

# 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

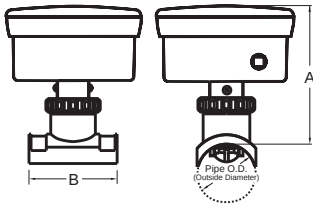
### LPM MODELS

| 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".

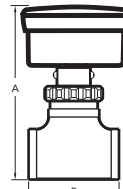
### Saddle Dim.

| 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"  |



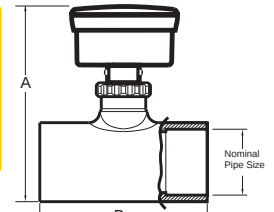
### 316 SS Tee Dimensions

| 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" |



## 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:

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

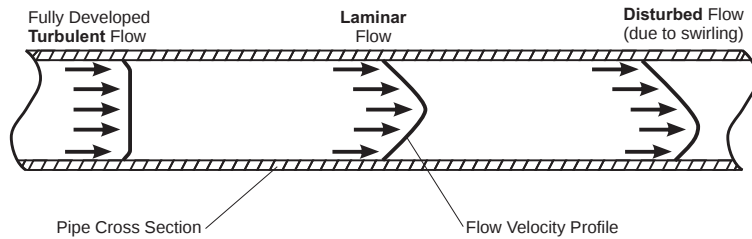
Where:

Flow rate of the fluid in GPM = Q

Specific gravity of the fluid = G

Pipe inside diameter in inches = D

Fluid viscosity in centipoise = V



### Minimum Straight Pipe Length Requirements

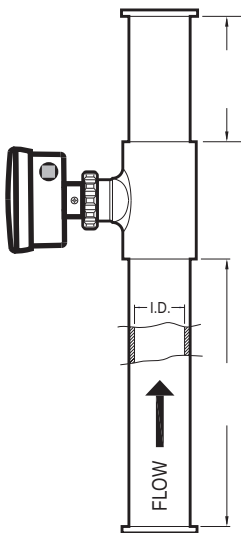
The meter's accuracy is affected by disturbances such as pumps, elbows, tees, valves, etc., in the flow stream. Install the meter in a straight run of pipe **as far as possible** from any disturbances. The distance required for accuracy will depend on the type of disturbance.

| 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   |

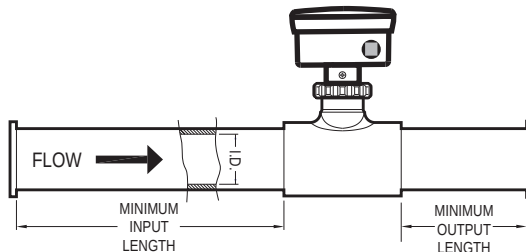
### Mounting location and pressure/temperature requirements

- 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.

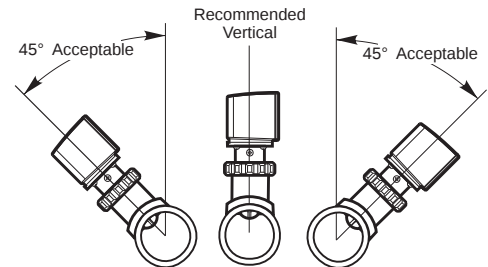
#### Vertical Mount



#### Horizontal Mount



#### Angle Mount on Horizontal Pipe



### Maximum Temperature vs. Pressure

