (twelve o'clock) position on horizontal pipe is recommended. Mounting anywhere around the diameter of vertical pipe is acceptable, however, the pipe must be completely full of water at all times. Back pressure is essential on downward flows. See the minimum straight length of pipe requirement chart above.
- The meter can accurately measure flow from either direction.

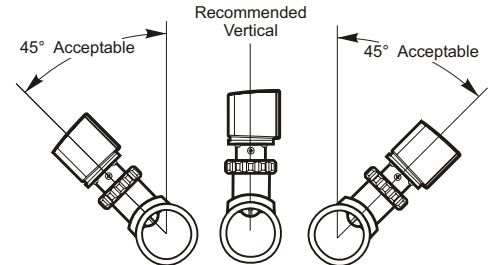
Vertical Mount



Horizontal Mount



Angle Mount on Horizontal Pipe



Maximum Temperature vs. Pressure

