

### F-2000

**Machined In-line Fitting**  
**Remote Mount Display**  
**Three Display Options:**

- Rate & Total Display Only
- Rate, Total, Analog output
- Rate, Total, Process Control



#### Features:

- High accuracy digital paddlewheel technology.
- 3/8", 1/2", 3/4", 1", 1-1/2", and 2" female pipe threads.
- Flow rate from .4 to 300 GPM (1 to 1000 LPM)
- Rate and total flow display.
- Optional Process Control alarm or batch processing relay.
- Optional 4-20mA or 0-10VDC output.

- Large, 8 digit LCD display, up to 4 decimal places.
- Remote mount display on panel, pipe or wall.
- Very low pressure drop.
- Total reset function can be disabled.
- Front panel security lock-out.
- Field programmable.

#### Specifications:

**Max. working pressure:** .....300 PSI (20 bar) @ 70° F (21° C)  
**Max. fluid temperature:** .....200° F (93° C) @ 0 PSI  
**Max. ambient temperature:** ..14° to 110° F / -10° to 43° C  
**Full scale accuracy:** .....+/- 1%  
**Power requirement:** .....16-24VDC  
 Model RT units only: .....4 AA batteries or AC/DC transformer  
 All units:..... AC/DC transformer

**Signal Distance:** .... AC sine wave sensor = 200 ft (60 m)  
 Optional Hall Effect sensor = 1 mile (1.6 km)  
**Signal Cable:** ..... 3 conductor shielded. Included 25 ft. (7,6 m)  
**Max pressure drop:** 8 PSI (varies per model)  
**Enclosure:** ..... NEMA 4X (IP56)  
**Approx ship wt:** .... 5 lb. (2.3 kg)

#### Materials of Construction:

**Pipe fitting body:**.....Polypropylene (options: PVDF)  
**Pipe fitting adapters:** .....Polypropylene (options: PVDF, PVC)  
**Union Nuts:**.....Anodized Aluminum

**Sensor, paddlewheel, axle:** ..PVDF  
**Sensor O-ring seals:**.....Viton<sup>®</sup> (optional EP)

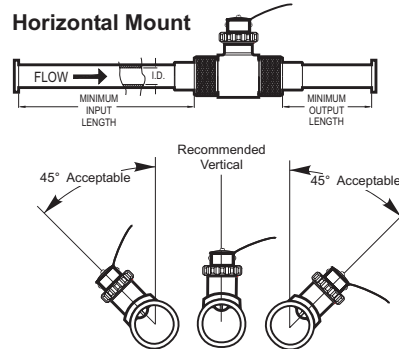
#### Installation Requirements:

##### Minimum Straight Pipe Length Requirements

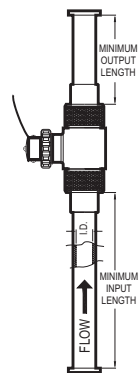
The meter's accuracy is affected by disturbances such as pumps, elbows, tees, valves, etc., in the flow stream. Install the meter in a straight run of pipe **as far as possible** from any disturbances. The distance required for accuracy will depend on the type of disturbance.

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

##### Horizontal Mount



Angle Mount on Horizontal Pipe

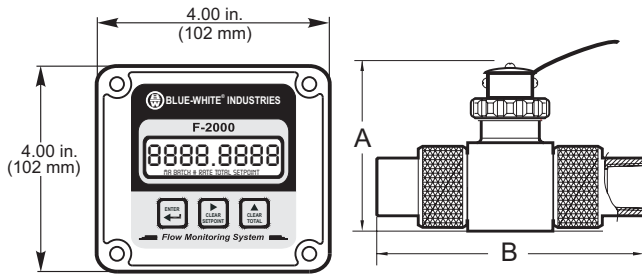


Vertical Mount

##### Mounting location

- 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.

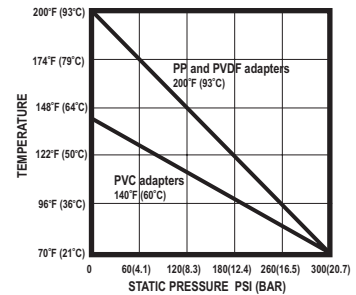
### Dimensions:



| Pipe Size | A             | B             |
|-----------|---------------|---------------|
| 3/8"      | 7-3/8" (187)  | 4-1/4" (108)  |
| 1/2"      | 7-3/8" (187)  | 4-1/4" (108)  |
| 3/4"      | 7-3/8" (187)  | 4-1/4" (108)  |
| 1"        | 7-3/8" (187)  | 4-1/4" (108)  |
| 1-1/2"    | 9-3/8" (238)  | 5-1/16" (129) |
| 2"        | 11-3/8" (289) | 5-3/8" (137)  |

Inches (mm)

Maximum Temperature vs. Pressure



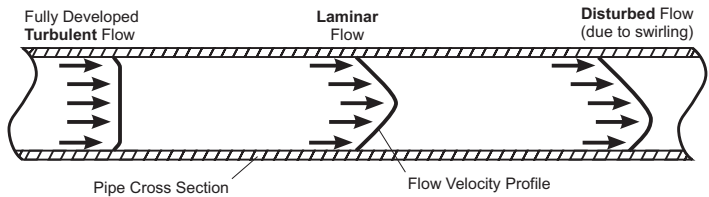
### Flow Stream Requirements:

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.

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

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



### Model Number Matrix:

| Display Function  |   | Display Mount / Sensor Type   |    | Power   |   | Pipe Size  |   | Pipe Fitting type and Material   |  | Calibration Flow Range   |  | Calibration Units  |  |
|---|---|---|----|---|---|--|---|--|--|--|--|--|--|
| RT  | P | 2   | 50 | PG  | 1 | GM   | 1 |  |  |  |  |  |  |
| RT = Rate and Total flow<br>AO = Rate, Total, 4-20mA<br>PC = Rate, Total, Relay<br>AP = Rate, Total, 4-20mA, relay  |   | S = Display mounted on AC coil sensor<br>P = Display remote mount, AC coil sensor<br>H = Display remote mount, Hall Effect sensor |    | B = Battery holder with 4 AA cells<br>1 = U.S. Transformer, AC 115V60Hz/15Vdc, NEMA5/15 plug<br>2 = Europe Transformer, AC 230V50Hz/15Vdc, CEE 7/VI1 plug<br>3 = U.S. Transformer, AC 230V60Hz/15Vdc, NEMA 5/15 plug<br>4 = U.S. Transformer, 115V60Hz and Battery back-up<br>5 = Europe Transformer, 230V50Hz and Battery back-up<br>6 = U.S. Transformer, 230V60Hz and Battery back-up<br>X = No Selection (Customer must supply power) |   | 38 = 3/8 inch<br>50 = 1/2 inch<br>75 = 3/4 inch<br>10 = 1 inch<br>15 = 1-1/2 inch<br>20 = 2 inch |   | P = PP body U.S. F/NPT<br>K = PVDF body U.S. F/NPT<br>PG = PP body PVC inch Slip weld/glue<br>PS = PP body inch Socket Fusion<br>PB = PP body inch Butt Fusion<br>KS = PVDF body inch Socket Fusion<br>KB = PVDF body inch Butt Fusion |  | 1 = Range 1 (see pipe data)<br>2 = Range 2 (see pipe data)<br>3 = Range 3 (see pipe data)<br>4 = Range 4 (see pipe data)<br>5 = Range 5 (see pipe data)<br>6 = Range 6 (see pipe data) |  | 1 = Range 1 (see pipe data)<br>2 = Range 2 (see pipe data)<br>3 = Range 3 (see pipe data)<br>4 = Range 4 (see pipe data)<br>5 = Range 5 (see pipe data)<br>6 = Range 6 (see pipe data) |  |
| GM = U.S. Gal per min<br>GH = U.S. Gal per hour<br>OM = U.S. Oz per min<br>FM = Cubic Ft per min<br>AD = Acre Ft per day<br>LM = Liters per min<br>LH = Liters per hour<br>MH = Cubic Mtr per hour<br>IM = Imperial Gal per min<br>IH = Imperial Gal per hour |   |   |    |   |   |  |   |  |  |  |  |  |  |

### Pipe Size, Flow Range and Display Model Options:

#### 115v AC Models with Polypropylene Pipe Fitting

| Pipe Size<br>M/NPT | GPM MODELS     |                                   |                            |                              | LPM MODELS     |                                   |                            |                              |
|--------------------|----------------|-----------------------------------|----------------------------|------------------------------|----------------|-----------------------------------|----------------------------|------------------------------|
|                    | GPM flow Range | RATE & TOTAL DISPLAY Model Number | ANALOG OUTPUT Model Number | PROCESS CONTROL Model Number | LPM flow Range | RATE & TOTAL DISPLAY Model Number | ANALOG OUTPUT Model Number | PROCESS CONTROL Model Number |
| 3/8"               | .8 to 8        | RTP138PG1GM1                      | AOP138M1GM1                | PCP138M1GM1                  | 3 to 30        | RTP138M1LM1                       | AOP138M1LM1                | PCP138M1LM1                  |
| 3/8"               | .4 to 4        | RTP138PG2GM2                      | AOP138M2GM2                | PCP138M2GM2                  | 1 to 10        | RTP138M2LM2                       | AOP138M2LM2                | PCP138M2LM2                  |
| 1/2"               | 2 to 20        | RTP150PG1GM1                      | AOP150M1GM1                | PCP150M1GM1                  | 7 to 70        | RTP150M1LM1                       | AOP150M1LM1                | PCP150M1LM1                  |
| 1/2"               | .5 to 5        | RTP150PG2GM2                      | AOP150M2GM2                | PCP150M2GM2                  | 2 to 20        | RTP150M2LM2                       | AOP150M2LM2                | PCP150M2LM2                  |
| 3/4"               | 3 to 30        | RTP175PG1GM1                      | AOP175M1GM1                | PCP175M1GM1                  | 11 to 110      | RTP175M1LM1                       | AOP175M1LM1                | PCP175M1LM1                  |
| 3/4"               | .8 to 8        | RTP175PG2GM2                      | AOP175M2GM2                | PCP175M2GM2                  | 3 to 30        | RTP175M2LM2                       | AOP175M2LM2                | PCP175M2LM2                  |
| 1"                 | 5 to 50        | RTP110PG1GM1                      | AOP110M1GM1                | PCP110M1GM1                  | 20 to 200      | RTP110M1LM1                       | AOP110M1LM1                | PCP110M1LM1                  |
| 1"                 | 2 to 20        | RTP110PG2GM2                      | AOP110M2GM2                | PCP110M2GM2                  | 7 to 70        | RTP110M2LM2                       | AOP110M2LM2                | PCP110M2LM2                  |
| 1-1/2"             | 4 to 40        | RTP115PG1GM1                      | AOP115M1GM1                | PCP115M1GM1                  | 15 to 150      | RTP115M1LM1                       | AOP115M1LM1                | PCP115M1LM1                  |
| 1-1/2"             | 6 to 60        | RTP115PG2GM2                      | AOP115M2GM2                | PCP115M2GM2                  | 25 to 250      | RTP115M2LM2                       | AOP115M2LM2                | PCP115M2LM2                  |
| 1-1/2"             | 10 to 100      | RTP115PG3GM3                      | AOP115M3GM3                | PCP115M3GM3                  | 40 to 400      | RTP115M3LM3                       | AOP115M3LM3                | PCP115M3LM3                  |
| 2"                 | 4 to 40        | RTP120PG1GM1                      | AOP120M1GM1                | PCP120M1GM1                  | 15 to 150      | RTP120M1LM1                       | AOP120M1LM1                | PCP120M1LM1                  |
| 2"                 | 6 to 60        | RTP120PG2GM2                      | AOP120M2GM2                | PCP120M2GM2                  | 25 to 250      | RTP120M2LM2                       | AOP120M2LM2                | PCP120M2LM2                  |
| 2"                 | 10 to 100      | RTP120PG3GM3                      | AOP120M3GM3                | PCP120M3GM3                  | 40 to 400      | RTP120M3LM3                       | AOP120M3LM3                | PCP120M3LM3                  |
| 2"                 | 20 to 200      | RTP120PG4GM4                      | AOP120M4GM4                | PCP120M4GM4                  | 70 to 700      | RTP120M4LM4                       | AOP120M4LM4                | PCP120M4LM4                  |